Blair-Preston Trail and Pedestrian Bridge

Municipal Class Environmental Assessment
Schedule B
Project File Report (PFR)

City of Cambridge

R.J. Burnside & Associates Limited
292 Speedvale Avenue West Unit 20
Guelph ON N1H 1C4 CANADA

November 15, 2023
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Distribution List

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Revision	Date	Description
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R.J. Burnside & Associates Limited

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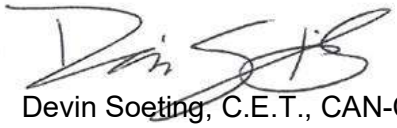

Devin Soeting, C.E.T., CAN-CISEC
Aquatic Ecologist
DS:js

Executive Summary

R.J. Burnside & Associates Limited (Burnside) was retained by the City of Cambridge (the City) to complete a Municipal Class Environmental Assessment (EA) to consider a new trail and bridge connection to create a pedestrian linkage between the neighbourhoods of Blair and Preston. The connection has been identified in the City's Trails Master Plan, Bike Your City Cycling Master Plan and the Region of Waterloo's Active Transportation Master Plan.

The EA is being carried out in accordance with the requirements of a Schedule B undertaking as outlined in the Municipal Engineers Association *Municipal Class Environmental Assessment Manual* (October 2000, as amended 2007, 2011 & 2015), which is an approved process under the *Ontario Environmental Assessment Act*.

The Alternative Solutions studied in the EA were tailored to the specific site conditions of the Study Area. Four Alternative Solutions were identified for the new trail and bridge connection to create a pedestrian linkage between the neighbourhoods of Blair and Preston. The Alternative Solutions were:

- Do Nothing;
- Alternative 1: Northern Route: Development of a trail along the northern boundary of the agricultural field on the *rare* Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting to the B. McMullen Linear (BML) Trail to the north of Dover Street South;
- Alternative 2: Dover Street South Route (Development of a trail along the northern boundary of the agricultural field on the *rare* Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting to the BML Trail at Dover Street South near the Dover Street Pump House Building); and
- Alternative 3: Southern Route (Development of a trail along the northern boundary of the agricultural field on the *rare* Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting to the BML Trail to the south of Dover Street South, west of the Preston High School field.

The Alternative Solutions were evaluated against the natural, social, cultural, land use / policy, technical and economic environment. It was determined that the Northern Route: Development of a trail along the northern boundary of the agricultural field on the *rare* Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting to the B. McMullen Linear (BML) Trail to the north of Dover Street South, (Alternative 1) was the Preferred Solution. This Solution, shown on Figure 7-2, creates the shortest connection between Fountain Street and the Linear Trail, provides a route that is the least likely to encourage trail users to veer off-trail and trespass on *rare* Charitable Research Reserve land, and the bridge and trail are the farthest distance

from the confluence of the Speed and Grand Rivers, a sensitive waterfowl wintering area. This Solution has a moderate cost relative to the other alternatives.

A key component of the study included consultation with interested stakeholders, considered broadly to include government and non-government agencies, Indigenous communities, property owners, and the general public. Consultation with stakeholders included a Notice of Commencement (NOCm) and Notice of Completion (NOCp). In addition, a Public Information Centre (PIC) was held to present the project and obtain input from interested stakeholders. A NOCp will be published in the local newspapers and emailed or mailed to stakeholders and agencies that have interest in the project. As per the requirements of the Municipal Class EA, this Project File Report (PFR) is available for public review and comment for a period of 30 calendar days following the publication of the NOCp.

The NOCp will provide the dates, times and locations where the PFR can be reviewed, and names and addresses of people to whom they can send their comments.

Concerns regarding the project should be directed to the contacts listed in the Notice of Completion. If concerns relating to Aboriginal or Treaty Rights arise regarding this project which cannot be resolved in discussion with the City, a person or party may request that the Minister of the Environment make an Order for the project to comply with Section 16 of the *Environmental Assessment Act* (referred to as a Section 16 Order), which addresses Individual Environmental Assessments.

Requests must be received by the Minister within 30 calendar days of the first publication of the Notice of Completion.

- Proposed Trail and Pedestrian Bridge
- Solid Fence
- Living Fence
- Existing Multi Use Trail
- Study Area

Sources:

1. Ministry of Natural Resources and Forestry, © Queen's Printer for Ontario.
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Disclaimer:

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CITY OF CAMBRIDGE

Figure Title

BLAIR PRESTON TRAIL EA

CONCEPTUAL PLAN

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File Path: \\elmo\gis\Project\300043765 (Blair Preston Trail EA)\06_GIS\Map\Carto\EA\043765 Figure 6-1 Proposed Alternatives.mxd Print Date: 2023/03/24 Time: 01:59 PM

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Appendices

1.0 Introduction

R.J. Burnside & Associates Limited (Burnside) was retained by the City of Cambridge (the City) to prepare a Schedule B Municipal Class Environmental Assessment (EA) for the development of a trail and pedestrian bridge spanning the Speed River to connect the neighbourhoods of Blair and Preston. Routes through lands owned by the *rare* Charitable Research Reserve were considered. The proposed trail and bridge will connect the B. McMullen Linear Trail (Linear Trail) to the existing multi-use trail on Fountain Street by crossing over the Speed River upstream of its confluence with the Grand River.

This EA addresses the location of the trail linkage and provides measures to mitigate possible impacts to the natural, social, cultural, and built environment.

The existing conditions, proposed Alternative Solutions and public consultation process are presented in this Project File Report (PFR) for a Schedule B Municipal Class EA.

2.0 Project Background

Study Area

The Study Area, shown on Figure 2-1, is located within an area known locally as the Junction (or Confluence) of the Speed and Grand Rivers. The Study Area broadly includes:

- Fountain Street to the west;
- A natural area to the north;
- The Linear Trail near Preston High School to the east; and
- The Grand River to the south.

The majority of the Study Area is owned by rare. Lands within the Study Area include a mix of woodland, wetland, shrub, open meadow, active agricultural areas, and the banks and waters of the Speed River. The area is located within the Regional Blair-Bechtel-Cruikston Environmentally Sensitive Landscape and the Speed and Grand Confluence Environmentally Sensitive Policy Area (ESPA 36). The lands are known to contain a variety of significant and sensitive environments and archaeological features.

The proposed connection involves lands that are near portions of the Speed River Provincially Significant Wetland (PSW) complex. The Study Area is located entirely within the Grand River watershed and lands regulated by the Grand River Conservation Authority (GRCA) through O. Reg. 150/06. Waters associated with the confluence of the Speed and Grand Rivers have also been identified as important wintering areas for waterfowl, raptors, and other wildlife.

The Study Area is located within the traditional territory of the Six Nations of the Grand River and Mississaugas of the Credit First Nation. The Study Area was part of Treaty 3, known as the “Between the Lakes Purchase”, a portion of which was subsequently granted to the Six Nations in what is known as the “Haldimand Tract”. The proposed trail and bridge are located on lands near the confluence of the Speed and Grand Rivers which have cultural and environmental significance to the Six Nations, Haudenosaunee Chiefs Confederacy Council and Mississaugas of the Credit.

Study Area

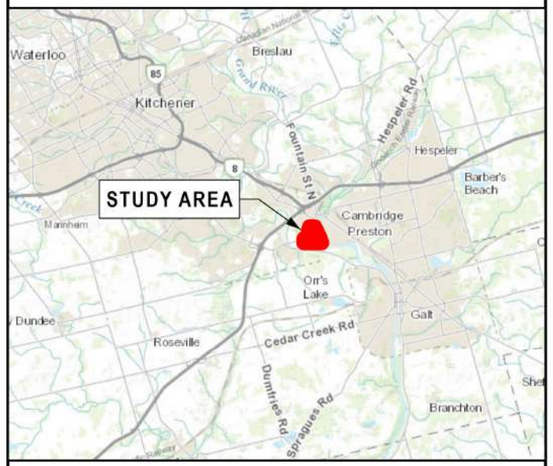

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Figure Title

BLAIR PRESTON TRAIL EA

STUDY AREA

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Needs and Justification

In 2019, the City of Cambridge declared a Climate Emergency. The City and Region of Waterloo have committed to making long-term transformative changes, including how residents move from place to place. The Region issued "Transform WR", a 30-year strategy to address climate change. According to the report, across the Region, 49% of greenhouse gas emissions are emitted from transportation and vehicle-related fuel consumption. Changing the way in which people travel is therefore critical in reducing emissions. The City and Region have committed to taking action so that, by 2050, most trips in the Region are taken using active transportation (i.e., walking, cycling and other non-motorized means), with the support of a robust public transit system. That goal is achievable but only with a comprehensive and well-connected trail network that makes active transportation an easy choice.

Both the City and Region have been working extensively to identify and close gaps in the City-wide and Regional trail networks. The City of Cambridge Trails Master Plan (2010) identified the need for a pedestrian connection between the neighbourhoods of Preston and Blair. The Master Plan recommended a path and bridge between the B. McMullin Linear Trail in Preston and the multi-use trail along Fountain Street on the Blair side of the Speed River, specifically noting the following as a short-term priority:

> *Investigate the opportunities to construct a bridge crossing to link west side trails from Blair to Preston. A trail linking Preston with Downtown Cambridge was the trail section that was most often stated in the community survey and workshops. A bridge linking the Linear Trail with the Grand Trunk trail was identified in the 1996 City-Wide Multi-use Trail Study. A bridge connection will be a long process and will require discussions with landowners; environmental impact studies; feasibility studies and other decisions. Bridge construction would follow and would likely be 5 to 10 years away from the start process. Given this length of time it is important that this trail section be identified as a short term priority so that process gets started. (pg., 15)*

The City's recent Cycling Master Plan (2020) also identifies a trail in this location as a short-term priority. This Master Plan highlights the City's goals for a broad and encompassing trail network, indicating that:

> *Cambridge is committed to a sustainable, effective, accessible, and energy efficient transportation system and recognizes the importance of encouraging residents and visitors to enjoy the beautiful natural environment, enhancing community health and safety as well as quality of life. The City is also committed to reducing air pollution by increasing opportunities for cycling and public transportation as seen through*

> *policies in the City's Greenhouse Gas (GHG) Reduction (Energy Management) Plan and Official Plan. (pg., 1)*

The Region of Waterloo's Active Transportation Master Plan (2014) also identifies the potential for a trail and bridge in the Study Area. The Study Area associated with this EA is mapped as a Special Study Area in the Region's Master Plan. These are areas that require "more in-depth study to refine a vision and plan for specific improvements." (Section 4.2.6). The Master Plan indicates, "The Region of Waterloo should work towards completion of the 12 projects identified as Special Study Area in the Walking and Cycling Network Action Plan" (Section 4.2.6).

Further support for the trail in the area was identified through the Class EA for Fountain / King Street/ Shantz Hill Improvements on April 17, 2012 as part of Region of Waterloo Engineering Report E-12-029. This document recommended that the Region of Waterloo, in conjunction with the City of Cambridge, should explore the feasibility of an off-road multi-use trail with new pedestrian / cycling bridge across the Speed River and trail connection from Fountain Street South to the City of Cambridge Linear Trail.

The purpose of this current EA is to provide a detailed analysis of the environmental, cultural, social, technical and economic factors required to confirm the feasibility, routing and design considerations necessary to build on the vision of the City and Region Master Plans for a trail connecting the neighbourhoods of Blair and Preston. This connection will advance the larger vision of a fully connected and well-traveled trail network across the Region to meet Transform WR, 2019 climate change targets.

3.0 Problem and Opportunity Statement

In Phase 1 of the EA process, the objective is to identify the challenge or opportunity that the process is meant to resolve. This statement assists in defining the scope of the project and serves as its central theme and integrating element that sets a benchmark for the final output of the project.

The Problem / Opportunity Statement for the Blair Preston Trail Municipal Class EA is defined as follows:

> *The purpose of this study is to identify the preferred location for pedestrian bridge and connecting trail to link the neighbourhoods of Preston and Blair. The Study will draw from input received through a comprehensive consultation and engagement program with public, review agencies and Indigenous communities.*

In accordance with the requirements of the EA planning process for Schedule B projects, the City initiated this EA to identify and evaluate Alternative Solutions to address this Problem / Opportunity Statement.

4.0 Study Methodology

EA Process

The planning of public sector projects or activities that have the potential for environmental effect is subject to an MCEA as required by Ontario's *Environmental Assessment Act*, R.S.O. 1990.

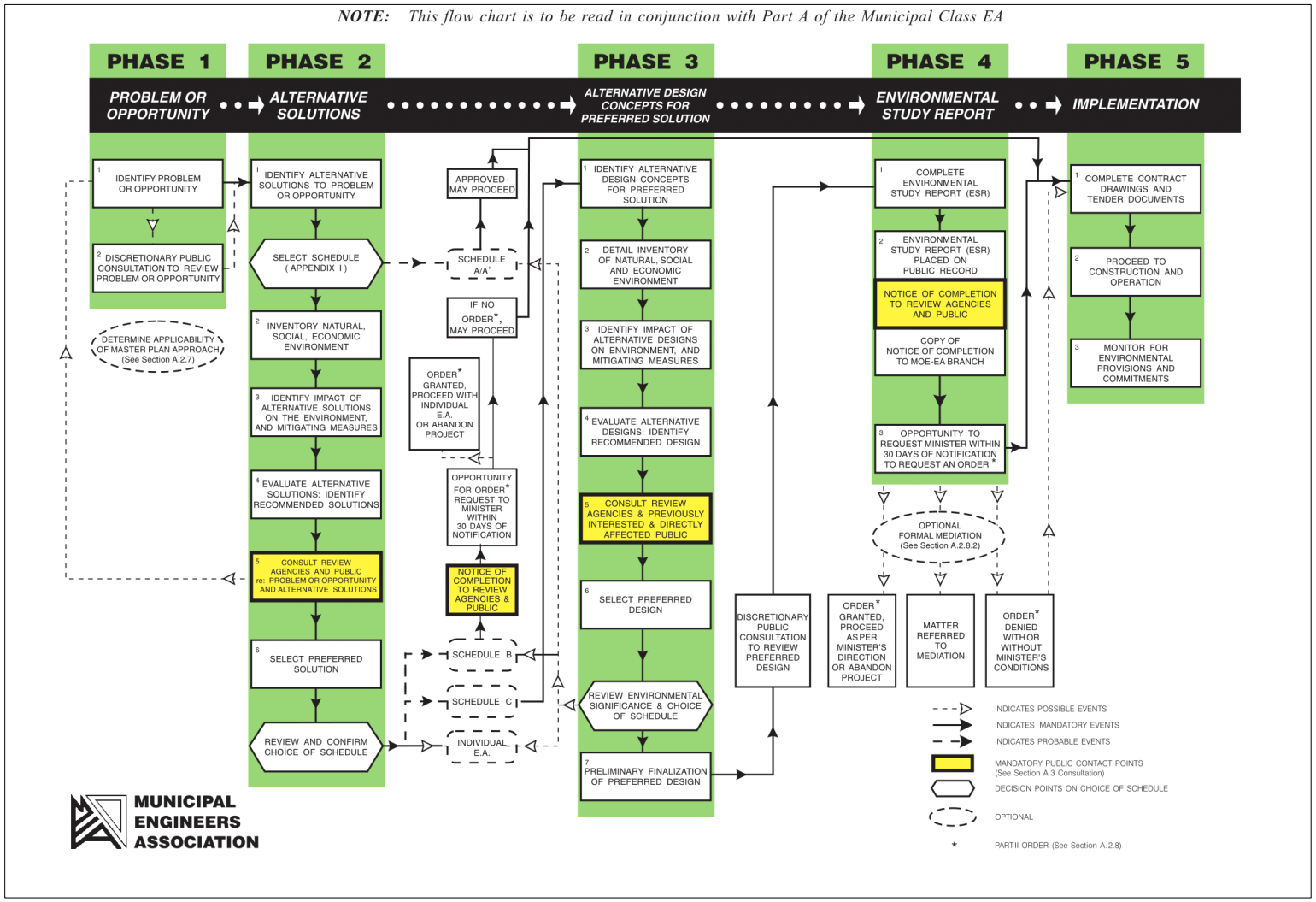
The MCEA process was developed by the Municipal Engineers Association (MEA), in consultation with the former Ministry of the Environment (now Ministry of Environment, Conservation and Parks), as an alternative method to Individual Environmental Assessments for recurring municipal projects that were similar in nature, usually limited in scale and with a predictable range of environmental impacts, which were responsive to mitigating measures. The MCEA solicits input from regulatory agencies, the municipality, Indigenous communities, and the public at the local level. This process leads to an evaluation of the Alternative Solutions in view of the significance of the environmental effects, including the technical, natural, social / cultural, and economic impact of a project, and the choice of effective mitigation measures.

Based on the description provided in the Municipal Engineering Association (MEA) Guide for Municipal Class EAs (2000, as amended in 2004, 2007, 2011 and 2015) for bridge Alternative Solutions being considered, and the presence of sensitive natural heritage features and the potential for environmental effect, it was determined that a Schedule B MCEA with a PFR was appropriate for the undertaking of this investigation.

As a Schedule B project, project planning proceeds under the planning and documentation procedures of Phases 1 and 2 of the MCEA process only (see Figure 4-1). Through this process, reasonable Alternative Solutions identified are evaluated with input from agencies, Indigenous communities, and stakeholders toward a recommendation for a Preferred Solution. As a minimum, public consultation is required at two stages under a Schedule B project. At the conclusion of Phase 2, the appropriate MCEA planning Schedule is confirmed and, if there are no outstanding concerns, the proponent may proceed to design and implementation.

Best attempts have been made to include Indigenous information and worldviews in the assessment process.

Figure 4-1: Municipal Class Environmental Assessment Process Flow Chart



5.0 Existing Conditions

The existing natural, cultural, social and built environment within the Study Area was characterized through a compilation of existing data sources and on-site field investigations. Existing conditions are described in the following sections.

Built Environment

5.1.1 Methodology for Characterizing the Built Environment

The built environment was characterized using a variety of mapping, background data, digital data files and field reconnaissance. Background data included:

- Aerial photography; and
- GIS data provided by the City of Cambridge to identify the location of below-ground utilities in the study area.

5.1.2 Existing Roads, Trails, and Infrastructure

The built environment includes human-made structures and alterations to the natural environment, including buildings, roads, infrastructure, and human-influenced topography. Existing structures and infrastructure are presented on Figure 5-1.

Fountain Street was recently improved and included construction of a multi-use trail adjacent to the roadway.

The east side of the Speed River is within the neighbourhood of Preston and contains a school soccer field, the terminus of Dover Street surrounded by residential development, a transformer station, and the Dover Street sanitary pumping station. A variety of below-ground infrastructure associated with the pumping station is located in the area. The Linear Trail runs along the eastern bank of the Speed River.

No existing structures or infrastructure is present on the portion of *rare* Charitable Research Reserve lands within the Study Area.

- Existing Sanitary Manhole
- Existing Storm Manhole
- Existing Storm Outlet
- Existing Watermain
- Existing Sanitary Sewer
- Existing Storm Sewer
- Study Area

Sources:

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Figure Title

BLAIR PRESTON TRAIL EA

EXISTING INFRASTRUCTURE

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Social Environment

5.1.3 Methodology for Characterizing the Social Environment

The social environment was characterized through a review of existing information, databases, plans and policies, including the following:

- Provincial Policy Statement, 2014;
- Region of Waterloo Official Plan;
- City of Cambridge Official Plan;
- City of Cambridge Trails Master Plan, 2010;
- City of Cambridge City-Wide Multi-Use Trail Study (1996);
- Region of Waterloo Active Transportation Plan (2014);
- Source Water Protection mapping;
- Aboriginal Title Claim to Water Within the Traditional Lands of the Mississaugas of the New Credit (Holmes, 2015);
- Aboriginal and Treaty Rights Information System (INAC); and
- Correspondence with MECP staff to identify Indigenous interests in the area (refer to Section 9.4 for further information).

5.1.4 Indigenous Treaties, Rights and Land Claims

Aboriginal and Treaty Rights are protected under Section 35 of the *Constitution Act, 1982*. Aboriginal Rights are associated with practices, customs or traditions that are integral to the distinctive culture of the Indigenous community claiming the right. Treaty Rights are those specified in historic treaties signed between Indigenous people and the Crown.

Indigenous peoples made use of the lands in the Study Area for thousands of years before European contact. Both the Speed and Grand Rivers were of particular importance as travel and trade routes and as sources of sustenance.

There are several Indigenous communities that may have constitutionally protected Aboriginal or Treaty Rights associated with the Study Area, or a portion of it, including:

- Mississaugas of the Credit First Nation (MCFN);
- Six Nations of the Grand River; and
- Haudenosaunee Confederacy Chiefs Council [represented by the Haudenosaunee Development Institute (HDI)].

The various treaties signed between the Crown and Indigenous communities in this area are documented in the Cultural Heritage Resource Assessment (CHRA), provided in Appendix D. Portions of those descriptions are copied below from the CHRA (ASI,

2020) 1F1F1F 1. Information regarding consultation with Indigenous communities is provided in Section 9.4.

Treaty No. 3 – The Between the Lakes Purchase (1784/1792)

Following the American Revolutionary War, the British Crown needed to find lands on which to settle United Empire Loyalists, including approximately 2,000 members of the Six Nations confederacy who had fought alongside British troops. Led by Sir Frederick Haldimand who was the governor of Quebec at that time, the Crown was initially planning on providing lands for Loyalist settlers in Quebec and Southeastern Ontario, including providing land in the Bay of Quinte for Six Nations people. This was not suitable for many of the members of Six Nations and a contingent of approximately 1,800 community members, led by Chief Joseph Brant, requested land north of Lake Erie along the Grand River (Surtees 1984:21).

Recognizing that under the terms of the Royal Proclamation the land needed to be purchased prior to settlement, Colonel John Butler was sent to negotiate with the Mississaugas of the Credit at the at the western end of Lake Ontario for lands west of Lake Ontario. On May 22, 1784, the Mississaugas of the Credit agreed to cede approximately 3,000,000 acres (1,214,057 ha.) of land located between Lakes Huron, Ontario, and Erie containing all or part of Brant, Elgin, Middlesex, Oxford, and Wellington Counties as well as the Regions of Haldimand-Norfolk, Halton, Hamilton - Wentworth, Niagara, and Waterloo. In exchange for these lands, the Mississaugas received £1180.74 worth of trade goods (Crown-Indigenous Relations and Northern Affairs 2016; Surtees 1984). Of the 3,000,000 acres (1,214,057 ha.), approximately 550,000 acres (222,577 ha.) was set aside for the settlement of Six Nations people.

However, due to uncertainties with the description of the lands in the original surrender, Treaty No. 3 was renegotiated on December 7, 1792 to clarify what was ceded. This largely revolved around the northern boundary of the Treaty area and in particular the area set aside for Six Nations settlement along the Grand River.

The Haldimand Grant (1784) and the Simcoe Patent / Treaty No.4 (1794)

On August 8, 1783, Lord North instructed Governor Haldimand to set apart land for the Six Nations Iroquois and ensure that they carried on their hunting and fur trading with the British. On May 22, 1784, a tract of land along the Grand River was purchased by the British government from the Mississaugas of the Credit as part of the Between the Lakes Purchase (Treaty No.3). Joseph Brant led Haudenosaunee loyalists (1600 people) to the Haldimand tract in 1784 and in the fall of 1784, Sir Frederick Haldimand formally awarded the tract to the Mohawks “and others of the Six Nations [Iroquois].”

[1] References for the following sections can be found in the CHRA in Appendix D.

As part of the 1792 renegotiation of Treaty No.3, the Crown also redefined the boundaries of the Haldimand Tract. Upon review of the Haldimand Proclamation, politician and Indian Department official Sir John Johnson noted an error involving the location of the northern boundary of the tract. Haldimand had mistakenly assumed in 1784 that the headwaters of the Grand River resided within the area negotiated under Treaty No.3. However, the northern reach of the Haldimand Tract was within lands that were not negotiated until 1818 under treaties Nos.18 and 19 (Crown--Indigenous Relations and Northern Affairs 2016; Filice 2018; Surtees 1984). In order to clarify the boundaries of the tract, the Crown appointed surveyor Augustus Jones to complete a survey of the Haldimand Tract in 1791. In so doing, Jones redefined the borders of the Six Nations' land parcel. Jones established straight-lined boundaries, rather than sinuous boundaries following every curve in the river, which can still be seen in today's municipal boundaries. Six Nations and Joseph Brant were not in agreement with this new definition and petitioned the government for control over the tract. This eventually led to the 1794 Simcoe Patent (Treaty No.4) which defined the rules of land ownership and leasing within the revised 30,000 acres of land provided to Six Nations. This 1794 patent did not address those lands northeast of the Jones Base Line and continues to be a source of dispute between Six Nations and the Crown.

In the years following the signing of Treaty No.4, there were continued disputes regarding land use, ownership and the encroachment of white settlers. There were a series of surrenders that were issued as a result, and today this history and those surrenders are still contested and there are currently 29 specific land claims that have been filed by the Six Nations of the Grand River with the federal government in regard to lands within the Haldimand Tract (Johnston 1964; Lytwyn 2005).

5.1.5 Relevant Land Use Policies

Provincial Policy Statement, 2020

The Provincial Policy Statement (PPS) provides provincial direction of land use and community planning and includes several policies of relevance to the proposed project.

With respect to natural features, Section 2.1.2 states that:

> *The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features.*

With respect to cultural heritage and archaeology, Section 2.6.1 states that:

> *Significant built heritage resources and significant cultural heritage landscapes shall be conserved, and Section 2.6.2 indicates that:*
>
> *Development and site alteration shall not be permitted on lands containing archaeological resources or areas of archaeological potential unless significant archaeological resources have been conserved.*

In summary, provincial direction is to conserve important cultural and natural heritage features.

Region of Waterloo Official Plan

The Region of Waterloo Official Plan (RWOP) indicates that lands on the east side of the Speed River are within the Settlement Area limits; these lands are designated as Built-up Areas. The lands west of the Speed River are within the Regional Greenlands Network and are Rural Areas, Significant Valleylands and part of Environmentally Significant Landscape (ESL) #2 (Blair-Bechtel-Cruickston). Riparian lands on either side of the Speed River and the Speed River Provincially Significant Wetland (PSW) Complex are Core Environmental Features and are identified as the Speed and Grand Confluence Environmentally Sensitive Policy Area (ESPA 36).

According to Section 7.B.9 development applications within Environmentally Sensitive Landscapes that establish or expand recreational, or tourism uses or rural institutional uses may be considered for approval if it can be demonstrated that no adverse environmental impacts will result to the features or function, existing corridors or linkages, watercourses or groundwater within or continuous with the ESL as a result. Additionally, it should be assured that disturbance of existing natural vegetation will be minimized, and that developments will be buffered from existing natural features by an appropriate natural vegetation buffer.

Significant Valleys are addressed in Section 7.B.20 and 7.B.21. The Region endeavors to maintain the character of these features by conservation and enhancement of cultural heritage resources of recreational and scenic value. It is anticipated that the trail and pedestrian bridge will enhance the recreational and scenic value of this area.

City of Cambridge Official Plan

The City of Cambridge Official Plan (CCOP) Maps 1A and 1B identify lands west of the Speed River as Protected Countryside, and areas to the east as Built-up Area. Map 2 designates riparian lands along the Speed River as well as lands to the west as part of the municipal Natural Open Space System.

Section 2.10.2 of the CCOP stipulates that land use within protected countryside is regulated in accordance with the underlying policies applied to Prime Agricultural, Rural,

or Landscape Level System designations of the CCOP. Section 3.0 c) states that Landscape Level Systems are managed under the City's Natural Heritage System, and Section 3.A.2 stipulates that these systems are identified and designated by the region. It is indicated that lands along the Speed River identified as Landscape Level Systems are considered to be Significant Valleys. Section 3.A.3 #14 indicates that the City of Cambridge will coordinate with the Region of Waterloo and the GRCA to preserve and enhance the cultural heritage resources of recreational and scenic value that Significant Valleys represent.

Conservation Authority Regulations

The Grand River Conservation Authority regulates development in or around hazard lands (i.e., floodplains, slopes, wetlands) through *Ontario Regulation 150/06*. The Authority *"may grant permission for development in [regulated areas] if, in its opinion, the control of flooding, …pollution or the conservation of land will not be affected by the proposed development."* (Section 3(1))[2].

The Study Area includes wetlands and two water course (the Speed River and an unnamed tributary) and their associated floodplains, all of which are regulated by the GRCA. A portion of steep slope / erosion hazard lands is located on the east bank of the Speed River adjacent to St. Joseph Catholic Elementary School.

5.1.6 *Rare* Charitable Research Reserve

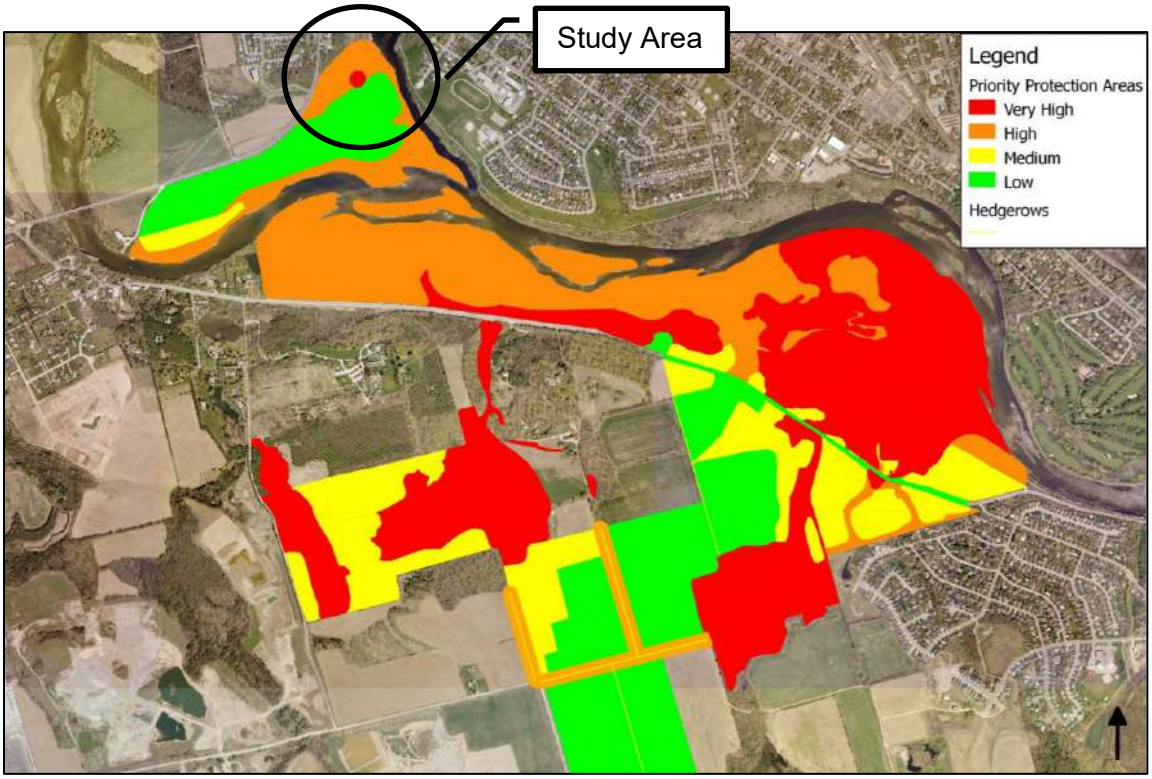
The *rare* Charitable Research Reserve is located in southern Ontario, with lands in the City of Cambridge and the Township of North Dumfries. Founded in 2001, the rare Charitable Research Reserve is a 900+ acre (364+ hectare) urban land trust situated at the confluence of the Grand and Speed Rivers.

Environmental Management Plan (2014)

The *rare* Charitable Research Reserve Environmental Management Plan (2014) divides the property into Priority Protection Areas (Figure 5-2) based on the vulnerability to disturbance of the natural features each contains. Each designation has corresponding management implications to guide future decisions related to land use, public access, and protection and restoration efforts.

[2] Updated in 2023 to the "control of flooding, erosion, dynamic beaches and unstable bedrock" through changes to the Conservation Authorities Act under Bill 23.

Figure 5-2: 2014 Priority Protection Areas at *rare* Charitable Research Reserve



The Study Area encompasses Low Priority Protection Areas, corresponding with the open agricultural field, High Priority Protection Areas, corresponding with wooded lands and a small circular Very High Protection Area, believed to correspond with the location of a historic Bald Eagles nest. No evidence of this nest was observed during field investigations.

Public use of existing and new trails is noted as being permitted in the Low and High Priority Protection Areas (Sections 5.2 and 5.4).

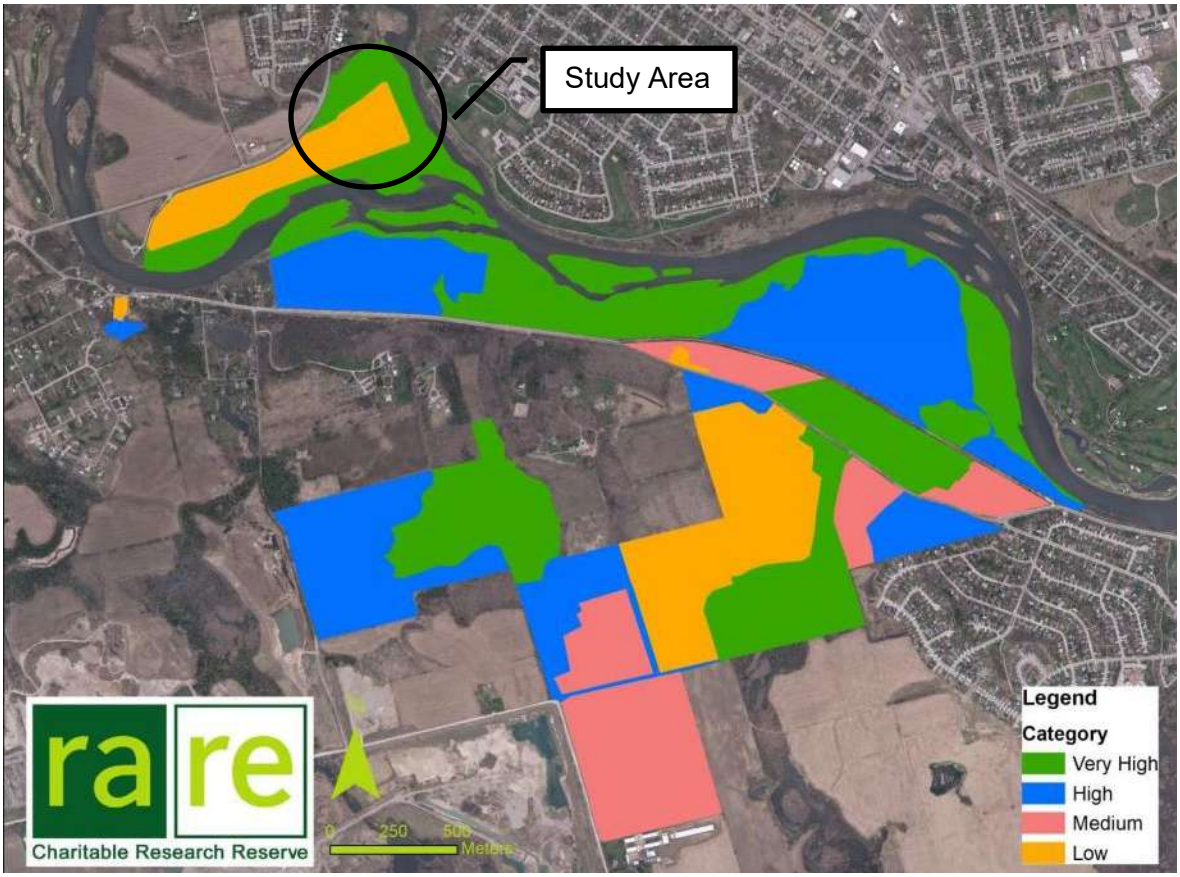
Environmental Management Plan (2020)

During the course of the EA, *rare* issued a new Environmental Management Plan. The agricultural fields in the Study Area continue to be identified as Low Priority Protection Areas while the wooded areas along the banks of the Speed and Grand Rivers have been moved into the Very High Protection Categories, as shown in Figure 5-3.

Section 5.4.2 of the Plan indicates that permitted uses in Low Priority Protection Areas, includes “Regular public use of existing or newly created public trails and open access areas. Regular trail use includes hiking on the trail independently or on guided tours, and possibly cycling and geocaching in suitable area…” It is also noted that the focus of these areas is on recreation, education and agriculture among other uses. “Educational material, communicated through trail signage, the rare website, trail maps and handouts,

should be provided to the public to explain the vision and methods behind the agricultural practices on the property."

Figure 5-3: 2020 Priority Protection Areas at *rare* Charitable Research Reserve



Section 5.1.2 of the Plan outlines policies for the Very High Priority Protection Areas. Pre-existing authorized trails are permitted in these areas but new trails are generally not. Activities such as ecological restoration and invasive species management, Indigenous cultural and subsistence activities and other low impact uses are permitted. Educational materials and signage continue to be an important goal for these areas.

Section 6.4.8.2 notes the following:

> *The City is also working on a footbridge and trail connection between the Bob McMullen Linear Trail in Preston and the multi-use trails adjacent to Fountain Street, which is currently in the Environmental Assessment stage. This would include a footbridge across the Speed River and a trail that would cross rare property. While this may be desirable from the point of view of active transportation, there can be little benefit to habitats on*

> *rare property, and the City must remain aware of their obligations to minimize impact to Preston Flats after construction is completed.*

This same section of the Plan also notes current stresses in the area, including the presence of significant invasive species cover (e.g., Buckthorn and Giant Hogweed) and the existing high level of noise and light pollution from Fountain St. and adjacent developed areas.

The Plan identifies the need for "Continued vigilance for dumping, parties, and other forms of human damage due to its close proximity to the City." A recommendation is provided to monitor for human impacts from trespassing, noting the need to establish a baseline in the event that the footbridge and trail are constructed.

Other recommendations include removing invasive species and completing Vegetation Sampling Protocols, using *rare*'s sampling methods.

Section 7.5 provides a number of policies related to trail use, including guidelines and recommendations for signage, management options to minimize off-trail use and dog walking.

Beginning in the spring of 2022, *rare* has partnered with a sustainable agriculture organization to allow Preston Flats to be grazed in a rotating set of fenced paddocks. It is assumed that this use of the land will continue in the long-term.

5.1.7 Source Water Protection Plan

The Study Area is not located within a Source Water Protection Area based on a review of Lake Erie Source Protection Area online mapping [3].

Six Nations of the Grand River staff noted that the Six Nations' community obtains their water from the Grand River, approximately 60 km downstream of the proposed bridge and trail. Questions were raised regarding potential impacts to drinking water.

The proposed trails and bridges are not deemed threats to drinking water as they do not discharge any substances to the water and they do not require any in-water work.

Consultations with the Six Nations of the Grand River are documented in Section 9.0. General considerations related to groundwater and the protection of water quality during construction are identified in Section 8.0.

[3] https://maps.grandriver.ca/swp-policymapping/

Natural Environment

The natural environment includes the ecological features, functions and linkages that exist within the Study Area and beyond. The existing natural environment was characterized through a review of the existing secondary source information, previous studies at the site and a variety of field investigations and analyses. The following sections document the methodology used and the findings of the various studies. A detailed description of natural features in the Study Area can be found in the Natural Heritage Report provided in Appendix A.

5.1.8 Methodology for Characterizing the Natural Environment

The natural environment was characterized through a review of existing information, databases, plans and policies and field investigations. These sources included:

- Aerial photographic imaging and 1:10,000 Ontario Base Mapping (OBM);
- Ontario Hydrology Network (OHN) mapping;
- MNRF Natural Heritage Information Centre (NHIC) database for significant species and designated natural features within 120 m of the subject lands;
- Ontario Breeding Bird Atlas (OBBA) database for avian species records within the area;
- Ontario Reptile and Amphibian Atlas (ORAA) database for herpetofaunal species records within the area;
- MNRF Land Information Ontario (LIO) database;
- GRCA regulated features, mapping and information;
- Ministry of Natural Resources and Forestry (MNRF) Aquatic Resource Area mapping (2015);
- Fisheries and Oceans Canada (DFO) Aquatic Species at Risk mapping (2018);
  rare Environmental Management Plan (*rare, 2014);*
- Provincial Policy Statement, 2014;
- Growth Plan for the Greater Golden Horseshoe, 2017;
- Region of Waterloo Official Plan; and
- City of Cambridge Official Plan.

In addition, to records review, a number of field investigations were completed, as summarized in Table 5-1.

Table 5-1: Field Investigations Summary Table

Field Study	Methodology	Staff Involved	Date(s)	Time of Day	Weather Conditions		
					Precipitation / Cloud Cover	Temperature (°C)	Wind (Beaufort Wind Scale)[1]
Ecological Land Classification	Ecological Land Classification for Southern Ontario (Lee et al., 1998) of entire property.	Peter DeCarvalho (Terrestrial Ecologist)	June 10, 2019	0800-1400	Spotty precipitation Partly cloudy/Overcast	21°C on arrival 26°C on departure	0-2 – Calm- slight breeze
Wetland Boundary Delineation	Ontario Wetland Evaluation System (OWES) (MNRF, 2014). Boundary jointly verified by the GRCA and RJ Burnside Ecologists on June 10, 2019.	Peter DeCarvalho (Terrestrial Ecologist) Representatives from the GRCA, City of Cambridge, and *rare*.	June 10, 2019	0800-1400	Spotty precipitation Partly cloudy/Overcast	21°C on arrival 26°C on departure	0-2 – Calm- slight breeze
Bat Maternity Habitat Survey	Survey protocol for Species at Risk bats within treed habitats: Little Brown Myotis, Northern Myotis & Tri-colored Bat (MNRF, 2017)	Meredith Meeker (Ecologist)	September 18, 2020	08:30 – 12:45	No precipitation	N/A	1 – Light Air
			November 24, 2020	9:55 – 13:45	No precipitation Overcast	-1°C on arrival 0°C on departure	1 – Light Air
Aquatic Habitat Assessment	Ontario Ministry of Transportation (MTO) Fisheries Protocol - Environmental Guide for Fish and Fish Habitat (June, 2009)	Chris Pfohl (Sr. Aquatic Ecologist)	June 10, 2019	0830 – 1230	No precipitation Cloudy	17°C on arrival 22°C on departure	1 – Light Air
Spring Migratory Waterfowl and Shorebird Survey	One survey, at least 4 hours using wandering transects through the Study Area during daylight hours, recording all species seen and heard.	Matthew Iles (Burnside sub-contractor)	May 13, 2019	07:30 – 10:00	No precipitation Overcast	4°C on arrival 7°C on departure	2-3 – Gentle breeze
Spring Breeding Bird Survey	Two surveys at least 10 days apart using the method in the Ontario Breeding Bird Atlas Guide for Participants (BSC, March, 2001)	Matthew Iles (Burnside sub-contractor)	June 4, 2019	06:00 – 10:00	No precipitation Overcast	6°C on arrival 18°C on departure	0 - None
			July 2, 2019	06:30 – 09:45	No precipitation Partly cloudy	17°C on arrival 20°C on departure	0 - None
Fall Migratory Waterfowl and Shorebird Survey	One survey, at least 4 hours using wandering transects through the Study Area during daylight hours, recording all species seen and heard.	Meredith Meeker (Ecologist)	September 18, 2020	08:30 – 12:45	No precipitation Clear skies	N/A	1 – Light Air

Field Study	Methodology	Staff Involved	Date(s)	Time of Day	Weather Conditions		
					Precipitation / Cloud Cover	Temperature (°C)	Wind (Beaufort Wind Scale)[1]
Winter Raptor and Waterfowl Habitat Use Survey	One survey, at least 4 hours using wandering transects through the Study Area during daylight hours, recording all species seen and heard.	Meredith Meeker (Ecologist)	November 24, 2020	9:55 – 14:00	No precipitation Overcast	-1°C on arrival 0°C on departure	1 – Light Air
	Three surveys, using wandering transects along the banks of the Grand River and Speed River through the Study Area. Also included observations through the agricultural field and forest edges for additional signs of raptors.	Matthew Iles (Burnside sub-contractor)	January 16, 2023	13.45-15:15	No precipitation Cloud cover 10%	1°C	1 – Light Air
			February 1, 2023	13:55-15:20	No precipitation Cloud cover 30%	-8°C	4 – Moderate Breeze
			February 23, 2023	14:05-15:30	No precipitation Cloud cover 10%	8°C	1 – Light Air
Search for potential wildlife habitats	Meandering survey throughout property. Search for features which could provide habitat for wildlife or Species at Risk Habitat such as: Nests, reptile hibernacula, old barns, structures, uncapped chimneys, foundations, mature forest areas with cavities or other features suitable for bat roosting, turtle nesting or overwintering sites along the Speed River etc.	All staff, all visits	All visits as noted above.	All visits as noted above.	All visits as noted above.	All visits as noted above.	All visits as noted above.
Incidental flora and fauna observations	Visual observations of animals, tracks or scat and compilation of a plant inventory during all site visits.	All staff, all visits	All visits as noted above.	All visits as noted above.	All visits as noted above.	All visits as noted above.	All visits as noted above.

1 Beaufort Wind Scale: 0 = calm, smoke rises vertically (0-2 km/hr); 1 = light air movement, smoke drifts (3-5); 2 = slight breeze, wind felt on face; leaves rustle (6-11); 3= Gentle breeze, leaves & twigs in constant motion (12-19); 4 = moderate breeze, small branches moving, raises dust & loose paper (20-30); 5 = fresh breeze, small trees begin to sway (31-39); 6 = strong breeze, large branches in motion (40-50).

5.1.9 Terrestrial Environment

Vegetation

The Study Area is approximately 25 ha in size. Much of the Study Area is within the floodplain of the Speed and Grand Rivers, and include a mix of cultural meadow / thicket, shallow marsh, and lowland forest ecosites, as shown on Figure 5-4. Based on Lee *et. al,* 1998, seven community types were located within the Study Area. Each community is described in further detail in the Natural Heritage Report (Appendix A). No rare vegetation communities were identified.

Provincially Significant Wetlands

A section of the Speed River Provincially Significant Wetland (PSW) Complex is present on the northern edge of the Site along the western bank of the Speed River.

A small unevaluated cattail marsh is also present to the north of the farm field.

The southern limit of the Speed River PSW and the unevaluated wetland boundaries were delineated using the Ontario Wetland Evaluation System protocol. The boundaries were staked by Burnside ecologists and verified by ecologists from the GRCA, the City of Cambridge and *rare* on June 10, 2019. The resulting wetland boundaries are shown on Figure 5-4.

- Potential Bat Maternity Habitat Tree
- ELC Boundary
- ELC Boundary - Undefined
- Staked Wetland (June 10, 2019)
- Unevaluated Wetland (MNRF)
- Speed River Provincially Significant Wetland (MNRF)
- Study Area

ELC Descriptions

CUM: Cultural Meadow
CUT1: Mineral Cultural Thicket Ecosite
CUT2: Bedrock Cultural Thicket Ecosite
FOD7: Fresh-Moist Lowland Deciduous Forest Ecosite
FOD7-4: Fresh-Moist Black Walnut Lowland Deciduous Forest
IAG: Agricultural Infrastructure
MAS2-1: Cattail Mineral Shallow Marsh Type
MAS2-9: Forb Mineral Shallow Marsh

Sources:

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Figure Title
BLAIR PRESTON TRAIL EA

VEGETATION

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Significant Woodlands

According to the Region of Waterloo Official Plan (2015),

> *significant woodlands are areas that meet all of the following criteria:*
>
> *a) Greater than four hectares in size, excluding any adjoining hedgerows;*
>
> *b) Consisting primarily of native species of trees; and*
>
> *c) Meets the criteria of a woodland in accordance with the provisions of the Regional Woodland Conservation By-law.*

Based on aerial photo interpretation, woodlands in the area are relatively small and do not meet the 4 ha size requirements. There are no significant woodlands found within the Study Area.

Significant Valleylands

Both the City of Cambridge and Region of Waterloo Official Plans identify the entire Study Area as Significant Valley that incorporates the floodplain and valley slopes associated with the Speed and Grand Rivers.

Wildlife

A large variety of wildlife have been recorded in the Study Area and its vicinity. The Ontario Breeding Bird Atlas [4] has recorded 116 bird species in a 100 km^2 area, covering the Study Area. The eBird [5] database has records of 195 bird species and surveys conducted by *rare* volunteers and staff have recorded 126 bird species.

No background records of mammalian species within the Site were identified during initial background screening. Mammals with the potential to be present are those typical to rural and agricultural environments, including white-tailed deer, coyote, red fox, white-tailed rabbit, groundhog, and various rodent species. The Ontario Wetland Evaluation System (OWES) record for the Speed River PSW Complex indicates the presence of additional mammalian species (beaver, coyote, muskrat, mink, raccoon, skunk).

The Ontario Reptile and Amphibian Atlas [6] has records of 26 species of frogs, snakes, salamanders and turtles in the vicinity of the project.

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[4] https://www.birdsontario.org/atlas/index.jsp
[5] https://ebird.org/region/CA-ON
[6] https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas/

Significant Wildlife Habitat

Wildlife habitats which are deemed to be significant in the province are identified using criteria listed in Significant Wildlife Habitat Technical Guide (SWHTG) and the SWHTG Ecoregion 6E Criterion Schedule (MNRF, 2015).

Through field investigations it was determined that most habitats described in the Ecoregion 6E Criterion Schedule are not present. A screening was conducted and is presented in the Natural Heritage Report (Appendix A).

One SWH was confirmed to be present in the Study Area: Special Concern and Rare Wildlife Species. Specifically, habitat for Monarch, a Special Concern species was identified within the CUM / CUT2 community along the Grand River. The location of habitat for this species is shown on Figure 5-5

Background reviews also identified the presence of a Winter Waterfowl Concentration Area in the Grand and Speed Rivers in the Study Area. This is not a type of habitat listed in the Ecoregion 6E Criterion Schedule; however, it is recognized that this area is an important site for waterfowl and does warrant consideration. For the purposes of this analysis, we have considered this type of habitat to be similar to “Waterfowl Stopover and Staging Areas (Aquatic)” which is a protected type of habitat. Winter waterfowl surveys were conducted in 2023 to better understand the significance and extent of the habitat. Most waterfowl were observed in the Grand River south of *rare*’s agricultural field. Some waterfowl were present in the Speed River; however, almost all were located within 200 m of the river confluence, in the area known as Settler’s Fork. The Grand River provides more sheltered bays and inlets to provide protection to waterfowl during winter months over the Speed River. The Grand River is also wider and provides more open water habitat than the Speed River through the Study Area, which can freeze over in the winter. Based on these findings, and historical records provided by *rare* and various online databases, the stretch of the Grand River between Fountain St. and its confluence with the Speed River appears to provide the highest quality and most utilized habitat for wintering waterfowl in the Study Area. The Speed River supports a small number of waterfowl and does not provide preferred habitat conditions.

The number of waterfowl observed during surveys is summarized in Table 5-2. Potential impacts to wintering waterfowl are described in Section 8.0.

Table 5-2: Waterfowl Observed in the Winter of 2023

Species	Number of Individuals Observed					
	Grand River			Speed River		
	Visit 1	Visit 2	Visit 3	Visit 1	Visit 2	Visit 3
Common Merganzer	10	28	35	0	10	1
Common Goldeneye	26	17	38	4	2	1
Mallard	102	63	47	13	11	32

Species	Number of Individuals Observed					
Trumpeter Swan	0	10	0	0	8	0
Canada Goose	716	329	193	22	70	0
American Black Duck	4	10	5	0	0	0
Blue-winged Teal	1	0	0	0	0	0
Gadwall	3	0	0	0	0	0
Bufflehead	1	2	3	0	0	0
Hooded Merganzer	15	5	12	0	0	0
Total	**878**	**464**	**333**	**39**	**101**	**34**

The Grand River is also known to support wintering Bald Eagles. Key raptor wintering areas are known to exist upstream of the Study Area along the Grand River between Fountain St. and Hwy 401. Another wintering area may be present approximately 1.7 km downstream along the cliff edge. Key wintering features such as winter roosts are not known to occur in the Study Area; however, impacts to wintering raptors were identified as a concern of the Six Nations of the Grand River. It is noted that Bald Eagles are a species of ecological and cultural importance to the Six Nations. Three winter raptor surveys were completed in January and February of 2023. Raptors were only observed during the first visit and were not seen during the second and third visits. The raptor observations were limited to the following:

- One Bald Eagle was seen flying overhead;
- One Northern Harrier was seen hunting over the marshy habitat between the Grand River and *rare*'s agricultural field; and
- One Cooper's Hake landed briefly in a treed area north of the Grand River (south of the agricultural field).

The Northern Harrier and Cooper's Hawk were using the area for hunting. The Bald Eagle appeared to be passing between hunting and feeding habitat along the Grand River. No raptors were observed within the agricultural fields, forest north of the agricultural field or along the Speed River.

Potential impacts are described in Section 8.0.

There are additional types of habitat which were not confirmed present, but which could also not be confirmed absent in the Study Area. These are identified as Candidate Habitats and include:

- Candidate Turtle Wintering Areas;
- Candidate Amphibian Breeding Habitat (Woodland); and
- Candidate Terrestrial Crayfish Habitat.

ELC Boundary

ELC Boundary - Undefined

Significant/SAR Wildlife Habitat Boundary

Waterfowl Winter Concentration Area

Study Area

HABITAT FOR ENDANGERED AND THREATENED SPECIES:
THR-BOBO: THREATENED BOBOLINK HABITAT (CONFIRMED)
THR-SISH: THREATENED SILVER SHINER HABITAT (CONFIRMED)
THR-WRLM: THREATENED WAVY-RAYED LAMPMUSSEL HABITAT (CONFIRMED)
CAND-BMC: BAT MATERNITY COLONY

SIGNIFICANT WILDLIFE HABITAT:
CONF-MONA: CONFIRMED SPECIAL CONCERN AND RARE WILDLIFE SPECIES (MONARCH HABITAT)
CAND-TWA: CANDIDATE TURTLE WINTERING AREA
CAND-TNA: CANDIDATE TURTLE NESTING AREA
CAND-ABH (WOOD): CANDIDATE AMPHIBIAN BREEDING HABITAT (WOODLAND)
CAND-MBBH: CANDIDATE MARSH BREEDING BIRD HABITAT
CAND-TC: CANDIDATE TERRESTRIAL CRAYFISH
CAND-RH: CANDIDATE REPTILE HIBERNACULUM

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Figure Title
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SIGNIFICANT AND SAR WILDLIFE HABITATS

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A number of Species of Conservation Concern may also inhabit the Study Area but were not confirmed present or absent. These include:

- Midland Painted Turtle, *Chrysemys picta marginata* and Snapping Turtle, *Chelydra serpentine.* Habitats for these species correspond with the Candidate Turtle Wintering Areas noted above and are assessed in conjunction with this habitat type.
- Western Chorus Frog, *Pseudacris triseriata.* Habitats for this species correspond with the Candidate Amphibian Breeding Habitat noted above and are assessed in conjunction with this habitat type.
- Bald Eagle, *Haliaeetus leucocephalus*. Bald Eagles are known to winter along the grand River through Cambridge. They have been recorded foraging and traveling through lands close to the Study Area. Key wintering roosts are not known to occur within the Study Area itself. As previously noted, Bald Eagles are a species of ecological and cultural importance to the Six Nations.

Potential impacts are described in Section 8.0.

Habitat of Endangered and Threatened Species

The records review identified eight Endangered and eight Threatened species which have been recorded in the City and are, therefore, known to inhabit the general vicinity.

Regulated habitat is present for three SAR, and is shown on Figure 5-5 and summarized as follows:

- Bobolink (Threatened): Bobolink was confirmed breeding on site during the breeding bird surveys. Its breeding habitat was confirmed present near the southeast corner of the IAG / CUM meadow in the Study Area. Regulated habitat for this species includes the fallow agricultural lands and adjacent meadows (IAG and CUM / CUT2 communities.
- Silver Shiner (Threatened): Regulated habitat for the Silver Shiner is confirmed in the Speed River on Site.
- Wavy-rayed Lampmussel (Threatened): Suitable habitat is present within the Study Area for the Wavy-rayed Lampmussel. The shells and critical habitat for this species, including the host species (Smallmouth bass) were observed on site during field investigations.

Further information regarding the Silver Shiner and Wavy-rayed Lampmussel can be found in Section 5.3.3.

There are four bat species in Ontario which are listed as Endangered due to an emergent pathogenic fungus affecting bat populations across North America. The distribution of these species (Eastern Small-footed Myotis, *Myotis leibii*; Little Brown Myotis, *Myotis lucifugus*; Northern Myotis, *Myotis septentrionalis*; Tri-colored Bat, *Perimyotis subflavus*) is generally poorly understood.

Surveys to identify potential roost trees for these species were conducted on September 18 and November 24, 2020.

Through these surveys, habitat suitable to support bat maternity roosting was identified in various snag trees along the banks of the Speed River. Acoustic surveys to confirm whether Endangered bat species are using these trees were not conducted but there is potential for Little Brown Myotis, Northern Myotis and Tri-colored Bat to be present.

Landscape Features

The Study Area is located entirely within the Natural Heritage System of the Growth Plan for the Greater Golden Horseshoe. The Natural Heritage System was developed to, "support a comprehensive, integrated and long-term approach to planning for the protection of the region's natural heritage and biodiversity." (Section 4.2.2).

According to the Region of Waterloo Official Plan (2015), the Study Area lies within the Environmentally Significant Landscape (ESL) #2 (Blair-Bechtel-Cruickston). This area is bounded by Highway 401 in the north and continues to south of Blenheim Road. This area includes several Provincially Significant Wetlands and a variety of unique habitat features, including riverside cliffs, an alvar and old growth woodland, all of which are located well to the south of the Study Area (MHBC *et. al.,* 2018).

The Study Area is also within the Region's Speed and Grand Confluence Environmentally Sensitive Policy Area (ESPA 36). The ESPA covers the area along the lower end of the Speed River and the Grand River upstream and downstream of the confluence. The agricultural field in the Study Area is not part of the ESPA but the natural areas along the riverbanks to the north, south and east of the field are included. The site was designated for its natural features, which include an important wintering area for waterfowl as well as a migratory stopover for waterfowl and songbirds. Several unique features are located outside of the Study Area including Bald Eagle wintering habitat and a limestone cliff along the Grand River south of the proposed trail site. The area also provides habitat to a variety of species which are rare at the federal, provincial and regional level. The ESPA provides an essential linkage between natural areas in the rural parts of the City of Kitchener and North Dumfries Township.

5.1.10 Aquatic Environment

The Study Area contains a portion of the Speed River approximately 500 m north of its confluence with the Grand River. The Speed River is a major tributary within the Grand River watershed and contains a diversity of cool and warm water fish species.

Both the left and right upstream banks of the Speed River in the Study Area are stable, with the exception of minor erosion from seasonal flows typically occurring in the spring. Spawning nests were observed in select locations and identified by clearing existing

granular substrate with an increased depth. Male Smallmouth bass *(Micropterus dolomieu)* were observed guarding the nest areas and fending off Rock bass *(Ambloplites rupestris)* from invading and potential predation on the young-of-the-year. Numerous gravel “mounds” known to be built by spawning Chub species were also observed.

Numerous crayfish were observed amongst the substrate in the Speed River throughout the Study Area. In addition, darter, cyprinid, and young-of-the-year species of fish were observed throughout the reach.

A small channel originating from a wetland pocket that overflows and connects to a stormwater management (SWM) outlet was observed to connect to the main river. The channel did not appear to have good connectivity to the wetland pocket although more defined with the SWM outlet from the adjacent road and residential area. This channel would have higher water levels in the spring or during peak flow events and most likely dries up during summer low flows. Fish have been documented in the connected wetland pocket (personal correspondence, Tom Woodcock, *rare*) most likely due to high water movements and being trapped in the ponded area when water levels drop. The channel was linear in morphology and had uniform substrate (primarily silt and organics). No fish were observed in the channel during the site visit. An overview of the aquatic features within the Study Area is provided on Figure 5-6.

- Spawning Area
- Stormwater Outlet
- Flow
- Unnamed Tributary of the Speed River (Warm)
- Staked Wetland (June 10, 2019)
- Wetland (MNRF)
- Species at Risk Habitat
- Study Area

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AQUATICS

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Habitat for Aquatic Species at Risk

Wavy-rayed Lampmussel, listed as Threatened, prefers small to medium sized rivers with clear water and clean sand and gravel substrates. They require host fish species carry on their life cycle, preferring Smallmouth Bass in riverine environments.

Suitable habitat and substrate for mussel SAR was observed within the main river channel. Areas of loose gravel used for burying during winter refuge was also observed along with remnant shells identified as mussel SAR. This reach of the Speed River has been identified as occupied reach for Wavy-rayed Lampmussel by Department of Fisheries and Ocean (DFO) based on a review of Aquatic SAR mapping (DFO 2019). The habitat of the Wavy-rayed Lampmussel is limited to the wet area of the watercourse.

The Silver Shiner (*Notropis photogenis)* is a minnow species that has been listed as Threatened under the *Endangered Species Act*. This species of minnow prefers specific habitat features that support its life history and survival. Based on a review of the "General Habitat Description for the Silver Shiner (*Notropis photogenis)"* (MNRF 2012), the preferred habitat for this species consists of moderate to large riverine systems with swift flowing currents (20 to 200 cm depths) associated with riffle pool sequences and clean gravel, cobble / boulder substrates. Suitable habitat for this species exists in the lower Speed River and the most recent observation based on background data was prior to 1981. This species was not observed during field investigations, although fish sampling was not conducted. General habitat protection under the Endangered Species Act includes:

- Category 1 (low tolerance to alteration): swift flowing pools, runs and riffles in occupied reaches.
- Category 2 (moderate tolerance to alteration): shallow nearshore habitats and areas with aquatic vegetation in occupied reaches.
- Category 3 (highest tolerance to alteration): floodplains and riparian edges adjacent to occupied reaches.

5.1.11 Floodplain

Most of the Study Area is below the floodplain elevation and is regulated by the GRCA under O. Reg. 150/06.

Approval from the GRCA is required for all work within the floodplain.

Cultural Environment

5.1.12 Archaeological Resources

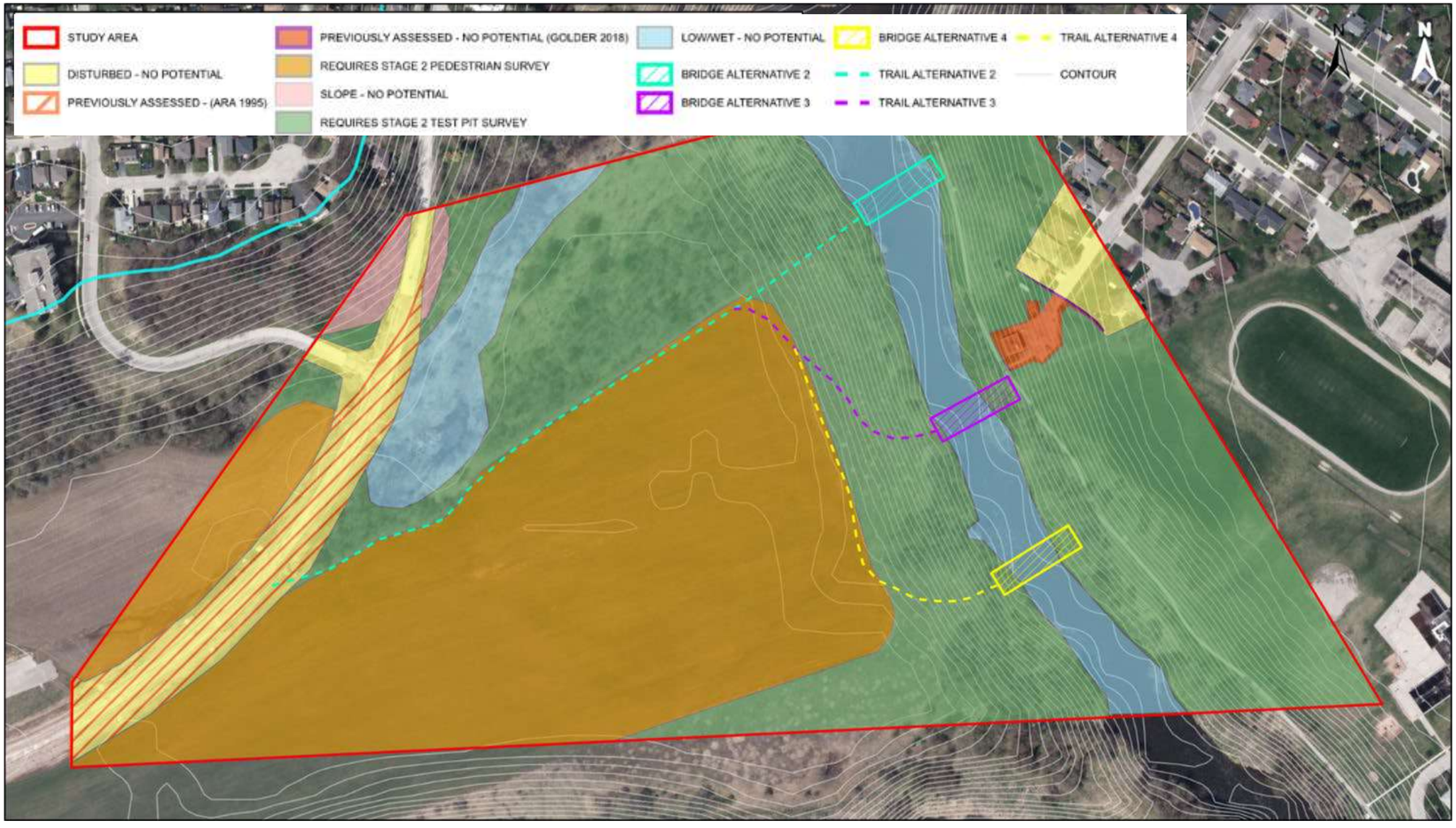
A Stage 1 Archaeological Assessment was completed by Archaeological Services Inc. (ASI). The Stage 1 Archaeological Assessment Report (June 2019) is provided in

Appendix B. The Stage 1 background study determined that 43 previously registered archaeological sites are located within one kilometre of the Study Area, four of which are within 50 m of the Study Area, and four of which are within the Study Area (Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI), 2018). According to the background research, three previous reports detail fieldwork within 50 m of the Study Area.

The Stage 1 Archaeological Assessment property inspection was conducted on May 2, 2019. The property inspection determined that the Study Area exhibits archaeological potential (Figure 5-7 areas highlighted in green and orange). Four registered precontact Indigenous archaeological sites with further cultural heritage value or interest are located within the Study Area (AiHc-4, AiHc-416, AiHc-417, AiHc-325). All require further study.

The remainder of the Study Area does not retain archaeological potential on account of deep and extensive land disturbance, low and wet conditions, slopes in excess of 20 degrees, or having been previously assessed with no further work required. These lands do not require further Archaeological Assessment.

Figure 5-7: Blair-Preston Trail and Pedestrian Bridge Study Area - Results of the Property Inspection



5.1.13 Early European and Current Cultural Heritage

A Cultural Heritage Resource Assessment (CHRA) (ASI, 2020) was completed and is provided in Appendix C.

The CHRA identified, "a study area with a rural land use history dating back to the early nineteenth century as well as residential subdivision including school properties dating to the mid-twentieth century. A review of federal, provincial, and municipal registers, inventories, and databases revealed that there is one previously identified feature of cultural heritage value within the Blair-Preston Pedestrian Bridge and Trail study area. No additional features were identified during the fieldwork." The previously identified resource is the Grand River Watershed Heritage River including the Speed River tributary, which are designated as Canadian Heritage Rivers. According to the Canadian Heritage Rivers system, "Because of its cultural history and outstanding recreational opportunities, the 290 km-long Grand River and its major tributaries, the Nith, Conestogo, Speed and Eramosa, were together designated as a Canadian Heritage River in 1994. The Grand meanders past towns where 19th century mills, foundries and factories still stand, and winds through wetlands and forests composed of rare Carolinian species." (Canadian Heritage Rivers System, n.d.)

Just south of the study area the existing Linear Trail travels through Settler's Fork / Linear Park which provides a striking viewing site at the confluence of the Grand and Speed Rivers. An interpretative panel installed at the park states:

> *You are looking at a panorama like no other in Cambridge or the Region of Waterloo – the Confluence of the Grand and Speed Rivers. This is the heartland of the Grand River watershed, a place of rich cultural, historical and natural significance.*

Potential impacts to cultural heritage are discussed in Section 8.0.

5.1.14 Indigenous Cultural Heritage Value

The Mississaugas of the Credit First Nation, Six Nations of the Grand River and Haudenosaunee Development Institute each identified the confluence of the Speed and Grand Rivers as an area of historical and cultural value. Both rivers would have historically been used for travel, sustenance, and cultural and spiritual uses, many of which continue today.

As noted in Section 5.1.12, evidence of historical occupation of the land is present in the archaeological resources identified on the site. Additional archaeological studies will be carried out in the future.

The environment in, and around, the Study Area also exhibits cultural heritage value. Bald Eagles, which are known to winter along the Grand River through Cambridge, are of importance as a cultural symbol and clan animal. In addition, a number of plants are present which are of cultural importance or of use in medicine, crafting or sustenance in both a historical and current day context. A preliminary list of culturally significant plants which have been observed in the Study Area is provided in Table 5-3: List of Plant Species Observed that are of Indigenous Cultural Value. It is noted that this list is not exhaustive and that all plants which play a beneficial ecological role are of concern to the Six Nations.

Table 5-3: List of Plant Species Observed that are of Indigenous Cultural Value[7]

COMMON NAME	SCIENTIFIC NAME
Box Elder	*Acer negundo*
Sugar Maple	*Acer saccharum ssp. saccharum*
Common Yarrow	*Achillea millefolium ssp. millefolium*
Common Burdock	*Arctium minus ssp. minus*
Kansas Milkweed	*Asclepias syriaca*
Canada Thistle	*Cirsium arvense*
Common Teasel	*Dipsacus fullonum ssp. sylvestris*
Daisy Fleabane	*Erigeron annuus*
Black Walnut	*Juglans nigra*
Crabapple Species	*Malus sp*
Eastern White Pine	*Pinus strobus*

[7] List provided by Six Nations of the Grand River

COMMON NAME	SCIENTIFIC NAME
Trembling Aspen	*Populus tremuloides*
Choke Cherry	*Prunus virginiana ssp. virginiana*
White Oak	*Quercus alba*
Staghorn Sumac	*Rhus typhina*
Black Raspberry	*Rubus occidentalis*

6.0 Evaluation of Alternatives

6.1 Identification of Alternative Solutions

The following alternative solutions were identified to address the problem / opportunity statement (see Figure 6-1):

Do Nothing: This alternative would involve the continued operation of the current trail network without any additional connecting trail / bridge development in the Blair Preston area.

Alternative 1 – Northern Route: Development of a trail along the northern boundary of the agricultural field on the *rare* Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting to the B. McMullen Linear (BML) Trail to the north of Dover Street South.

Alternative 2 – Dover Street South Route: Development of a trail along the northern boundary of the agricultural field on the *rare* Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting to the BML Trail at Dover Street South near the Dover Street Pump House Building.

Alternative 3 – Southern Route: Development of a trail along the northern boundary of the agricultural field on the *rare* Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting to the BML Trail to the south of Dover Street South, west of the Preston High School field.

An additional alternative was considered to extend the multi-use Trail on Fountain St. northward to King St. and across the King St. bridge near Riverside Park with a connection along Chopin Dr. to the Linear Trail. There are some significant limitations to this alternative, including:

- A narrow road right-of-way along Fountain St., requiring property acquisition from a large number of landowners along the route;
- High traffic volumes in the area of Fountain St., Shantz Hill Rd. and King St. E., making the route less attractive to unexperienced cyclists;
- The narrow King St. E. bridge is narrow and would be difficult to widen. There is no space for a separated multi-use trail in this location; and
- The route is long and less direct than Alternatives 1, 2 and 3 for travel between the Preston Heights neighbourhood and Preston Highschool. It is also less direct for travel between Preston Center and Conestoga College and the Walter Bean Trail in Kitchener.

For these reasons, this alternative was discarded as a viable option. The EA proceeded with an evaluation of Alternatives 1, 2 and 3 as well as the Do Nothing option.

Existing Multi Use Trail

Proprosed Rare-Link Trail Alternatives 1,2,3

Proposed Rare-Link Pedestrian Bridge Alternatives 1,2,3

Study Area

Sources:

1. Ministry of Natural Resources and Forestry, © Queen's Printer for Ontario.
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Figure Title

BLAIR PRESTON TRAIL EA

PROPOSED ALTERNATIVES

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6.2 Evaluation Criteria

The criteria to be used to evaluate the Alternatives is presented in Table 6-1.

Table 6-1: Evaluation Criteria

Environmental Component	Criteria	Indicator	Data Source [8]
Natural Environment	• Impacts to existing trees and vegetation	• Area of trees and other naturally vegetated areas to be removed	• Field studies by Burnside • Databases • *Rare* records
	• Impacts to migrating, breeding and wintering birds	• Proximity to key bird habitats	• Field studies by Burnside • Databases • *Rare* records
	• Impacts to small wetland on *rare* lands / amphibian habitat	• Proximity to the wetland	• Field studies by Burnside
	• Impacts to the Provincially Significant Speed River wetland complex	• Proximity to Provincially Significant Speed River Wetland Complex	• Land Information Ontario wetland mapping
	• Impacts to Species at Risk	• Area of SAR habitat to be removed • Proximity to SAR habitat	• Field studies by Burnside • Databases • *Rare* records
	• Impacts to aquatic habitat in the Speed River	• Proximity of crossing to key aquatic habitats	• Field studies by Burnside • Databases
	• Impacts to surface water quality	• Qualitative analysis of potential	• Air photos / GIS mapping

[8] In this table, “RJB” refers to R.J. Burnside & Associates Limited ecology staff and “Databases” refers to the Natural Heritage Information Centre, Ontario Breeding Bird Atlas, Ontario Reptile and Amphibian Atlas and GRCA records

Environmental Component	Criteria	Indicator	Data Source [8]
		for deleterious substances to enter the Speed River (e.g. sediment, stone dust etc.)	
Social Environment /Public Health and Safety	• Route layout and connectivity within the City's trail network	• Ability of alternative to improve City's trail network • Length of trail • "Curviness" of trail (Distance / trail length)	• Air photos / GIS mapping
	• Potential for trespassing/off trail uses	• Number of potential "short-cuts" or off-route attractants	• Air photos / GIS mapping • Consultation
Cultural Environment	• Impacts to archaeological resources	• Area of high archaeological potential to be removed	• Stage 1/2 Archaeological Assessment
	• Impacts to Built Heritage and Cultural Heritage Landscapes	• Comparative qualitative analysis of potential effects	• CHRA
Land Use/Policy	• Compatibility with City and Region policies and plans	• Qualitative analysis of compatibility with various trail plans	• City and Region Official Plans • The City of Cambridge City-Wide Multi-Use Trail Study (1996) • City of Cambridge Trails Masterplan (2010) • Region of Waterloo Active Transportation Master Plan (2014)
	• Area of *rare* lands affected	• Area of trail easement/land use agreement required	• Air photos/GIS mapping

Environmental Component	Criteria	Indicator	Data Source [8]
	• Compatibility with *rare* land management plan	• Qualitative analysis of compatibility	• *Rare* Charitable Research Reserve Environmental Management Plan (December 2014)
Technical Environment	• Flood impacts to adjacent property	• Potential to increase flooding on adjacent lands	• Hydraulic modelling
	• Flood impacts to constructed trail and bridge	• Likelihood of the trail route and bridge to experience flooding • Vulnerability to climate change	• Hydraulic modelling
	• Ease / complexity of construction	• Qualitative analysis of construction effort / challenges	• Air photos / GIS mapping • Professional engineering opinion
Economic Environment	• Comparative capital and operational costs	• High level estimates of capital and operational costs	• Cost estimates prepared by Burnside with data on operational costs to be provided by the City
	• Impacts to agricultural uses and income on *rare* lands	• Area of agricultural lands to be removed	• Air photos / GIS mapping Consultation with *rare*

Evaluation Process

Alternatives were compared using the criteria and indicators listed in Table 6-1. Scoring was based on quantitative measures where possible (e.g., area of woodland to be removed). For many criteria (e.g., ease of construction), impacts were based on qualitative assessment and professional experience.

Criteria are categorized into Natural, Social, Cultural, Technical and Economic considerations. Because each of these main headings has a different number of criteria, the rankings will be averaged under each main heading and the Preferred Solution will be based on the average rankings for Natural, Social, Cultural, Technical and Economic considerations.

A summary of the advantages and disadvantages of each of the alternatives is presented in Table 6-2. The detailed evaluation is provided in Appendix D.

Table 6-2: Summary of Advantages and Disadvantages

Alternative	Advantages	Disadvantages
Do Nothing	• No impact to natural environment or potential habitat. • No costs to implement. • No impact to *rare* lands.	• Does not support the City or Region in their initiative to enhance connectivity for multi-use trail systems. • Does not address the problem statement.
Alternative 1: Northern Route	• Creates the shortest connection between Fountain St. and the Linear Trail. • Provides a route that is the least likely to encourage trail users to veer off-trail and trespass on *rare* lands. • Removes the smallest quantity of *rare*'s agricultural lands from future production (approx. 1840 m^2) • The bridge and trail are the farthest distance from the confluence of the Speed and Grand Rivers, a sensitive waterfowl wintering area. • Results in the fewest impacts	• The bridge is the closest option to the Speed River PSW (less than 100 m). • The bridge is close to potential turtle nesting habitat. • The bridge is close to a sanitary sewer line. • The bridge will need to be longer than the bridge in Alternate 3, but shorter than the bridge in Alternative 2. This option therefore has a moderate cost relative to the other options.

Alternative	Advantages	Disadvantages
	to species at risk habitat. • Bridge is located farthest from the panoramic view of the Grand River / Speed River confluence, a significant area associated with the Grand River Canadian Heritage River designation. The bridge is unlikely to be viewed from this location.	
Alternative 2: Dover St. South Route	• The trail provides a direct link with Dover St. S. • The bridge ends close to the school property. Students are expected to be among the trail users. • The bridge is farther from the Speed River PSW than Alternative 1 (approx. 100m).	• The route results in more disturbance to species at risk habitat than Alternative 1 but less than Alternative 3. • The route includes a 90 degree bend which is likely to lead trail users to "cut the corner" and trespass on *rare* lands. • Trail is close to the sanitary pump station and related below-ground infrastructure. • This route has the longest bridge and therefore the highest cost. • The bridge is closer to the confluence of the Grand and Speed Rivers and may have an effect on the view from the Settler's Forks Park, impacting cultural heritage values. • Removes a moderate quantity of *rare*'s agricultural lands from future production (approx. 2060 m^2).
Alternative 3: Southern Route	• This option crosses at the narrowest point and therefore a shorter bridge is required. • This is the least costly option. • The bridge is farther from the Speed River PSW than Alternatives 1 and 2 (greater than 100m). • No nearby below-ground	• The route results in the greatest disturbance to species at risk habitat. • This bridge is closest to the sensitive waterfowl wintering area at the confluence of the Speed and Grand Rivers. • The bridge is closest to the confluence of the Grand and Speed

Alternative	Advantages	Disadvantages
	infrastructure is present.	Rivers and may affect the view from the Settler's Forks Park, impacting cultural heritage values. • Two 90-degree angles in the trail route are likely to encourage trail users to "cut the corners" and travel off-trail, potentially damaging natural features and agricultural lands. • This is the longest trail route. • Removes the largest quantity of *rare*'s agricultural lands from future production (approx. 2995 m^2).

Based on this analysis, including the table in Appendix D and the comments received from stakeholders, agencies and interested parties, the Preferred Solution is Alternative1: Northern Route.

7.0 Description of the Preferred Alternative Solution

The Preferred Solution will include construction of a trail from Fountain Street, along the northern edge of the *rare* farm field to a new bridge over the Speed River to connect to the Linear Trail north of Dover Street South.

Conceptual Design

Trail Concept

For the purposes of this MCEA, it is assumed that the trail will be constructed using the design standards for primary multi-use trails set out in the Cambridge Trails Master Plan (City of Cambridge, 2010). Based on that document, trails are generally 3.0 m in width with a stonedust surface. Asphalt is recommended where slopes exceed 5 % and may be used where desired or appropriate for local conditions. According to Section 5.3, "Trails prone to flooding should be maintained preferably as stone dust wherever possible to minimize the time and expense of spring maintenance."

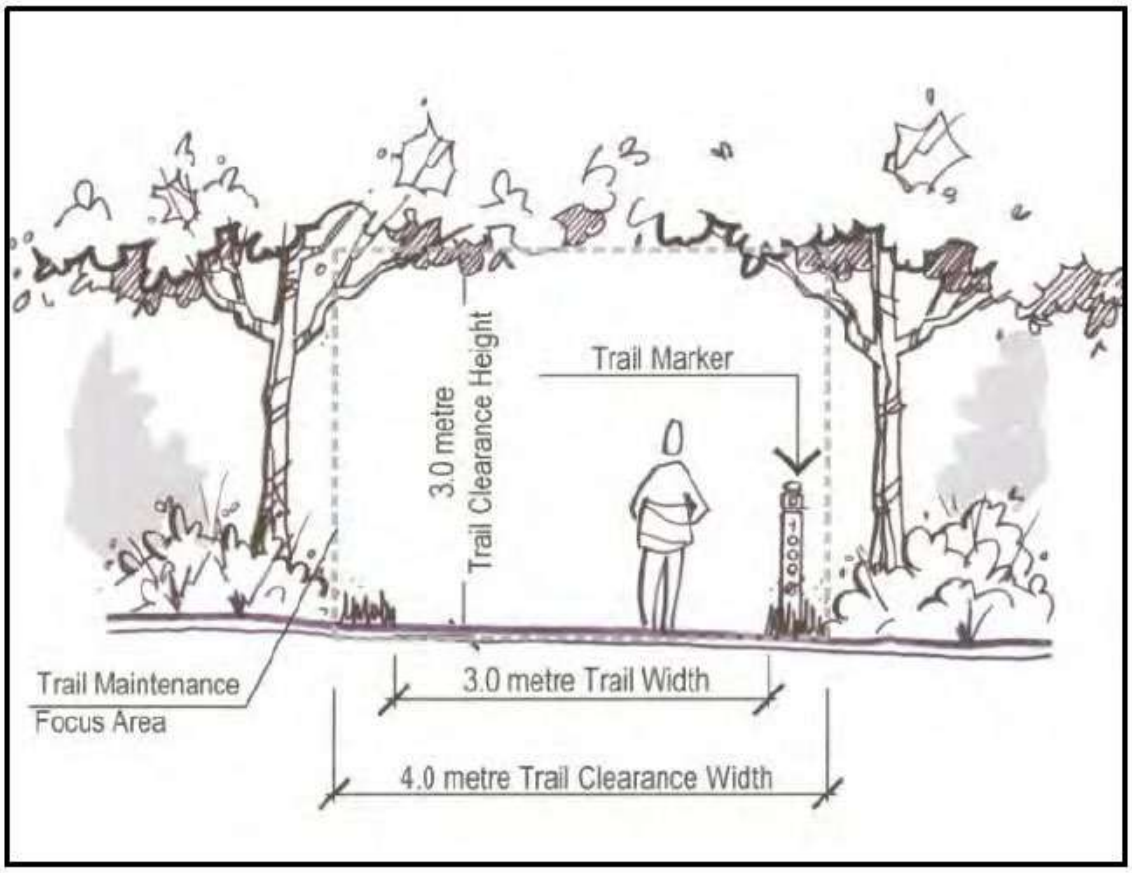
A typical trail, including the vertical and horizontal clearances is shown in Figure 7-1. The City's trail standards for stonedust and asphalt trails are provided in Appendix E. Some adjustments to the width and surface type may be made during detailed design to address archaeological concerns, AODA requirements and other site conditions.

The potential impacts and mitigation outlined in Section 8.0 are conservative and allow for some development beyond the standard limits if required. The detailed design will be

developed in consultation with *rare*, various City departments, City and Region accessibility committees, MECP, GRCA, Six Nations and others, as required.

The preferred trail route is presented on Figure 7-2.

Figure 7-1: Typical trail width and clearances (Source: Cambridge Trails Master Plan, 2010).



- Proposed Trail and Pedestrian Bridge
- Solid Fence
- Living Fence
- Existing Multi Use Trail
- Study Area

Sources:

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CONCEPTUAL PLAN

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Measures to Limit Trespassing

Measures to keep trail users on the trail will be incorporated, including:

- Installing a fence along the south side of the Fountain St. multi-use trail from the northern edge of the rare property to the start of the proposed new trail to prevent trail users from creating a short-cut through the woodland and wetland.
- Installing a "living fence" between the proposed trail and the woodland and wetlands to the north to limit trespassing into the natural area. The design will be developed in consultation with *rare* and may include a thick shrub line and potential use of hawthorne and other thorny species to deter trespassing.
- Installing a "living fence" in the meadow / regenerating forest to the south of the proposed trail to limit trespassing in the direction of the river confluence.
- Installing a feature to denote the southern edge of the trail through the agricultural field to encourage users to stay on the trail. This may include a small post and rail fence, line of landscape stones, signage or other edge marker. The feature will not entirely limit movement so as to avoid creating a "tunnel" that poses a safety hazard for trail users.
- Erecting signage denoting trail use guidelines and identifying property limits and no trespassing zones.
- Potential partnerships with Preston Highschool to educate students about the ecological importance of the area and appropriate trail use. Options to develop trail clean up days with the school or a trail stewardship group will be explored.
- Formalizing a complaint-response system between *rare* and the City's bylaw and trail maintenance staff to track current concerns, including a potential "blitz" by City bylaw officers. The City will continue to respond to complaints and concerns on an ongoing basis throughout the life of the trail.

Educational Elements

The trail offers an opportunity to provide education to trail users about a variety of topics, including:

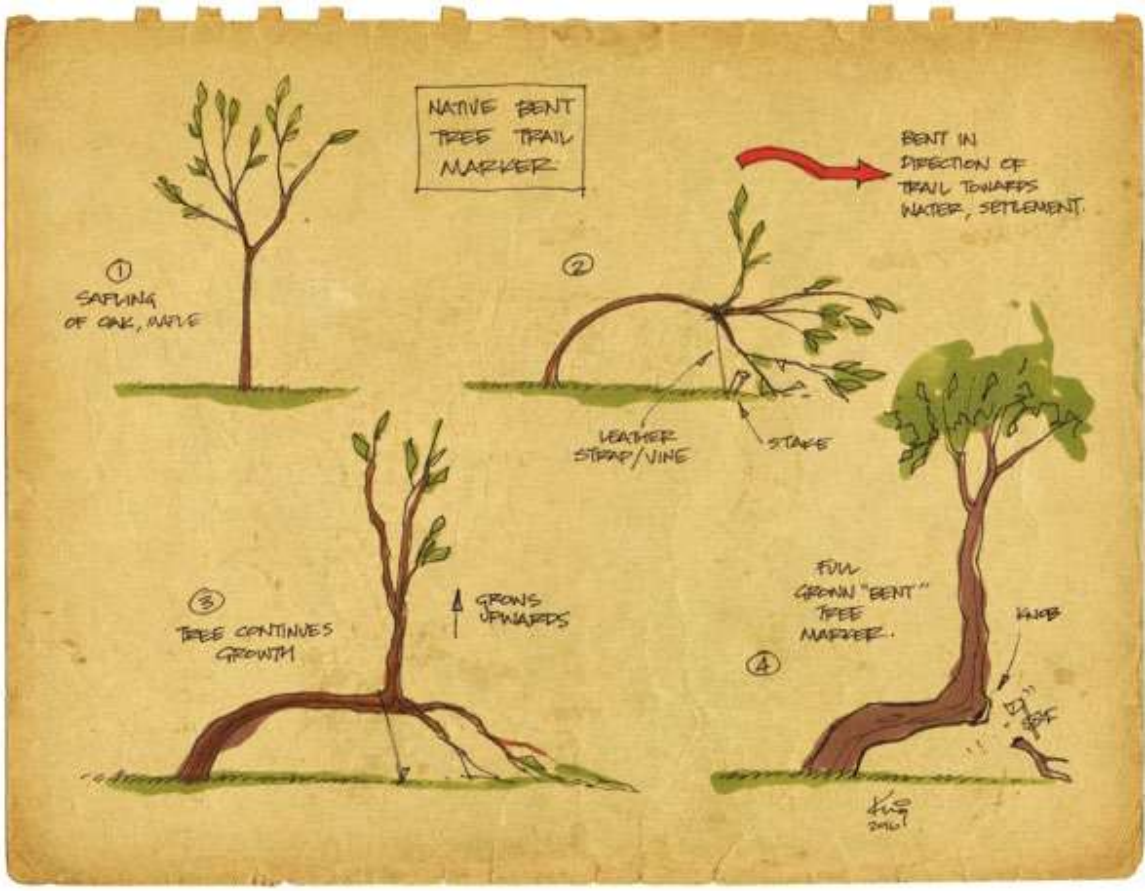
- *Rare*'s purpose and objectives;
- Sustainable agriculture;
- The ecological features in the area; and
- The cultural heritage value to Indigenous communities.

Interpretive signage will be developed during the detailed design stage in consultation with *rare*, Six Nations and others, as appropriate. Detailed input from these groups, such as signage text and design, should be appropriately compensated.

A trail maker tree, similar to those historically used by Indigenous communities in the area, (Figure 7-3) may be installed, subject to further consultation with Indigenous

communities and development of a maintenance plan in consultation with *rare*, Indigenous communities and / or Preston Highschool.

Figure 7-3 Example of Trail Marker Tree [9]



Bridge Concept

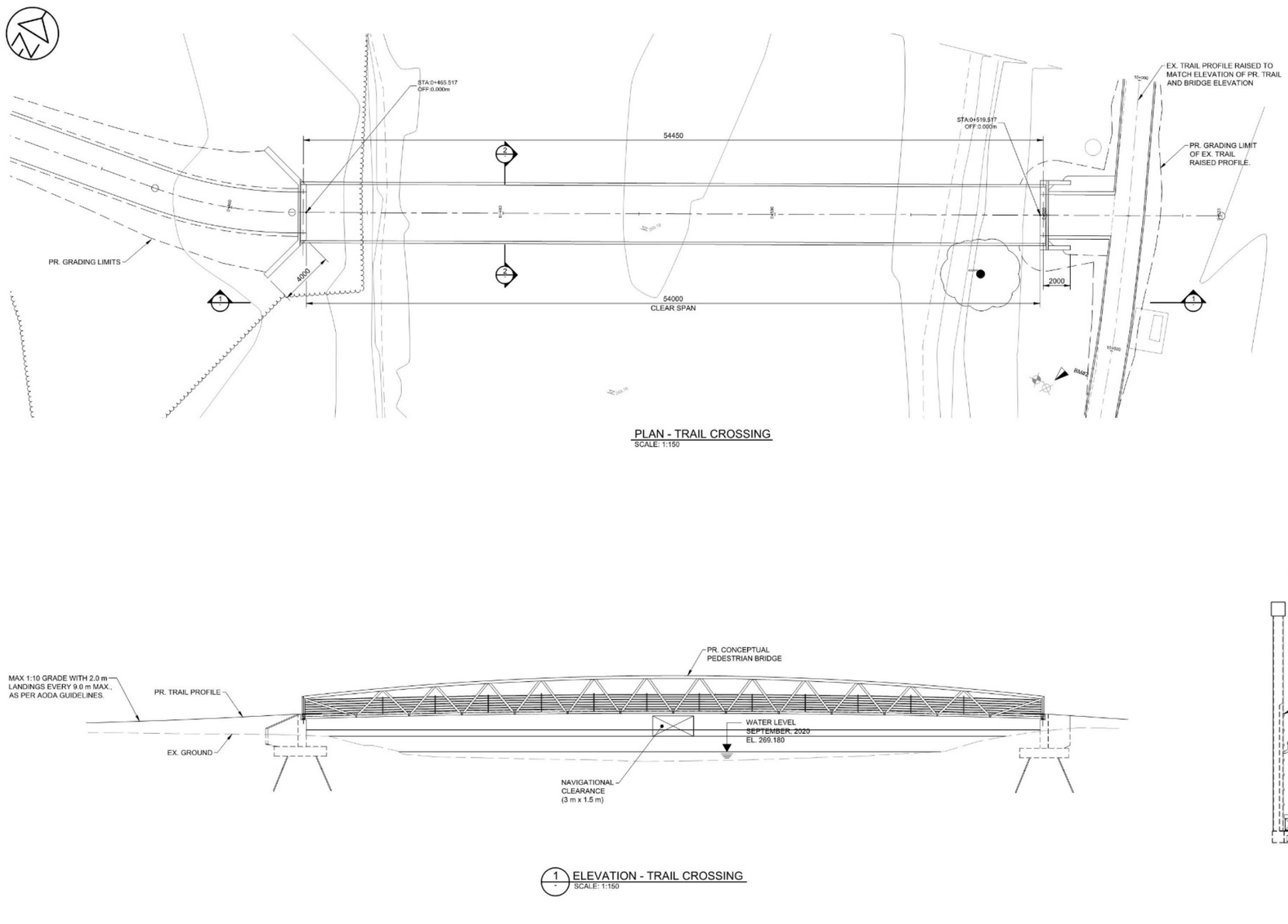
A conceptual design for the bridge is provided in Appendix F. The bridge will be 4 m wide and approximately 54 m long and will span the Speed River. No structures will be placed in the river and the bridge and abutments will be constructed in a manner that avoids any in-water work. The design will be refined during the detailed design process subsequent to this MCEA. In general, the bridge will be designed:

[9] Source: https://ottawarewind.com/2016/08/07/strange-things-old-native-trails-once-makred-by-bent-trees/

- To meet applicable AODA standards to the extent possible;
- To comply with GRCA policies and regulations;
- To address geotechnical and bank stability conditions; and
- To allow access by standard work vehicles, if required.

The concept provided in Figure 7-4 is intended to be flexible and can be refined, as required, during the detailed design and permitting process.

Figure 7-4: Conceptual Bridge Design



Property Requirements

Most of the project is located on lands owned by the *rare* Charitable Research Reserve. An easement in perpetuity or partial land acquisition (fee simple) will be obtained for the purposes of locating, constructing, operating, maintaining, and repairing a trail and bridge on *rare* property. Preliminary property needs are shown on Figure 22. Final property requirements, including temporary construction areas will be confirmed during detailed design.

The City is committed to making best efforts to secure an easement with *rare* through amicable agreement. This may include partial compensation for the use of land. The City also reserves its property rights as set out in the Municipal Act, and powers outlined as part of the Act for property acquisition.

Required Property from Trail and Bridge Construction and Maintenance: **.3ha**

Study Area

Sources:

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PRIVATE PROPERTY REQUIREMENTS

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Landscaping and Restoration

A Landscape and Restoration Plan will be developed during detailed design. The plan will include:

- The design of the living fence along the northern edge of the trail and southern edge of the trail near the bridge (i.e., not through the agricultural field);
- Restoration of any areas disturbed during construction;
- Measures to limit soil compaction during construction and restore compacted soils within the agricultural field, if required;
- Tree inventory and planting plan to restore trees. Trees that are 10 cm dbh and greater will be replaced at a 10:1 ratio. Smaller trees will be replaced at a 1:1 ratio;
- The location of the bat box(es);
- Identification and removal of invasive species in the Study Area, including Buckthorn and Giant Hogweed; and
- Riparian plantings along the eastern bank of the Speed River to improve the ecological function of the riparian zone.

Meadow enhancement or creation to compensation for the removal of a portion of Bobolink habitat may also be included in landscape plans. The location of compensation habitat will need to be confirmed and could include lands owned by the City, Region, GRCA, *rare* or Six Nations. As an alternative, a cash-in-lieu fee could be paid to the province's Species at Risk Compensation Fund. The manner in which compensation will be provided will be confirmed during the detailed design process.

The Landscape and Restoration Plan will include the use of native species only and will be developed in consultation with *rare*, GRCA, the Region and Six Nations. Additional details are provided in Table 8-2.

Hydraulic Analysis of the Preferred Solution

Modeling of the conceptual bridge design indicates that it can be constructed without increasing flood risk. Any minor changes necessary during detailed design will be re-assessed to ensure that flood and erosion risk remain minimal. Ice jamming is known to occur in the area. The potential for ice jamming will be considered in the detailed design.

The Hydraulic Analysis can be found in Appendix F.

Archaeological Resources in the Vicinity of the Preferred Solution

A Stage 2 Archaeological Assessment was completed by ASI along the preferred trail route. The Stage 2 property assessment was conducted by ASI on November 4, 5 and 10, 2020, in accordance with the Ontario Heritage Act and the Standards and Guidelines for Consultant Archaeologists. The property assessment was comprised of a pedestrian

survey at 1 m intervals throughout the agricultural fields and test pit survey at 5 m intervals in scrublands or wooded areas along the riverbanks. Interested Indigenous communities were invited to participate in the fieldwork. Indigenous liaisons from the Haudenosaunee Development Institute, Mississaugas of the Credit First Nation and Six Nations of the Grand River were present during the field surveys.

During the course of the Stage 2 surveys, nine precontact Indigenous findspots and six precontact Indigenous sites were encountered, and one previously registered precontact Indigenous site (AiHc-146) was relocated. Of the seven registered precontact Indigenous sites, including previously registered site AiHc-146, six exhibit further cultural heritage value or interest and meet the requirements for Stage 3 site-specific assessment as per S & G Section 2.2, Standard 1.a.i, and therefore require further work. A Stage 3 Archaeological Assessment is recommended for these areas prior to any site disturbance.

The Stage 2 Archaeological Assessment can be found in Appendix G.

Geotechnical Characteristics in the Vicinity of the Preferred Solution

A Geotechnical Study was undertaken to confirm soil conditions and provide recommendations for the trail foundation and bridge abutments.

Specifically, the study noted the following:

> *Based on the borehole information, compact to very dense sand and gravel or sandy gravel deposits were found below depth of 1.5 m…. The granular deposits contain frequent cobble and boulder sizes and are saturated and below groundwater. Therefore, drilled caissons are not suitable for supporting the structure, due to soil caving and heaving problems associated with caisson installation in granular soils below groundwater. Driven piles are not recommended due to obstruction problems associated with boulders and cobbles. Based on the borehole information, the proposed pedestrian bridge can be supported by micropiles. (Section 4.1)*

Section 4.1.2 of the report makes other recommendations, including the following:

- Large obstructions such as cobbles and boulders are anticipated at the site. If buried obstructions are encountered during the installation of piles, relocation of some piles may be required. Provisions must be made in the foundation installation contract for the removal of possible obstructions and / or relocation of piles.
- All pile caps exposed to seasonal freezing conditions must have at least 1.4 m of soil cover or its thermal equivalent for frost protection.
- Erosion and scour protection should be provided for the abutments and foundations of the bridge. Proper erosion and scour protection should also be provided along the

sides of the watercourse near the bridge structures. The erosion and scour protection should be designed by a specialist river engineer / scientist who is familiar with the site conditions.

The Geotechnical Study can be found in Appendix H.

Climate Change Considerations

Climate change is usually associated with any significant change in long-term weather patterns. Changes in the composition of the atmosphere is resulting in processes that alter global temperature and precipitation and is affecting local weather patterns. These processes can ultimately lead to increased occurrence of extreme weather events such as floods, droughts, ice storms and heat waves.

The project is intended to improve the City's trail network, allowing for improved active transportation options. Creating an environment that supports walking and cycling as a means to reduce reliance on vehicular travel is a means to reduce greenhouse gas emissions. As described in Section 2.0 the project is designed to support the City and Region's climate change goals by helping to create a viable active transportation option.

There is potential for the project to be affected by climate change. Precipitation, whether it is rainfall, snowfall, or other forms of frozen / liquid water, is the key climate and weather-related variable of concern with respect to drainage and culvert design. As a result of climate change, storm events are predicted to become more intense, which can result in larger volumes of precipitation at one time. Other climate variables such as temperature are major inputs to evaporation and snowmelt processes. Increases in temperature are likely to impact precipitation and snowmelt runoff volumes discharged to watercourses.

The majority of the Study Area is located within a floodplain. The area has been subject to flooding in the past and flooding can be expected to increase in the future.

The following measures will be implemented during the design and operation of the trail:

- The bridge and trail will be designed in accordance with GRCA Regulations and will be designed to ensure flood and erosion risk are minimized and are within acceptable parameters.
- Measures to address public safety at the site during, or after, large precipitation and flooding events will be developed. This may include installation of signage to warn trail users of potential flood conditions.

8.0 Potential Impacts and Mitigation Associated with the Preferred Solution

The Preferred Solution has the potential to impact various components of the social, natural and built environment.

Potential effects are as follows:

Natural:

- Clearing of trees, shrubs and ground vegetation has the potential to disturb or destroy nests of migratory birds, wildlife habitats and habitats for SAR. A summary of direct removal of natural features is provided in Table 8-1. These calculations are considered to be conservative as tree protection measures will be in place and trail routing can be “field-fit” to limit tree removal to the extent possible.
- Trail use and increased human presence in the area can cause impacts associated with littering, trespassing and access to natural areas that were previously relatively inaccessible, including the woodland and wetlands to the north of the trail and confluence of the Speed and Grand Rivers, which function as a winter waterfowl concentration area. Wintering raptors in the area could also be affected by human presence.
- Work on and around steep slopes along the banks of the Speed River has the potential to cause sediment and erosion impacts downstream and disturb fish habitat and habitat of aquatic SAR, including Silver Shiner and Wavy-rayed Lampmussel.
- There is potential for spills of fuels or other hazardous materials to occur during fueling of construction equipment or other construction activities.
- Any steep slopes associated with valleylands could be disturbed by vegetation removal, grading work and the movement of large equipment which could result in erosion, slumping or slope failure.

Table 8-1: Area of Natural Features which may be Directly Affected

Feature [10]	Approx. Area of Potential Disturbance (m^2)
Treed Areas along riverbank	798 [11]
Bat Maternity Colonies / Habitat for Little Brown Myotis (END) / Northern Myotis (END) / Tri-colored Bat (END)	Up to 5 potential roosting trees
Wetlands / Amphibian Breeding Habitat (Woodland)	0 (portions of the trail are within 30m of the wetland)
Fish Habitat/ Habitat for Silver Shiner (THR) and Wavy-rayed Lampmussel (THR)	0 (no in-water work is anticipated)
Category 3 habitat of Silver Shiner	2,654 (the entire project is within the floodplain area corresponding with Silver Shiner Category 3 habitat.
Open country habitat for Bobolink (THR) and Monarch (Special Concern)	1,856

Social/Technical:

- Approximately 0.3 ha of *rare* lands will be used for the trail and bridge. Portions of this lands are leased for agriculture will be temporarily or permanently removed from future agricultural use.
- Additional portions of agricultural land may be temporarily disturbed or unavailable for agricultural use during construction.
- Use of the Linear Trail may be disrupted due to the temporary closure during construction.
- Trespassing, littering and vandalism on *rare* lands may increase.

[10] Features with similar boundaries are grouped together.
[11] Based on an assumption of a 10m disturbance area around the bridge location. This can likely be reduced with tree protection measures during construction.

- Use of the Linear Trail may also increase. Landowners along the end of Dover Street South. may also be affected by nuisances such as trespassing and noise.
- The project has the potential to be affected by flooding and future climate change conditions. The entire project is located within the floodplain.

Cultural / Archaeological:

- Archaeological resources have been found at the site and require further study.
- Despite completed and ongoing archaeological surveys, unexpected archaeological resources may be found during construction.
- The cultural heritage landscape may potentially be affected by changes to the view as a result of the trails and bridges.
- Some plants with Indigenous cultural value may be disturbed or removed during site clearing.
- The project represents a development within lands subject to Treaties between the Crown and Indigenous people represented by the modern-day communities of the Mississaugas of the Credit First Nation, Six Nations and Haudenosaunee Confederacy Chiefs Council.

All potential effects and proposed mitigation are present in Table 8-2.

Table 8-2: Potential Impacts and Mitigation

Feature	Description of Potential Effects	Mitigation Measures	Construction and Post-Construction Monitoring Activities
Effects on Ecological Features and Functions			
Nests of Migratory Birds/ Roosting Habitat for Rare Bats	Clearing of trees, shrubs and ground vegetation has the potential to disturb or destroy nests of migratory birds and maternity roosting areas for bats.	• Early in the detailed design process, the trail route will be staked in the field with *rare* and Six Nations representatives. A route with limited tree removal through the wooded strip along the riverbank will be selected. • One bat box will be installed for every 10 bat roosting trees that are removed (i.e. for the removal 1-10 trees, 1 bat box will be installed; if a larger area than expected is needed to be cleated, an additional bat box will be installed for the removal of between 11 and 20 trees). • The location of the bat box(es) will be confirmed during detailed design in consultation with MECP, *rare* and Six Nations. • Any vegetation clearing will take place outside of the breeding bird and bat roosting timing window; generally, from April 1 to September 30. • If clearing must occur within this window: – A qualified Ecologist Ecologist / Avian Biologist will first search the affected area. Any active nests will be flagged and all clearing within the associated habitat will be avoided until the Ecologist / Avian	• No monitoring required.

Feature	Description of Potential Effects	Mitigation Measures	Construction and Post-Construction Monitoring Activities
		Biologist confirms that the birds have fledged, and the nest is no longer active; – If a nesting migratory bird (or SAR protected under ESA, 2007) is identified within or adjacent to the construction site, all activities will stop, and the Contractor shall discuss mitigation measures with the proponent. In addition, the proponent will contact the MECP to discuss applicable mitigation options. The Contractor will proceed based on the mitigation measures established through discussions with the MECP; and – Clearance must be provided by MECP in relation to the removal of trees within the bat roosting season; and, – Six Nations will be contacted for comment and/or review of the trees for potential nesting prior to removal.	
Wooded Area	Removal of trees adjacent to the Speed River and potential damage to trees along the woodland boundary north of the agricultural field.	• A Tree Inventory and Preservation Plan will be completed during detailed design. • Tree removals should be compensated on *rare* lands, if possible. Trees that are 10 cm dbh and greater will be replaced at a 10:1 ratio. Smaller trees (seedlings and whips) will be replaced at a 1:1 ratio. • Compensation plantings will be undertaken prior to tree removals or at the earliest appropriate season after tree	• The success of compensation vegetation will be monitored for two years. Success of less than 80% of plantings will require replacement

Feature	Description of Potential Effects	Mitigation Measures	Construction and Post-Construction Monitoring Activities
		removals. • Tree Protection Zones (TPZs) will be established during detailed design. • Barriers will be installed around trees to be protected using plywood clad boarding or an equivalent material approved by the affected municipality. • No stockpiles, storage or disturbance to grade will occur within the TPZ to minimize soil compaction and root damage. • Where tree roots are encountered during construction, they should be cut cleanly and re-packed with soil as soon as possible. • A Landscape / Restoration Plan will be developed during the detailed design stage to outline how, and where, tree planting will occur and how restoration of lands disturbed during construction will be carried out. • The Landscape / Restoration Plan will use only native species. • The Landscape / Restoration Plan will be provided to *rare* and Six Nations for comment prior to construction.	planting.
Bobolink Habitat	Removal of a portion of Regulated Bobolink Habitat	• Due to the time that has passed and the change in use of the agricultural field since the original bird surveys were conducted, additional surveys will be completed during the bird breeding season to confirm the continued presence of this species.	• Monitoring, as required under O. Reg 830/21 will be undertaken, if required.

Feature	Description of Potential Effects	Mitigation Measures	Construction and Post-Construction Monitoring Activities
		• The amount of habitat loss will be quantified during detailed design. • Specific development exemptions for Bobolink are addressed under the ESA, 2007 in Ontario Regulation 830/21. Mitigation, compensation or cash-in-lieu requirements are outlined under this Regulation and will be followed. • The proponent will work with *rare*, GRCA and / or Six Nations to identify lands for habitat compensation, if required.	
All Adjacent Natural Features	Sediment and erosion impacts associated with land grading and clearing.	• All work zones should be clearly marked on detailed design drawings and at the work site to indicate that no work should occur outside the work zone. • Detailed grading, construction, dewatering and erosion and sediment control plans will be submitted to the GRCA for review and comment at detailed design. Implementation of the erosion and sediment control (ESC) measures will conform to industry best management practices and recognized standard specifications such as Ontario Provincial Standards Specifications (OPSS). • The ESC Plan will also take into account the GGHACA Erosion and Sediment Control Guidelines for Urban Construction (2006). • Sediment and erosion control measures will be	• Erosion and sediment control measures will be inspected weekly and after heavy rainfall events to ensure they are functioning and are maintained as required. • If erosion and sediment control measures are not functioning properly, alternative

Feature	Description of Potential Effects	Mitigation Measures	Construction and Post-Construction Monitoring Activities
		implemented prior to construction and maintained during the construction phase in accordance with the erosion and sediment control plan developed during detailed design. • All sediment and erosion control measures will be inspected prior to construction and maintained during the construction phase to prevent entry of sediment into natural features. • Routine upkeep and maintenance of ESC features are to include regular monitoring for erosion and sedimentation impacts due to site grading during and after trail construction. • If the sediment and erosion control measures are not functioning properly, no further work in the affected areas will occur until the sediment and / or erosion problem is addressed. • All disturbed areas of the construction site will be stabilized and re-vegetated as soon as conditions allow. • Sediment and erosion control measures will be left in place until all areas of the construction site have been stabilized and will then be removed by the Contractor. • Wet weather restrictions shall be applied during site preparation and excavation. Work will be avoided near watercourses during periods of excessive precipitation and / or excessive snow melt.	measures will be implemented and prioritized above other construction activities.

Feature	Description of Potential Effects	Mitigation Measures	Construction and Post-Construction Monitoring Activities
		• The Contractor will be aware of spill prevention best practices and will have contingency plans in place should a spill occur. Personnel will be trained in how to apply the plans. Spills or depositions into watercourses will be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. Spills will be reported to the Ontario Spills Action Centre at 1-800-268-6060.	
Natural Areas	Introduction of invasive species into natural areas	• Construction equipment should be cleaned prior to bringing it to the site to avoid introducing exotic species from other sites. • All disturbed areas of the construction site will be re-vegetated as soon as conditions allow. • Re-vegetation of disturbed areas will be carried out in accordance with a Landscape / Restoration Plan to be developed during the detailed design stage. • The Landscape / Restoration Plan will use only native species. • The Landscape / Restoration Plan will be provided to *rare* and Six Nations for comment prior to construction. If extensive invasion of non-native species is identified as a result of the Project, contingency measures may need to be developed in consultation with *rare* and GRCA.	• Regular inspections will be conducted by the Contractor to ensure that mitigation is implemented. • The construction area will be monitored one year post-construction to determine if invasive species have established as a result of construction. Any new invasive species patches will

Feature	Description of Potential Effects	Mitigation Measures	Construction and Post-Construction Monitoring Activities
			be removed and replaced with native species.
Wildlife	Mortality of wildlife inadvertently moving through construction zones	• Silt fencing will be properly installed and maintained in accordance with the erosion and sediment control plan to keep wildlife out of work areas. • If wildlife inadvertently moves into a construction area, the Environmental Inspector will move the species outside of the work area, if possible, using gloves and a bucket or plastic tub, as appropriate. • If any species at risk are encountered that are not identified on relevant permits, all work will cease within the immediate work area and the MECP will be contacted.	• The Contractor will be required to regularly monitor fenced areas to ensure that fencing is properly keyed / toed into the ground to ensure that wildlife cannot gain access under fenced area.
Wildlife	Dust effects on wildlife habitat	• As appropriate, dust from the work areas will be controlled through suppressants (e.g., water).	• Dust emissions will be monitored daily during construction to ensure dust control watering frequency and rates are adequate.
Groundwater/ Wetlands	Effects on hydrology due to changes to site grading and	• The trail type and surface will be determined in consultation with the City, Region, GRCA and *rare*. Permeable materials are recommended, if possible, but final surface materials will be selected with	• No monitoring is required.

Feature	Description of Potential Effects	Mitigation Measures	Construction and Post-Construction Monitoring Activities
	decreased permeability	consideration to maintenance requirements, geotechnical conditions and impacts of flooding in the area and other conditions identified during detailed design. • A Grading Plan will be developed during detailed design to ensure the trail does not alter surface drainage patterns.	
Groundwater/ Wetlands	Effects on hydrology due to dewatering	• Minor dewatering may be required during installation of bridge footings. • All requirements under the *Ontario Water Resources Act,* R.S.O. 1990, c. O.40 with respect to the quality of water discharging into natural receivers will be met, including the following mitigation measures and best practices: • Any discharge from dewatering should outlet to a vegetated area at least 30 metres from a significant natural feature or watercourse utilizing a sediment filter bag. • In the event of sediment discharge, all operations will stop immediately until the problem can be resolved. • If significant changes in water levels / seepage areas are noted, operations will cease until water levels recover. • Appropriate measures are to be implemented where necessary to maintain or improve runoff quantity and	• An Environmental Inspector should be on-site during any dewatering within 120m of natural features. The Monitor should ensure that the filter bag is working appropriately and ensure that no sediment is entering significant natural features or watercourse.

Feature	Description of Potential Effects	Mitigation Measures	Construction and Post-Construction Monitoring Activities
		quality to the MAS2-1 feature north of proposed trail construction.	
Groundwater/ Surface Water/ Natural Areas	There is potential for spills of fuels or other hazardous materials to occur during fueling of construction equipment or other construction activities	• All materials and equipment used for the purpose of site preparation and project construction shall be operated and stored in a manner that prevents any deleterious substances (petroleum products, silt, etc.) from entering natural features. • Any stockpiled materials will be stored at least 30 m away from wetlands or watercourses. • Refueling and maintenance of construction equipment should occur a minimum of 30 m from a natural feature. • Hazardous material transportation and application will occur in designated areas according to operational procedures. Proper spill containment equipment will be used and maintained on site. • The Contractor will be aware of spill prevention best practices and will have contingency plans in place should a spill occur. Personnel will be trained in how to apply the plans. Spills or depositions into watercourses will be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. Spills will be reported to the Ontario Spills Action Centre at 1-800-268-6060.	• Workers will report any instances of spills to their supervisors.
Valleyland/ Steep	Any steep slopes	• The setback from the Speed River for the bridge abutments will be confirmed with the GRCA during	• The Contractor Inspector will

Feature	Description of Potential Effects	Mitigation Measures	Construction and Post-Construction Monitoring Activities
Slope	associated with Valleylands could be disturbed by vegetation removal, grading work and the movement of large equipment which could result in erosion, slumping or slope failure.	detailed design. • Detailed design plans will be submitted to the GRCA to confirm that all work is in compliance with GRCA Regulations. • Wet weather restrictions will be applied during site preparation and excavation. Work will be avoided in Valleylands during periods of excessive precipitation and / or excessive snow melt.	perform regular inspection to ensure that mitigation is implemented.
Fish Habitat/ Silver Shiner/ Wavy-rayed Lampmussel Habitat	Pedestrian Bridge Construction	• No in-water work is anticipated. All construction will be carried out from riverbanks. • The footprint of disturbed areas will be minimized to the extent possible. Vegetated buffers will be left in place adjacent to watercourses / waterbodies to the maximum extent possible. • Wet weather restrictions will be applied during site preparation and excavation. Work will be avoided near watercourses during periods of excessive precipitation and / or excessive snow melt. • The pedestrian bridge will be designed to meet appropriate storm design requirements in order to avoid hydrologic effects. • All requirements under the *Fisheries Act* will be met	• An Environmental Inspector will perform regular inspection to ensure that mitigation is implemented and that all work is conducted in accordance with the ESA, 2007, and any associated permits/approvals.

Feature	Description of Potential Effects	Mitigation Measures	Construction and Post-Construction Monitoring Activities
		including Project Review or permitting. • Following construction, all disturbed riparian areas should be restored and / or revegetated as soon as conditions allow using native materials. • Should an unanticipated need for in-water work be identified during detailed design, no in-water work will occur between April 1 and June 30 of any year and submission of a request for review to DFO at the detailed design stage of the project as well as screening the project with MECP will clarify mitigation to be employed during the construction of any proposed in-water work. • Permitting associated with work in Category 3 Silver Shiner habitat will be obtained as required under the Endangered Species Act, Species at Risk Act and Fisheries Act.	
Winter Waterfowl Concentration Area/Wintering Raptors	An increase in human presence may alter bird behaviour	• Signs will be erected along the trail denoting the area as having sensitive wildlife and including suggestions to limit noise and disturbance to wildlife. • A “living fence” will be installed in the meadow / regenerating forest to the south of the proposed trail to limit trespassing in the direction of the river confluence. • During detailed design, specific bridge designs and materials may be considered to dampen noise and	• Post-construction monitoring of wintering waterfowl and wintering raptors will occur to identify any significant changes in populations and trigger the need to

Feature	Description of Potential Effects	Mitigation Measures	Construction and Post-Construction Monitoring Activities
		reduce visibility. • Trees should be removed in October and November, where possible. If construction is to occur during winter, measures to limit construction noise may be considered.	additional mitigation, if required.
Lighting	Outdoor lighting can affect the patterns of nocturnal wildlife	• Lighting is not recommended along the trail route. • If lighting is to be installed along the trail or bridge, it should be directed downward and away from natural areas.	• No monitoring required.
All-Natural Features	Increased salt use during the winter can increase salinity of the wetlands and watercourses in the Study Area changing the water chemistry and harming wildlife that inhabit the area. Stockpiling snow also changes habitat conditions for wildlife.	• If the trail and bridge are to be maintained during winter months, the use of salt should be minimized to the extent possible. The use of more natural alternatives should be explored. • Design measures to reduce the amount to salt required should be considered during detailed design. • Stockpiling of snow on *rare* lands should be avoided where possible.	• No monitoring required.

Feature	Description of Potential Effects	Mitigation Measures	Construction and Post-Construction Monitoring Activities
Effects on Cultural Heritage and Archaeological Resources			
Cultural Heritage Features	The trail and bridge may affect the cultural heritage landscape present at the site.	• Conduct a Heritage Impact Assessment. • Ensure location and design of the bridge does not obstruct the views north along the Speed River from Settler's Fork / Linear Park. • The design and material of the proposed pedestrian bridge across the Grand River should be suitably designed to minimize the visual impacts as much as possible and to be sympathetic to the historical setting and context of the area.	• No monitoring required.
Indigenous Natural and Cultural Heritage Value	There is an opportunity to inform the public of the natural and cultural value of the area to Indigenous communities.	• During detailed design, consideration will be given to the installation of interpretive signage to communicate the ecological and Indigenous cultural heritage value and importance of the Speed and Grand Rivers and their associated wetlands, to help increase the awareness of the local community. • Alternatives to signage may be considered, including installation of an Indigenous trail marker tree (refer to Section 7.0 for details). • Signage and interpretive features will be developed in consultation with Six Nations, HDI and MCFN. • The GRCA will be consulted regarding requirements for interpretive features within the floodplain.	• No monitoring required.

Feature	Description of Potential Effects	Mitigation Measures	Construction and Post-Construction Monitoring Activities
Archaeological Resources	There is potential that unexpected archaeological resources are found during construction.	• A Stage 3 Archaeological Assessment will be completed as outlined in the Stage 2 report. • MCFN, Six Nations and the Haudenosaunee Confederacy, through the Haudenosaunee Development Institute, will be contacted by staff prior to any new Stage 3 work or additional work beyond Stage 3, if required, and will be offered an opportunity to participate in field studies and/or report review. • The Region of Waterloo will also be provided with a copy of any Stage 3 Archaeological Assessment prior to construction. • Any recommendations identified in through the Stage 3 assessment will be carried out prior to construction, including any design specifications to minimize impacts. • In the event that previously undocumented archaeological remains are found during construction activities, the proponent or person discovering the archaeological resources will cease alteration of the site immediately, and the consultant archaeologist, approval authority, and the Cultural Programs Unit of the MHSTCI will be immediately notified. • In the event that human remains are discovered, the person discovering the human remains will also immediately notify the police or coroner.	• No monitoring required.

Feature	Description of Potential Effects	Mitigation Measures	Construction and Post-Construction Monitoring Activities
Effects on Social/Technical Environment			
Private Property	A portion of *rare* lands will be used for the trail and bridge. These lands will no longer be available to *rare* for farming or other activities.	• An easement in perpetuity or partial land acquisition (fee simple) will be obtained for the purposes of locating, constructing, operating, maintaining, and repairing a trail and bridge on *rare* property (Refer to Figure 22 for preliminary property requirements). • The City is committed to making best efforts to secure an easement with *rare* through amicable agreement. This may include partial compensation for the use of land. The City also reserves it's property rights as set out in the Municipal Act, and powers outlined as part of the Act for property acquisition.	• The City and *rare* will maintain ongoing dialogue, as required, throughout the operating period of the trail and bridge.
Private Property/ All Natural Features	Trail construction may result in an increase in trespassing beyond the trail limits and lead to increased trampling, littering and vandalism on *rare* lands and on private properties at the end of Dover St. S.	• Waste receptacles will be provided and maintained by the City at one or more appropriate locations along the trail route. • Access to natural areas beyond the trail limits on *rare* lands should be restricted by erecting fencing or green barriers. • It is recommended that fencing along the northern edge of the trail on *rare* lands consist of a "living fence" (i.e., shrubs, plantings, etc.) that would restrict human access, while still accommodating wildlife movement. • Low-level markers (such as stones and / or signage) may be used on the south side of the trail to denote the	• Ongoing contact between the City and *rare* and Dover St. S. landowners will be maintained to discuss any littering and trespassing concerns.

Feature	Description of Potential Effects	Mitigation Measures	Construction and Post-Construction Monitoring Activities
		edge of the trail without creating a tunnel effect. A thicker living fence may be erected along the natural area on the west side of the Speed River to limit trespassing to the south. • A solid barrier may be required along the trail in the vicinity of Fountain Street to limit trespassing into natural areas. • Landowners along Dover Street South should be contacted during detailed design to discuss options to address trespassing, privacy, noise and other nuisance concerns.	
Agricultural Lands	There is potential for soil compaction on adjacent agricultural lands as a result of construction.	• Heavy equipment and material stockpiles will be limited to marked construction areas. • Temporary construction staging areas which have been compacted will be rehabilitated upon completion of construction. • The Contractor will ensure that soils in construction areas are rehabilitated to restore previous uses.	• Regular inspections will be conducted by the Contractor to ensure that equipment and stockpiles do not extend beyond construction areas.
B. McMullen Linear Trail	Use of the Linear Trail may be disrupted due to the temporary closure during construction.	• Notification will be provided for any temporary closures of a portion of the Linear Trail, as required during construction.	• No monitoring required.

Feature	Description of Potential Effects	Mitigation Measures	Construction and Post-Construction Monitoring Activities
Trail and Bridge Stability and Design	Constructed works have the potential to become damaged or fail if not designed with regard to site conditions.	• The bridge and trail will be designed in accordance with the recommendations provided in the Geotechnical Study, provided in Appendix H or other applicable geotechnical data identified during the detailed design stage.	• The long-term structural integrity and safety of the bridge will be subject to regular inspections throughout its lifespan, in accordance with City and provincial guidelines and regulations. • The trail will also be regularly monitored and maintained, as required.

Feature	Description of Potential Effects	Mitigation Measures	Construction and Post-Construction Monitoring Activities
Trail and Bridge Infrastructure / Public Safety	The project has the potential to be affected by flooding and future climate change conditions.	• Modeling of the conceptual bridge design indicates that it can be constructed without increasing flood risk. Any refinements made during detailed design will be re-assessed to ensure that flood and erosion risk remain minimal. • Ice jamming is known to occur in the area. The potential for ice jamming will be considered in the detailed design. • Appropriate warning signage will be in place around the proposed pedestrian bridge and trail to warn that the site is within a floodplain and that flood conditions may occur.	• No monitoring required.

9.0 Consultation

The Schedule B Class EA requirements include two mandatory public points of contact during the EA process, a Notice of Commencement (NOCm), and a Notice of Completion (NOCp).

A key component of the Study includes consultation with interested stakeholders, agencies, utilities, Indigenous communities, local residents who live within the Study Area and others who may have an interest in the Study.

All documentation related to consultation can be found in Appendix I. The comments received throughout the EA were considered in the evaluation of the Alternative Solutions.

Notice of Project Commencement

The Notice of Commencement inviting input to the Study was published in the Cambridge Times on April 23, 2020 and April 30, 2020. It was also posted on the City's website (www.cambridge.ca/BlairPreston).

In addition, the notice was mailed to residents within 200 m of the Study Area and mailed or emailed to other stakeholders that may have an interest in the Study and Indigenous communities, utilities, and agencies.

A copy of the notice and the circulation list is provided in Appendix I.

Agency Correspondence

Notices were sent to various federal and provincial agencies with a potential interest in the project. A summary of correspondence and how comments were considered is presented in Table 9-1. All correspondence can be found in Appendix J.

Table 9-1: Summary of Agency Correspondence

Agency	Comment	How Comment was Considered
MECP	The proponent should consider the identification of impacts and necessary mitigation: climate change adaptation and mitigation; identification of, and mitigation relating to Species at Risk (SAR); identification of required permits and approvals to enable the implementation of each alternative. Consultation with the Haudenosaunee	Impacts and mitigation are summarized in Section 8.0. Climate change considerations are discussed in Section 7.2. Required permits and approvals are listed in Section 10.3. Consultation with Indigenous communities is summarized in Section 9.5.

Agency	Comment	How Comment was Considered
	Confederacy and Six Nations of the Grand River was recommended.	
MNRF	The proponent should review and identify any requirements related to Natural Heritage and *Endangered Species Act*; Petroleum Wells and Oil, Gas and Salt Resource Act; *Public Lands Act* and *Lakes and Rivers Improvement Act.*	Natural heritage and Endangered Species have been inventoried and assessed. The selection of Alternative 1 minimizes effects on natural features. Remaining effects can be addressed through the mitigation identified in Section 8.0. No petroleum, oil or gas wells or salt resources are present. The project will not be located on the riverbed and will not cause any damming of the river. As such the *Public Lands Act* and *Lakes and Rivers Improvement Act* do not apply.
MHSTCI	The proponent is required to identify and determine any potential impact on cultural heritage resources. This project may impact archaeological resources and cultural heritage resources. Both Archaeological Assessment and a Cultural Heritage Report may be required. Report should be submitted to MHSTCI prior to issuing the Notice of Completion.	Stage 1 and 2 Archaeological Assessments were completed in addition to a Cultural Heritage Resource Assessment (refer to Appendices B and C). Archaeological and Cultural Heritage resources are present. Further steps will be taken during detailed design to ensure all MHSTCI requirements are addressed. Interested Indigenous communities will continue to be involved in future archaeological work.
Regional Municipality of Waterloo	(1) Proposed connection would benefit those in Preston neighbourhood area heading towards Conestoga College: (a) could access Route 61 at corner of Preston Parkway & Fountain Street, (b) neighbourhood would also continue to be served by a local route as part of future City of Cambridge network redesign; (2) While the proposed connection	Acknowledged. Comments were considered in the evaluation process. The selection of Alternative 1 appears to meet the Region's needs and allows for additional connections to Dover Street and Preston Heights.

Agency	Comment	How Comment was Considered
	does not have a major impact on access to Stage 2 ION for Preston Heights residents, the pedestrian bridge will become a more comfortable and enjoyable means of accessing the station area for some residents, and aligns well with City of Cambridge and the Regional Municipality of Waterloo strategies to develop opportunities for enhanced placemaking in / around the central transit corridor; (3) Alternative 2 and 3 will likely lead to cut-through across the bends in the trail; if Alternative 1 is pursued, explore opportunities for enhancing direct connections to the sidewalk on Dover Street (which has illumination and may be the preferred path of travel outside of prime daylight hours), and potentially Preston High School through the field for a dedicated path.	
	A direct path through the “back” of school property may help encourage use and provide more direct and comfortable school travel option to / from pedestrian bridge.	Acknowledged.

GRCA staff were made of aware of the project in its early stages. GRCA staff were present for the wetland boundary staking exercise and were provided with a draft copy of the Natural Heritage Report for review. Comments received related to the data sources used in the report, standards for erosion and sediment control measures and consideration for the quantity and quality of runoff to the small marsh to the north of the trail on *rare* lands. Comments have been incorporated into the EA document.

A meeting was held with GRCA staff on December 14, 2020 to discuss potential flood risk as a result of the bridge. GRCA staff reviewed the Natural Environment Report and draft version of the Project File Report. Correspondence and GRCA’s acceptance of the reports if provided in Appendix J.

Consultation with Utilities

Several utilities were contacted. Responses were received from Hydro One and Zayo, both of which indicated that they have no assets within eh Study Area. Correspondence is provided in Appendix K.

Public Consultation

On October 20, 2020, the Notice of Public Information Centre (PIC) inviting public input was published in the Cambridge Times. A presentation and short survey was available on the City's website (www.engagewr.ca/Blair-Preston) starting October 30, 2020. Feedback was requested to be submitted by November 27, 2020. The Notice of PIC was mailed to residents within 200 m of the Study Area and mailed or emailed to other agencies, stakeholders and Indigenous communities. A copy of the notice can be found in Appendix L.

Written comments were received from several members of the public and several requests were made to be added to the project mailing list. Table 9-2 summarizes comments received from the public through email correspondence. Copies of all correspondence is provided in Appendix L.

Table 9-2: Resident Comments by Email

Comment	Project Team Response
Resident 1 It would make the most sense to extend Fountain Street south from the point where Study Area boundary crosses the street on the left, go across the river and join up with Eagle on the other side. The road could have a trail as part of it (as the Fountain Street South Bridge over the Grand has) with the trail turning right to join up with the Linear Trail. This alternative would accomplish the same purpose and go a long way to alleviating the traffic / accident mess that is the Shantz-Fountain-King series of intersections.	Burnside noted that comments will be considered, and resident will be added to Project Contact List. City staff requested that comment be elaborated and suggested a phone conversation.
Resident 2 Saw NOCm in the Cambridge Times. They were pleased to see work moving forward with a bridge and trail that will connect McMullen Trail with Blair Trail. They questioned the location of the	The City responded to Resident-2 thanking the resident for their interest and noting they would be added to Project Contact List. City staff and Cambridge Cycling and Trails Advisory Committee (CCTAC)

Comment	Project Team Response
connection since it requires the trail users to leave what is a trail in a 'natural environment' and engage a trail adjacent to a busy road and backtrack all the way back to the beginning of the trail where they will also need to engage long stretch of a very narrow trail along side Blair Road. From an amenity's perspective, the location of the connection would be much better if it connected Linear Trail to the Walter Bean Grand River Trail. This would be a 'nature to nature' connection and would be a much more direct connection to either Blair or downtown Galt. As a resident of Preston would prefer this trail improvement and would appreciate some feedback.	reviewed the options; the challenge of this area is the high level of sensitive natural environment and documented provincially and federally regulated SAR habitat throughout, that make crossing anywhere very difficult to mitigate. The location identified as the Study Area meets the criteria set out in 2010 Transportation Master Plan and is a strong active transportation connection linking Preston to Blair Village as well as the Doon area of Kitchener via the Highway 401 pedestrian overpass at the end of Morningside Drive. It also provides a safer and more direct connection for students residing in Preston Heights neighbourhood to access Preston High School when travelling by foot, which was an item of concern discussed with CCTAC by the former principal at and supported by the Waterloo Region District School Board. The *rare* Charitable Research Reserve owns all of the lands south of the Grand River / north of Blair Road, from the east limits of the Blair Village to the western limits of West Galt, and they are not supportive of any new City trails / pedestrian bridges in those highly sensitive, protected natural areas. The only location on their lands they are open to consider a new trail / bridge is within the Study Area shown in the NOCm, because it is the least environmentally impactful area under consideration.
Resident 3 Requested to be added to the Project Contact List and noted difficulty connecting to the commenting page on the website	Resident added to the mailing list. City staff assisted with website navigation and connection.
Resident 4 Requested to be added to the Project Contact List; and loved the idea of having a bridge to access *rare* from Preston,	Resident added to the mailing list.

Comment	Project Team Response
wants to show support in any way possible.	

Online Survey

The short online survey on the City's website engaged local residents and solicited comments. The survey was available starting October 30, 2020 and was completed by 29 people.

Some of the key findings from the survey are summarized below. The full survey and response summary can be found in Appendix L.

Of the Online Surveys completed 75.0 % of people were supportive of the City developing a trail between the communities of Blair and Preston. When asked how often, on average, do you currently use the trails in your community during peak season (May to October), respondents answered 37.5 % daily, 42.5 % a few times a week, 10 % once a week, 5 % once a week, and 5 % few times a year. Currently the trail is being utilized for walking, hiking, to enjoy nature/ view wildlife, spend time with family and friends, and biking. Respondents were asked how often, on average, do you expect to use the proposed Blair-Preston trail link during peak season, 35.0 % answered once a week and 30.0 % said a few times a week.

The online survey respondents showed a 52.5 % preference in Option 1 - Northern Route, 27.5 % preferred Option 2 – Dover Street Southern Route, 12.5 % preferred Option 3 – Southern Route and 7.5 % do not wish to see any trail or bridge constructed.

Survey respondents were also asked to provide suggestions or comments. Comments are summarized in Table 9-3.

Table 9-3: Summary of Survey Comments

Common Comments	Project Team Response
Support for the Project	
• I love this project! It will improve connectivity and allow for more "round trip" cycling excursions in the area. • Thank you for looking at doing this! It's a beautiful area and will be much used. • This is a great opportunity to connect Preston to Galt, as well as connecting Preston to the Doon area. I would fully support moving this project ahead as quickly as possible and it's a much needed investment in Preston and this historic neighbourhood. • Love this plan. • I commute by bike and the least safe part of my 30 km commute is along Fountain. This would make me much safer.	The City appreciates your support for the Project.
Project Cost	
• Two respondents commented on the project to be a waste of taxpayer money and that it would not be good in these economic times to be spending money on this type of project.	The City considers the costs and benefits of all capital projects prior to proceeding. There is value in developing parks and trails. The project rationale is provided in Section 2.2.

Common Comments	Project Team Response
Design Recommendations	
• Incorporate signage and wayfinding; incorporate a mid-bridge bump out for viewing; • Lighting like Craigs Crossing in Galt; • The trail should be wide enough for cyclists and joggers passing those walking or going slower; • Use hard crushed gravel or preferably pavement; • Use lights and safety posts (have a call button to Emergency Services in case of user safety issues); • Ensure route is safe from flood damage; • Area by the pump house should be graded to allow cars to park; • Create a wider cut grass area on both sides of the crushed gravel part of the trail (for cross country skiers/ snowshoe); and • It would be nice to make the bridge a community skills building project for young adults, such as heritage building like post and beam or a covered bridge. The spot at Dover Street is used by canoeists as a launch and I would like to see that capacity preserved or even enhanced so more people could enjoy kayaking or canoeing on the river there	The Preferred Solution will include a 3.0 m in width with a firm stable surface that can accommodate pedestrians and cyclists. Elements, such as signage, will be developed during detailed design. Lighting is not expected to be provided.
Environmental Concerns	
• Consider the least amount of shoreline taken to be the best for wildlife; • At least 10 deer are in the vicinity of Option 1 nightly. Please select Option 2 or 3; and • One concern I have about a bridge is safety for deer. They sleep on the island there and upriver from there, where they are safe. I would not want any bridge - and its attendant increase in human use - to impair their safe environment any further. Better no bridge than a bridge that worsens the habitat for deer and other animals there.	Alternative 1 offers the least impact to species at risk. It is assumed that the author is referring to the islands in the Grand River near the confluence with the Speed River. Alternative 1 provides the least access to this area.

Common Comments	Project Team Response
Archaeological Concerns	
• Choose the option which has the least impact on First Nations archaeological sites.	Archaeological studies have been completed with representatives from MCFN, Six Nations and the Haudenosaunee Development Institute. Additional archaeological work will be completed prior to construction. Further details regarding archaeology can be found in Section 5.4.1.
Property Concerns	
• It doesn't make sense to have a bridge in people's backyards; and • Option 1 goes into private back yards. Keep it in option 2 or 3 which doesn't affect any homes.	The bridge is intended to connect to the existing Linear Trail, on City property, and will not be constructed on private property. It is understood that the bridge may encourage additional foot traffic along the trail. The City is committed to working with landowners to address concerns. Measures to address trespassing concerns will be incorporated and are outlined in Table 8-2.

Common Comments	Project Team Response
Flooding Concerns	
• Please consider high water flooding when designing the new trail. Route 1 is most suitable because of this. Please elevate sections that will be washed away or submerged ahead of time • The route should be made to be as safe from flood damage as possible; • Option one is the only viable choice, the others would be flooded out when the Grand backs up and floods across the field to flow into the Speed across from the pumping station; and • The area on the Blair side of the Speed River is flood plain. High water levels and huge chunks of ice are there almost every late winter and early spring. Leave it natural!	Flooding and ice jamming are known to occur in this area and were taken into consideration in this EA process. Ice jamming will be further considered in the design of the bridge.
Additional Trail Connections	
• Completion of this connection of Blair and Linear trails will increase pressure to extend the Linear trail to Galt. I believe such an extension should also be constructed as it would greatly enhance the usefulness of this trail system	Additional trail extensions are not part of the current Project scope. However, the City recognizes the importance of a well-connected trail network. Future trail extensions are identified in the City's Cycling Master Plan, 2020 and Trails Mater Plan, 2010.

Common Comments	Project Team Response
Evaluation of Alternatives	
• Alternative 1, Northern Route, is the only viable option, is most suitable, is the straightest version creating a T like path, looks the most suitable for walking / hiking; • The Dover Street Alternative is the least obtrusive for existing neighbours; • Alternative 3, Southern Route, is the only real option; and • The smell of the sewer water release point should be considered. One would not want to spend a huge amount of money on a bridge that brings you right over the smelliest part.	Alternative 1 was preferred overall by the highest number of respondents. This Alternative was selected on the basis of the evaluation presented in Section 6.0.

Consultation with Cambridge Cycling and Trails Advisory Committee

A virtual meeting was held with the Project Team and members of the Cambridge Cycling and Trails Advisory Committee (CCTAC) on February 11, 2021. Meeting minutes are provided in Appendix M.

Burnside provided a presentation with a summary of the EA process, project timelines and preferred trail routing.

CCTAC members generally supported the trail project. There were several questions regarding potential impacts, winter trail maintenance, trespassing and allowing dogs on the trail. Many of these trail specifics will be developed during the detailed design process. Specific discussions during the meeting included the following:

- A CCTAC member questioned why the old rail bed through the property was not used as a base for the trail. Burnside noted that the area of the old rail line has naturalized since it was decommissioned. It is now within a relatively mature woodland and a trail through that area would have impacts to the trees and wetlands present. City staff also noted that *rare* prefers the trail along the edge of the field.
- There was a question about the bobolink found in the field and how it might be affected by farming. There was also a question about how it might be affected by the trail. Burnside noted that the area is currently farmed and bobolink have adapted to the type of farming currently being practiced. No change to the type of farming is expected as a result of the trail. The trail will bring more people and noise to the site which may have an effect on sensitive birds in the area. Plans are being developed to keep trail users on the trail as much as possible to reduce these effects.
- The frequency of flooding at the site was discussed. Burnside noted that the trail is entirely within a floodplain and some flooding of the trail can be expected. A conceptual design for the bridge is currently underway and it is being designed in a way that will not result in any increased flooding in the surrounding area.
- There was a question about whether the trail will be maintained in the winter and how the trail will be designed. City staff noted that maintenance and trail specifications have not yet been determined. These will be determined as the project moves forward. CCTAC members would like to see this as a year-round link in the trail network.
- A CCTAC member questioned whether dogs would be permitted on the trail and how rules would be enforced. It was noted that even with signage, some people do not follow the rules. City staff indicated that the City would negotiate an easement with rare. The City would be responsible for maintenance, signage and complaints / enforcement. City bylaw staff have met with rare to discuss these concerns. There may be potential to use thick shrubbery or other measures to keep people on the trail and limit trespassing on rare lands.

Consultation with the Cambridge Environmental Advisory Committee

The Cambridge Environmental Advisory Committee (CEAC) reviewed a draft copy of the Project File Report. Comments were received and are provided in Appendix R. Comments reflected the following general topics:

- The criteria used in the evaluation and whether they could be made more specific;
- Concerns with climate change and ensuring the trail and bridge design consider potential flood impacts;
- Ensuring that impacts to wildlife are carried out and cash-in-lieu options are used as a last resort;
- Ensuring construction monitoring is carried out appropriately;
- Ensuring that the City will be able to monitor and enforce impacts such as litter, off-leash dogs etc.; and
- Clarifications regarding Indigenous consultation throughout the EA process.

Responses were provided to these comments and the CEAC confirmed that any outstanding concerns could be addressed through their involvement and review of the detailed design. Correspondence is provided in Appendix R.

Consultation with rare Charitable Research Reserve

The City and Region discussed this project with *rare* long before the EA began. Early discussions were used to discuss the merits of a trail through the area and gauge *rare*'s level of acceptance for this type of project. Discussions continued throughout the EA process.

On May 27, 2019, the Project Team met with the *rare* Environmental Advisory Committee (EAC). The EA was in its initial stages and the purpose of the meeting was to outline the EA and obtain feedback on any initial concerns with the project and proposed EA work plan. The group discussed the ecological fieldwork to be completed, including staking wetland boundaries. It was noted that ecological inventories have been completed by rare staff and volunteers for many years and that data could supplement Burnside's fieldwork.

The Project Team subsequently met with the *rare* Board of Directors, on July 23, 2020.

At each of these meetings, Burnside presented the project history, work completed to date, alternative routes under consideration and the preliminary (draft open for discussion) preferred route and bridge location.

Board members questioned who would be responsible for trail maintenance and for monitoring and addressing issues with off-leash dogs, littering, trespassing, off-trail use, and campfires etc. City staff noted that complaints would go through the City's complaints system and be addressed quickly, and City arranges an annual volunteer

litter clean-up. Concern was voiced that an annual clean-up and complaint-response system may not be sufficient to deal with chronic issues. It was suggested that *rare* and the City's trails maintenance and bylaw staff meet to further discuss. A meeting with City parks staff was subsequently held and it is expected that an open dialogue between *rare* and City staff will be maintained throughout the EA, detailed design, and operational phases of the project with respect to these issues.

Some trails on *rare* lands and other areas are closed from mid-November to mid-March, as ploughing and salting on *rare* lands are discouraged. Board members questioned whether the trail would be closed seasonally due to Bald Eagles and other wintering birds in the area. The City noted that this trail network is important and would prefer to keep it open year-round. It is most likely that the trail would not be cleared or maintained by the City in the winter, but people could continue to use it.

There was a discussion regarding the trail and bridge design and how to limit ecological impacts. Board members questioned the use of a covered bridge and a covered trail or high fencing to provide a visual block on both sides of the trail. The City noted that completely fenced trail would create a safety issue. Other options were discussed including strategic planting of thick shrubs, creation of wetland areas and some strategic fencing to deter movement off-trail. Locations for these features will be determined during detailed design.

At the close of the meeting, *rare* Board Chair noted support of the trails and appreciates the value in creating well-connected trail networks; however, this needs to be balanced with appropriate measures to minimize impacts to ensure the trail can be created without negatively impacting sensitive *rare* lands.

Rare staff were provided with draft copies of the Natural Heritage Report, Stage 1 and 2 Archaeological Assessments and Project File Report for review and comment.

Further concerns regarding impacts to property and natural features were identified by *rare* staff in virtual meetings held on April 2, 2020, September 1, 2021 and November 2, 2021 as well as in email correspondence dated November 23, 2021.

The proposed trail route was walked by *rare* staff, members of Six Nations, staff of the City of Cambridge and Region of Waterloo as well as ecologists and planners from R.J. Burnside & Associates Limited on April 7, 2022. The discussion focused on potential impacts to natural features should trail users' trespass off the trail and vandalize the site.

Additional discussions were held with *rare* staff in 2023. Ultimately *rare* staff and board of directors indicated that they are opposed to further consideration of the trail through the proposed property following the filing of the EA. They no longer see the project as being consistent with their mandate for conservation and have indicated they are no

longer willing to consider further discussions over property easement or acquisition for the trail on this particular property.

Meeting minutes and correspondence is provided in Appendix N.

Consultation with Indigenous Communities

There are several Indigenous communities that may have constitutionally protected Aboriginal or Treaty Rights associated with the Study Area, or a portion of it, including:

- Mississaugas of the Credit First Nation (MCFN);
- Six Nations of the Grand River; and
- Haudenosaunee Confederacy Chiefs Council [represented by the Haudenosaunee Development Institute (HDI)].

These communities / organizations, and the Métis Nation of Ontario, were contacted at various stages in the EA process.

Contact with these Indigenous communities and organizations included:

- Initial emails and follow-up phone calls prior to issuance of the Notice of Commencement to introduce the project and gauge whether the community may wish to participate in portions of the fieldwork;
- Emails and follow-up phone calls to issue the NOCm and formally introduce the project;
- A meeting with MCFN Department of Consultation and Accommodation (DOCA) staff to introduce the project and discuss participation in fieldwork;
- Submission of the draft Stage 1 Archaeological Assessment to communities who expressed an interest in providing comment;
- Submission of the draft Natural Heritage Report to communities who expressed an interest in providing comment;
- MCFN, Six Nations and HDI staff participation in Stage 2 archaeological field surveys;
- Emails and follow-up phone calls to issue the Notice of PIC and to inform communities about project information available for review on the project website;
- Video conferences and site visit with Six Nations staff to discuss the project and key ecological concerns; and
- A video conference with HDI staff.

A summary of the meetings and correspondence with MCFN, Six Nations and HDI is presented below. No response was received from the Métis Nation of Ontario.

Consultation with MCFN

A meeting was held at the MCFN Department of Consultation and Accommodation (DOCA) office on September 12, 2019. The meeting was attended by City of Cambridge, Region of Waterloo, Burnside and DOCA staff. MCFN staff provided a history of their Nation, including its historic movements, treaties, and ongoing claims. The project was in its initial phases at the time of the meeting. Burnside and City staff provided details about the trail and bridge project and noted upcoming ecological and archaeological fieldwork.

DOCA staff identified their community's interest in ecological and archaeological fieldwork.

MCFN field liaisons participated in Stage 2 archaeological work. The draft Natural Heritage Report was provided to MCFN staff for review and a follow-up meeting was offered to further discuss the report, as required.

The draft EA was provided to MCFN for review on August 11, 2021. On October 5, 2021 MCFN responded by email indicating that they had no further concerns with the EA. Correspondence with MCFN is provided in Appendix O.

Consultation with Six Nations of the Grand River

A virtual meeting was held with Six Nations staff on December 9, 2020. A presentation providing the project history, purpose and benefits was provided.

Six Nations staff expressed concern about the impact on the natural environment and species at risk which have been observed in the area. The concern was primarily that increased human access and additional foot traffic would disrupt natural features. City staff noted that a similar concern was expressed by *rare* and that measures were being considered to keep trail users from encroaching into natural areas.

Six Nations staff also questioned how restoration and compensation would be undertaken where natural features are removed i.e., portions of Bobolink habitat or trees along the riverbank. Six Nations have been requesting a 10:1 tree compensation ratio, and destruction of habitat would be similar (i.e., 10 trees planted for every tree removed or 10 ha of habitat created for every 1 ha removed). They would like to see this for the area. It was noted that the actual quantification of meadow and trees lost will be calculated more accurately during detailed design. The City is open to a relatively high tree compensation ratio. Consultation with *rare* will occur during detailed design to confirm an acceptable ratio, as reparations would likely be on their lands.

There was also discussion regarding archaeological work. Burnside noted that a Stage 3 Archaeological Assessment may be required, and Six Nations will be contacted

to participate in the field work. A commitment was also made to provide a draft copy of the EA report to Six Nations staff for review prior to issuing the Notice of Completion.

Additional meetings were held on October 28, 2021 and February 4, 2022 and a visit to the site was held on April 7, 2022.

Copies of meeting minutes and letter correspondence are provided in Appendix P.

Consultation with HDI

HDI was contacted multiple times between the spring of 2019 and the fall of 2021 before contact was made in late September, 2021. A meeting was held with HDI on March 9, 2022. During the meeting several issues were raised that were outside of the scope of the study. It was noted by HDI staff that the Haudenosaunee are familiar with the *rare* property and some use the various *rare* properties for hiking and collecting medicinal and traditional plants. Through letter correspondence, the City committed to providing the Haudenosaunee with an opportunity to collect plants from within the project footprint prior to construction.

Correspondence is provided in Appendix Q.

10.0 Next Steps

The Project File Report (PFR) will be posted for the required 30-day public and agency review period, and will be finalized provided there are no Section 16 Order requests. If, during future discussions, the City and *rare* were to arrive at, and formalize a property agreement which supports the preferred alternative, then the project could proceed as described below.

Detailed Design Work

During detailed design, the preferred alternative would be refined and finalized to address site-specific conditions as identified in this report.

The detailed design phase involves additional studies and the development of detailed drawings for the preferred alignment as well as construction standards and specifications. The detailed design will include:

- Plan and profile drawings;
- Typical sections and details;
- Materials specifications;
- Construction access route locations;
- Construction sequencing and management plan;
- Tree protection, removal and Landscape / Restoration plans;
- Utility locates and mitigation plans; and

- Sediment and erosion control plans.

The additional studies and consultation to occur during the detailed design phase are described in the following sections.

Commitments for Future Studies

The following future studies will be completed early in the detailed design process such that any findings can be incorporated into the design, as required:

- A Tree Inventory and Preservation Plan will be completed to identify tree removals and / or tree injuries and appropriate protection measures.
- A Heritage Impact Assessment will be prepared to further assess impacts to the cultural heritage landscape.
- A Stage 3 Archaeological Assessment will be undertaken to further assess impacts to archaeological resources, if required.
- Hydraulic modeling will be reviewed and reassessed based on refinements to the design to ensure that flood and erosion risk remain minimal.
- The potential for ice jamming will be reviewed. Any necessary reinforcements will be incorporated into the bridge and bank protection design.
- Winter waterfowl surveys will be completed in the winter of 2022 / 23 to further build our understanding of current waterfowl presence. Six Nations will be invited to participate in the surveys and provided with findings.
- Winter raptor surveys will be carried out in the winter of 2022 / 23. Six Nations will be contacted to participate in those surveys.
- Bobolink surveys are recommended in the agricultural field in a bird breeding season prior to construction to confirm the presence of this species before proceeding with compensation plans.

Commitments for Future Consultation and Notification

The following commitments have been made for future consultation:

- MCFN, Six Nations and HDI will be notified and offered an opportunity to participate in future archaeological field studies, if required.
- Six Nations and HDI will be notified of opportunities to harvest plant material from the construction area prior to its removal. *Rare* will be involved in discussions regarding this opportunity.
- Six Nations will be notified of upcoming bid opportunities associated with the construction of this project so that the community can choose to submit a bid or participate in a joint bid on the construction works.
- Detailed design plans, including Tree Inventory and Preservation Plan and Landscape / Restoration Plan will be circulated to *rare* and Six Nations during detailed design.

- A property agreement would need to be reached with *rare.* If this was to occur *Rare* would be further consulted regarding land use agreements with the City, trail maintenance plans and a system to address complaints with respect to trespassing, littering, off-leash dogs etc.
- Residents on Dover Street South abutting the Linear Trail near the eastern end of the proposed bridge will be contacted during detailed design to discuss options to address trespassing, privacy, noise and other nuisance concerns.
- Notification will be posted for any temporary closures of the Linear Trail, as required during construction.

Permits and Approvals

The City and Region, in coordination with the consultants and contractors, will secure the necessary permits and approvals for construction of the trail and bridge. This may include, but is not limited to:

- *Fisheries Act* compliance / approval from the Department of Fisheries and Oceans, if in-water work is required;
- Authorization for work within the habitat of Wavy-rayed Lampmussel and Silver Shiner under the *Endangered Species Act,* if required;
- Registration and development of a compensation plan for work within Bobolink habitat under the *Endangered Species Act,* if required.
- Approval under GRCA O. Reg. 150/06 for work within a floodplain;
- Permit to Take Water from the Ministry of Environment, Conservation and Parks for dewatering activities, as required; and
- Temporary road closure and / or road occupancy permit form the Region of Waterloo / City of Cambridge during construction if access and / or staging on Fountain St. / Dover St. S. is required.

Post-Construction Monitoring

Commitments were made to conduct monitoring after construction is complete to confirm that are not significantly different than predicted. Post-construction monitoring will include:

- Two-year warranty monitoring on any landscape and restoration plantings;
- The construction area will be monitored one year after construction to identify whether any new patches of invasive species have established as a result of construction. Invasive species removal and restoration will occur, as required.
- Monitoring of restored Bobolink habitat under the *Endangered Species Act* and regulations if compensation habitat is created;
- Winter waterfowl and raptor surveys three years after construction. If a significant decrease in the wintering populations due to the trail is observed, additional mitigation can be implemented, such as additional plantings to buffer noise and

views or temporary winter trail closures, if required. Six Nations will be invited to participate in the surveys and provided with findings.

11.0 Conclusions

This study considered how, and where, to construct a trail to connect the communities of Blair and Preston in the City of Cambridge. Through the MCEA process, it was determined that the Preferred Solution will include construction of a trail from Fountain Street, along the northern edge of the *rare* farm field to a new bridge over the Speed River to connect to the Linear Trail north of Dover Street South.

As per the requirements of the Municipal Class EA, this Project File is available for public review and comment for a period of 30 calendar days following the publication of the Notice of Completion.

Concerns regarding the project should be directed to the contacts listed in the Notice of Completion. If concerns relating to Aboriginal or Treaty Rights arise regarding this project which cannot be resolved in discussion with the City, a person or party may request that the Minister of the Environment make an Order for the project to comply with Section 16 of the *Environmental Assessment Act* (referred to as a Section 16 Order), which addresses individual Environmental Assessments. Requests must be received by the Minister within 30 calendar days of the first publication of the Notice of Completion.

If the Minister does not receive a request for a Section 16 Order within the 30 calendar days, then the project will move forward, if the City and *rare* can arrive at and formalize a property agreement, to detailed design, approvals, and subsequent implementation of the preferred alternative.

Respectfully submitted by:

R.J. Burnside & Associates Limited

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Appendix A
Natural Heritage Report

Blair-Preston Trail Schedule B Municipal Class Environmental Assessment Natural Heritage Report

City of Cambridge

R.J. Burnside & Associates Limited
292 Speedvale Avenue West Unit 20
Guelph ON N1H 1C4 CANADA

February 2023
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1.0 Introduction

R.J. Burnside & Associates Limited (Burnside) has been retained by the City of Cambridge to prepare a Schedule B Municipal Class Environmental Assessment (MCEA) in support of the development of a trail and pedestrian bridge spanning the Speed River through lands owned and managed by the *rare* Charitable Research Reserve (*rare*). The proposed construction will create a connection between the B McMullen Linear Trail (Linear Trail) to the east and the existing multi-use trail on Fountain Street to the west. This connection will include a crossing over the Speed River, upstream of its confluence with the Grand River, in the general area shown on Figure 1-1.

The purpose of the MCEA is to consider several routing alternatives for the trail and bridge through the Study Area. An option to do nothing and not construct the trail and bridge is also being considered.

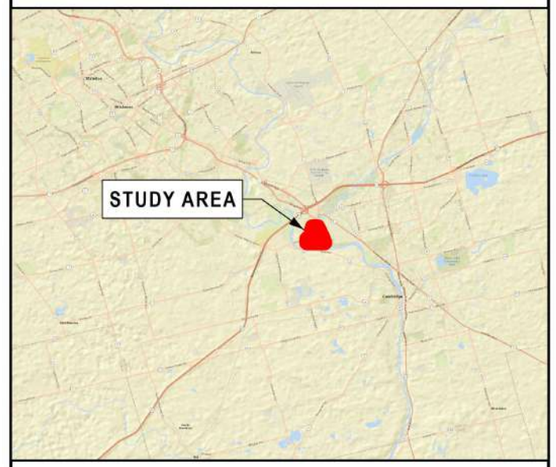
As part of the MCEA, this Natural Heritage Report (NHR) has been prepared to assess existing ecology and anticipate potential impacts from proposed works.

This document has been prepared in accordance with the Terms of Reference, provided in Appendix A and includes:

- A review of applicable environmental policies and regulations affecting the subject lands;
- A review of existing secondary source data to identify any known natural features;
- Pre-submission consultation with various agencies to identify additional features and to confirm field study methodologies;
- A summary of field studies and a natural resources inventory to confirm the presence, significance and sensitivity of any natural features;
- A description of the proposed development;
- Identification of any recommended setbacks from natural features;
- An assessment of potential impacts resulting from the proposed development; and
- Recommended mitigating measures that will allow development to proceed in a manner that is consistent with local, regional, provincial and federal policies and regulations.

The MCEA represents a high-level planning process. The purpose of this study is to support the evaluation of routing alternatives. Detailed design and permitting will be carried out upon completion of the MCEA. Additional fieldwork, studies and permitting will be identified in this report, including the scope of a future Environmental Impact Study to further assess impacts to natural features, if required.

Study Area



Sources:

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BURNSIDE

Client
CITY OF CAMBRIDGE

Figure Title
BLAIR PRESTON TRAIL EA

STUDY AREA

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1.1 Project Description and Justification

The City of Cambridge Trails Master Plan (2010) identified the need for a connection between the neighbourhoods of Preston and Blair. The Master Plan recommended a path and bridge between the B. McMullin Linear Trail in Preston and the multi-use trail along Fountain Street on the Blair side of the Speed River, specifically noting the following as a short-term priority:

> *Investigate the opportunities to construct a bridge crossing to link west side trails from Blair to Preston. A trail linking Preston with Downtown Cambridge was the trail section that was most often stated in the community survey and workshops. A bridge linking the Linear Trail with the Grand Trunk trail was identified in the 1996 City-Wide Multi-use Trail Study. A bridge connection will be a long process and will require discussions with land owners; environmental impact studies; feasibility studies and other decisions. Bridge construction would follow and would likely be 5 to 10 years away from the start process. Given this length of time it is important that this trail section be identified as a short term priority so that process gets started. (pg 15)*

The City's recent Cycling Master Plan (2020) also identifies a trail in this location as a short-term priority. This Master Plan highlights the City's goals for a broad and encompassing trail network, indicating that:

> *Cambridge is committed to a sustainable, effective, accessible, and energy efficient transportation system and recognizes the importance of encouraging residents and visitors to enjoy the beautiful natural environment, enhancing community health and safety as well as quality of life. The City is also committed to reducing air pollution by increasing opportunities for cycling and public transportation as seen through policies in the City's Greenhouse Gas (GHG) Reduction (Energy Management) Plan and Official Plan. (pg., 1)*

The Region of Waterloo's Active Transportation Master Plan (2014) also identifies the potential for a trail and bridge in the Study Area. The Study Area associated with this EA is mapped as a Special Study Area in the Region's Master Plan. These are areas that require "more in-depth study to refine a vision and plan for specific improvements." (Section 4.2.6). The Master Plan indicates, "The Region of Waterloo should work towards completion of the 12 projects identified as Special Study Area in the Walking and Cycling Network Action Plan" (Section 4.2.6).

Further support for the trail in the area was identified through the Class EA for Fountain / King St/ Shantz Hill Improvements on April 17, 2012 as part of Region of Waterloo Engineering Report E-12-029. This document recommended that the Region of Waterloo, in conjunction with the City of Cambridge, should explore the feasibility of

an off-road multi-use trail with new pedestrian/cycling bridge across the Speed River and trail connection from Fountain Street South to the City of Cambridge Linear Trail.

The purpose of this current EA is to provide a detailed analysis of the environmental, cultural, social, technical and economic factors required to confirm the feasibility, routing and design considerations necessary to build on the vision of the City and Region Master Plans for a trail connecting the neighbourhoods of Blair and Preston.

The Study Area for this EA includes lands from the Linear Park near Preston High School to the west, the shoreline on the Speed River where the pedestrian bridge is proposed, and *rare* - owned lands east of Fountain Street. These lands include a mix of woodland, wetland, shrub, open meadow, active agricultural areas, and riparian shoreline of the Speed River.

The proposed connection involves lands that are near portions of the Speed River Provincially Significant Wetland (PSW) complex. The Study Area is located entirely within the Grand River Watershed and lands regulated by the Grand River Conservation Authority through O. Reg. 150/06. Waters associated with the confluence of the Speed and Grand Rivers have also been identified as important wintering and migratory stopover areas for certain waterfowl, raptors, and other wildlife.

1.2 Report Organization

This NHR is a technical supplement to the Municipal Class EA Project File Report. The NHR is organized as follows:

- Section 2.0: Planning Context, which provides a description of the natural heritage policies affecting the Study Area;
- Section 3.0: Records Review, which provides the findings of a detailed review of existing plans, maps and databases;
- Section 4.0: Field Investigations, which provides the methodology and findings of field investigations used to confirm the findings of the records review and identify any additional natural features not previously recorded;
- Section 5.0: Identification of Features of Provincial, Regional and Local Significance;
- Section 6.0: Trail and Bridge Alternatives;
- Section 7.0: Impact Assessment, which includes direct and indirect impacts and recommended mitigation measures;
- Section 8.0: Compliance with Applicable Policies; and
- Section 9.0: Conclusions.

2.0 Planning Context

2.1 Provincial Policy Statement

The Provincial Policy Statement (PPS, 2020) provides general policies on land use patterns, resources, and public health and safety that guide development across Ontario. This report will address Section 2.1 (Natural Heritage).

Eight types of natural heritage features are identified in Section 2.1 of the PPS. In summary, development and site alteration are not permitted within:

- *Significant wetlands in Ecoregions 5E, 6E and 7E; and,*
- *Significant coastal wetlands.*

In addition, development and site alteration are not permitted within, or adjacent to, the following features unless it can be demonstrated that there will be no negative impacts to the feature or its ecological functions:

- *Significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E;*
- *Significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);*
- *Significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);*
- *Significant Wildlife Habitat (SWH);*
- *Significant Areas of Natural and Scientific Interest (ANSI); and*
- *Coastal wetlands in Ecoregions 5E, 6E and 7E.*

In addition, development, and site alteration on, and adjacent to, fish habitat and the habitat of endangered and threatened species will only be permitted in accordance with provincial and federal regulatory requirements.

The presence or potential presence of some of these features has been identified on, and in the vicinity of, the subject lands.

2.2 Growth Plan for the Greater Golden Horseshoe

The Growth Plan (2019) provides a framework for growth in the Greater Golden Horseshoe (GGH) region. The Plan provides guidance on how and where to grow, how to make efficient use of infrastructure and how to build public transit-friendly communities. The Plan also includes policies on protecting natural and water resources, consistent with the policies under other provincial plans.

The Province has developed a Natural Heritage System for lands outside of Settlement Areas in the GGH. In the Natural Heritage System includes policies to protect Key Natural Heritage Features (KNHFs) and Key Hydrologic Features (KHFs).

KNHFs include:

- Habitat of endangered and threatened species;
- Fish habitat;
- Wetlands;
- Life Science Areas of Natural and Scientific Interest;
- Significant Valleylands;
- Significant Woodlands;
- Significant Wildlife Habitat;
- Sand Barrens, savannahs and tallgrass prairies; and
- Alvars.

KHFs include:

- Permanent and intermittent streams;
- Inland lakes and their littoral zones;
- Seepage areas and springs; and
- Wetlands.

Outside of Settlement Areas, development or site alteration is not permitted within any of these features or within a 30 m setback with the exception of "*small-scale structures for recreational uses, including boardwalks, footbridges, fences, docks and picnic facilities, if measures are taken to minimize the number of such structures and their negative impacts*." (Section 4.2.3.1.g)

The proposed trail and surrounding lands are within the Natural Heritage System of the Growth Plan.

2.3 City of Cambridge Official Plan

The City of Cambridge Official Plan (CCOP) Maps 1A and 1B identify lands west of the Speed River as Protected Countryside, and areas to the east as Built-up Area. Map 2 designates riparian lands along the Speed River as well as lands to the west as part of the municipal Natural Open Space System.

Section 2.10.2 of the CCOP stipulates that land use within protected countryside is regulated in accordance with the underlying policies applied to Prime Agricultural, Rural, or Landscape Level System designations of the CCOP. Section 3.0 c) states that Landscape Level Systems are managed under the City's Natural Heritage System, and Section 3.A.2 stipulates that these systems are identified and designated by the region. It is indicated that lands along the Speed River identified as Landscape Level Systems are considered to be Significant Valleys. Section 3.A.3 #14 indicates that the City of Cambridge will coordinate with the Region of Waterloo and the GRCA to preserve and enhance the cultural heritage resources of recreational and scenic value that Significant Valleys represent.

2.4 Region of Waterloo Official Plan

The Region of Waterloo Official Plan (RWOP) indicates that lands on the east side of the Speed River are within the Settlement Area limits; these lands are designated as Built-up Areas. The lands west of the Speed River are within the Regional Greenlands Network and are Rural Areas, Significant Valleylands and part of Environmentally Significant Landscape (ESL) #2 (Blair-Bechtel-Cruickston). Riparian lands on either side of the Speed River and the Speed River Provincially Significant Wetland (PSW) Complex are Core Environmental Features and are identified as the Speed and Grand Confluence Environmentally Sensitive Policy Area (ESPA 36).

According to Section 7.B.9 development applications within Environmentally Sensitive Landscapes that a) establish or expand *recreational or tourism uses* or *rural institutional uses* may be considered for approval if it can be demonstrated that no adverse environmental impacts will result to the features or function, existing corridors or linkages, watercourses or groundwater within or continuous with the ESL as a result. Additionally, it should be assured that disturbance of existing natural vegetation will be minimized, and that developments will be buffered from existing natural features by an appropriate natural vegetation buffer.

Significant Valleys are addressed in Section 7.B.20 and 7.B.21. The Region and Municipality, in collaboration with the GRCA, endeavor to maintain the character of these features by conservation and enhancement of cultural heritage resources of recreational and scenic value. It is anticipated that the path and pedestrian bridge will enhance the recreational and scenic value of this area.

2.5 Conservation Authority Regulations

The Grand River Conservation Authority regulates development in or around hazard lands (i.e., floodplains, slopes, wetlands) through *Ontario Regulation 150/06*.

The Authority *"may grant permission for development in [regulated areas] if, in its opinion, the control of flooding, …pollution or the conservation of land will not be affected by the proposed development."* (Section 3(1)).

The entire Study Area is within a floodplain and is regulated by the GRCA. A portion of steep slope / erosion hazard lands is located on the east bank of the Speed River adjacent to St. Joseph Catholic Elementary School.

2.6 Provincial Endangered Species Act, 2007

The *Endangered Species Act* 2007 (ESA) provides protection for species at risk (SAR) and their habitat. The ESA, 2007 helps protect species (Section 9) and their habitat (Section 10). Section 9(1)(a) of the ESA states,

> *"No person shall kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as extirpated, endangered or threatened."*

Section 10(1)(a) of the ESA states,

> *"No person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario List as an endangered or threated species."*

There is potential for SAR to be present within the Study Area.

2.7 Migratory Birds Convention Act, 1994

The *Migratory Birds Convention Act, 1994* (MBCA) and the *Migratory Bird Regulations* (MBR) are federal legislative requirements that are binding on members of the public and all levels of government, including federal and provincial governments. The legislation protects certain species[1], controls the harvest of others, and prohibits commercial sale of all species.

One key responsibility under the MBCA is described in Section 6 of the associated MBR:

> *"Subject to subsection 5(9), no person shall*
>
> - *Disturb, destroy or take a nest, egg, nest shelter, eider duck shelter or duck box of a migratory bird, or*
> - *Have in his possession a live migratory bird, or a carcass, skin, nest, or egg of a migratory bird except under authority of a permit therefor."*

It is anticipated that migratory birds are present on the Site.

2.8 Federal Fisheries Act

The federal *Fisheries Act, 1985, as amended in 2019,* is administered by Fisheries and Oceans Canada (DFO) and provides protection for fish and fish habitat across Canada. Section 34.4 of the Act states that:

[1] Bird species not regulated under the Act include: Rock Dove, American Crow, Brown-headed Cowbird, Common Grackle, House Sparrow, Red-winged Blackbird, and European Starling. In addition, raptors are not regulated under the MBCA. However, they are protected under provincial legislation which restricts and regulates the taking or possession of eggs and nests. Furthermore, if the species identified is protected under Ontario's *Endangered Species Act, 2007* additional restrictions may apply.

> *No person shall carry on any work, undertaking or activity, other than fishing, that result in the death of fish.*

Section 35 (1) of the Act states that:

> *No person shall carry on any work, undertaking or activity that results in the harmful alteration, disruption or destruction of fish habitat.*

The Act defines fish habitat as waters frequented by fish and any other areas on which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply and migration areas. If works will proceed below the annual high-water mark then a Request for Project Review should be made to the Fish and Fish Habitat Protection Program.

Fish habitat has been identified within the Study Area in association with the Speed and Grand Rivers. No in-water works are anticipated within the Speed River or its associated tributary. Development of a pedestrian bridge and associated trails would be considered works near water, which will require a project review to determine whether a HADD to fish or fish habitat can be avoided or mitigated based on the preferred alternative.

3.0 Records Review

A comprehensive desktop assessment was completed to compile and review existing natural heritage information available for the Study Area. All areas within 120 m of the site were reviewed as part of the high-level assessment in order to identify significant natural heritage features located within or directly adjacent to the subject lands that may be impacted by the proposed works. Information acquired through this screening process was used to help guide field efforts and evaluate the significance of on-site observations. Information was reviewed from the following sources:

- Aerial photographic imaging and 1:10,000 Ontario Base Mapping;
- Ontario Hydrology Network mapping;
- MNRF Natural Heritage Information Centre (NHIC) database for significant species and designated natural features within 120 m of the subject lands;
- Ontario Breeding Bird Atlas (OBBA) database for avian species records within the area;
- Ontario Reptile and Amphibian Atlas (ORAA) database for herpetofaunal species records within the area;
- MNRF Land Information Ontario (LIO) database;
- GRCA regulated features, mapping and information;
- Ministry of Agriculture, Food, and Rural Affairs Mapping (2017);
- Ministry of Natural Resources and Forestry (MNRF) Aquatic Resource Area mapping (2015);
- Fisheries and Oceans Canada (DFO) Aquatic Species at Risk mapping;
- eBird online database for avian species records within the area; and

- *rare* Charitable Research Reserve Bird Monitoring data for avian species records within the area.

3.1 Records Review Results

Through the background data review, multiple natural heritage records were identified on, and in the vicinity of, the Study Area. A summary of findings is presented below.

3.1.1 Topography and Soils

The site is located in the Preston Flats, just north of the confluence of the Grand and Speed Rivers. Topography is relatively flat within this site (see Figure 3-1).

The western half of the site is characterized as gravelly loam soil. Along the southern and eastern edge of the site, the soil is classified as loam. Through the middle of the site and along the Speed River, the soil is unclassified (see Figure 3-2; OMAFRA GIS, 2019).

Contour (.5m Interval)

Study Area

Sources:

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BURNSIDE

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CITY OF CAMBRIDGE

Figure Title

BLAIR PRESTON TRAIL EA

TOPOGRAPHY

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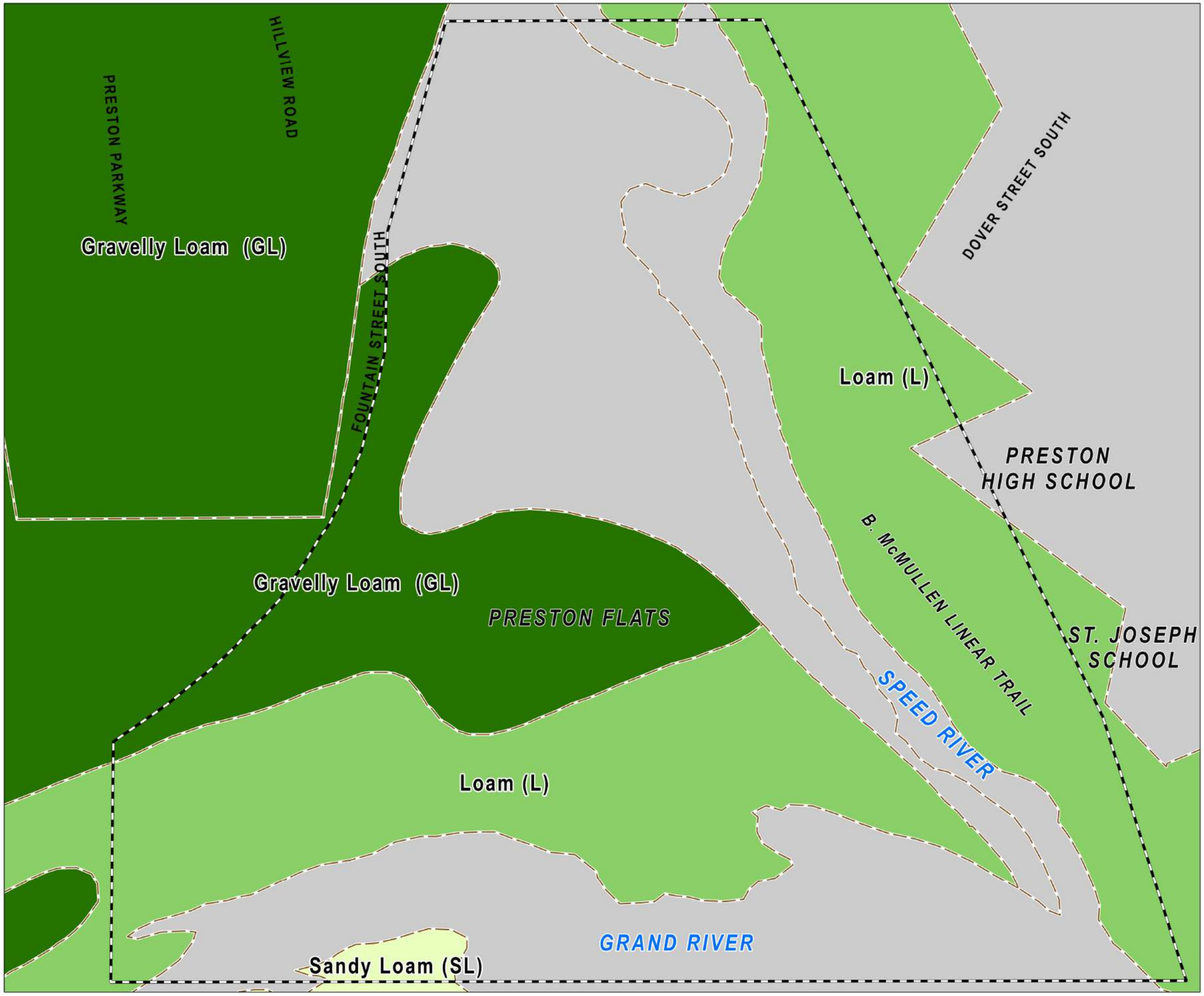

Study Area

Soil Unit

Loams

- Loam (L)
- Sandy Loam (SL)
- Gravelly Loam (GL)
- Unclassified

Sources:

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CITY OF CAMBRIDGE

Figure Title

BLAIR PRESTON TRAIL EA

SOILS

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3.1.2 Significant Woodlands

According to the Region of Waterloo Official Plan (2015), "significant woodlands are areas that meet all of the following criteria:

a) Greater than four hectares in size, excluding any adjoining hedgerows;

b) Consisting primarily of native species of trees; and

c) Meets the criteria of a woodland in accordance with the provisions of the Regional Woodland Conservation By-law."

Based on aerial photo interpretation, woodlands in the area are relatively small and do not meet the 4 ha size requirements. There are no significant woodlands found within the Study Area.

3.1.3 Significant Wetlands

The Speed River Wetland Complex is approximately 661.6 ha in size (GRCA, 2018). It is found at the north end of the Study Area, directly adjacent to the Speed River on the west side of the river.

3.1.4 Significant Valleylands

According to the Region of Waterloo Official Plan (2015), "Environmentally Significant Valley Features are natural features within a Significant Valley that consist of:

1. At least one of the following:

   a) River channel; or

   b) *Environmentally Significant Discharge Areas* or *Environmentally Significant Recharge Areas*; or

2. Both of the following ecological features:

   a) Habitat of regionally significant species of flora or fauna:

   b) Natural area, such as a *woodland* of one to four hectares in extent, *floodplain* meadow or *wetland*, which consists primarily of native species; or;

3. Any one of (b) above plus any one of the following Earth Science features:

   a) River terrace;

   b) Esker;

   c) Cliff or steep slopes;

d) Oxbow;

e) Confluence with significant watercourse draining a watershed greater than five square kilometres;

f) Regionally *significant* Earth Science *Area of Natural and Scientific Interest*; or

g) Fossil bed."

The entire Study Area is within a Significant Valley that incorporates the floodplain and valley slopes associated with the Speed and Grand Rivers.

3.1.5 Significant Areas of Natural and Scientific Interest

There are no significant Areas of Natural and Scientific Interest found within the vicinity of the Study Area.

3.1.6 Landscape Features

The Study Area is located entirely within the Natural Heritage System of the Growth Plan for the Greater Golden Horseshoe. The Natural Heritage System was developed to, "support a comprehensive, integrated and long-term approach to planning for the protection of the region's natural heritage and biodiversity." (Section 4.2.2).

According to the Region of Waterloo Official Plan (2015), the Study Area lies within the Environmentally Significant Landscape (ESL) #2 (Blair-Bechtel-Cruickston). This area is bounded by Highway 401 in the north and continues to south of Blenheim Road. This area includes several Provincially Significant Wetlands and a variety of unique habitat features, including riverside cliffs, an alvar and old growth woodland, all of which are located well to the south of the Study Area (MHBC *et. al.,* 2018).

The Study Area is also within the Region's Speed and Grand Confluence Environmentally Sensitive Policy Area (ESPA 36). The ESPA covers the area along the lower end of the Speed River and the Grand River upstream and downstream of the confluence. The agricultural field in the Study Area is not part of the ESAP but the natural areas along the riverbanks to the north, south and east of the field are included. The site was designated for its natural features, which include an important wintering area for waterfowl as well as a migratory stop over for waterfowl and songbirds. The winter waterfowl concentration area is shown on Figure 5-1.

Several other unique features are located outside of the Study Area including:

- Bald Eagle wintering habitat, located along the Grand River between Fountain St. and Hwy 401, approximately 730 m from the project site.
- A limestone cliff along the Grand River which supports Bald Eagle wintering as well as rare species, including Smooth Cliffbrake. The cliff is approximately 1.7 km south of the proposed trail site.

3.1.7 Vegetation

The NHIC background review identified a record of American Chestnut (*Castanea dentata*) from 1988 within the vicinity of the Study Area.

3.1.8 Avifauna

Multiple databases provide records of bird sightings in the area. The following records were identified:

Records from the Ontario Breeding Bird Atlas

A review of the Ontario Breeding Bird Atlas (OBBA) identified records of 116 bird species in the vicinity of the site. The relative rarity[2] of each species is identified in Table 3-1.

Table 3-1: Provincial S-Ranks of Bird Species Recorded in the Vicinity[3] of the Site

Rarity Ranking (SRank)*	Number of Species
S5 (S5, S5B, S5N)	56
S4 (S4, S4B, S4N)	56
S3S4 (S3S4B)	1
SNA	4

*S1- Critically Imperiled
S2- Imperiled
S3- Vulnerable
S4- Apparently Secure
S5- Secure
SNA- Not applicable, not suitable for conservation activities

Most of the bird species in the area are common, secure and not at risk. Species ranked S3 and lower are considered to be vulnerable. Based on a review of OBBA records, one species ranked S3 or lower (Purple Martin – *Progne subis*; S3S4B) was identified as being present within the vicinity of the Study Area.

- Five species are listed under the ESA as Special Concern:
  - Canada Warbler – *Cardellina canadensis*;
  - Common Nighthawk – *Chordeiles minor*;
  - Eastern Wood-pewee – *Contopus virens*;
  - Golden-winged Warbler – *Vermivora chrysoptera*; and
  - Wood Thrush - *Hylocichla mustelina;*
- Five species are listed as Threatened
  - Barn Swallow – *Hirundo rustica*;
  - Bank Swallow – *Riparia riparia*;
  - Bobolink – *Dolichonyx oryzivorus*;
  - Chimney Swift – *Chaetura pelagica*; and
  - Eastern Meadowlark – *Sturnella magna*.

[2] Rarity based on NatureServe rankings for provincial/state rarity (SRank).
[3] Based on OBBA 10x10 km square covering the site.

Threatened and Endangered species, as well as habitats that support them, are protected in Ontario.

OBBA records are provided in Appendix B.

Records from the eBird Database

A review of eBird records in the vicinity of the site identified records of 195 bird species. The relative rarity[4] of each species is identified in Table 3-2.

Table 3-2: Provincial S-Ranks of Bird Species Recorded in the Vicinity[5] of the Site

Rarity Ranking (SRank)*	Number of Species
S5 (S5, S5B, S5N)	77
S4S5 (S4B, S5N, S5B, S4N)	4
S4 (S4, S4B, S4N, S4M)	84
S3S4 (S3B, S4N)	3
S3 (S3B, S3N)	4
S2S4 (S2B, S4N, S2N, S4B)	2
S2 (S2B)	3
S1S4 (S1B, S4N)	3
S1 (S1B)	1
SNA	14

*S1- Critically Imperiled
S2- Imperiled
S3- Vulnerable
S4- Apparently Secure
S5- Secure
SNA- Not applicable, not suitable for conservation activities

Most of the bird species in the area are common, secure and not at risk. Species ranked S3 and lower are considered to be vulnerable. Based on a review of eBird records, 16 species ranked S3 or lower were identified as being present within the vicinity of the Study Area:

- Short-billed Dowitcher - *Limnodromus griseus*, S3BS4N;
- Semipalmated Sandpiper - *Calidris pusilla*, S3BS4N;
- Hudsonian Godwit - *Limosa haemastica*, S3BS4N;
- Black-crowned Night-heron - *Nycticorax nycticorax*, S3BS3N;
- Peregrine Falcon - *Falco peregrinus*, S3B;
- Long-tailed Duck - *Clangula hyemalis*, S3B;
- Caspian Tern - *Hydroprogne caspia*, S3B;
- Bald Eagle - *Haliaeetus leucocephalus*, S2NS4B;
- Redhead - *Aythya Americana*, S2BS4N;
- Great Egret - *Ardea alba*, S2B;
- Great Black-backed Gull - *Larus marinus*, S2B;

[4] Rarity based on NatureServe rankings for provincial/state rarity (SRank).
[5] Based on eBird records within approximately 250 m of the site boundaries.

- Golden Eagle - *Aquila chrysaetos*, S2B;
- Rough-legged Hawk - *Buteo lagopus*, S1BS4N;
- Horned Grebe - *Podiceps auratus*, S1BS4N;
- Canvasback - *Aythya valisineria*, S1BS4N; and
- Ross's Goose - *Chen rossii*; S1B.

Several species regulated under the ESA were also included in the records, including:

- Seven species are listed under the ESA as Special Concern
  - Horned Grebe;
  - Bald Eagle,
  - Peregrine Falcon;
  - Canada Warbler - *Cardellina canadensis*;
  - Common Nighthawk - *Chordeiles minor*;
  - Eastern Wood-pewee - *Contopus virens*; and
  - Rusty Blackbird - *Euphagus carolinus*.
- Five species are listed as Threatened
  - Bank Swallow - *Riparia riparia*;
  - Barn Swallow – *Hirundo rustica*;
  - Bobolink – *Dolichonyx oryzivorus*;
  - Eastern Meadowlark – *Sturnella magna*; and
  - Chimney Swift - *Chaetura pelagica*.
- One species is listed as Endangered:
  - Golden Eagle.

A total of 29 waterfowl species are recorded from the eBird data for the Study Area. Many of these species are migratory for the area however some breed in the Study Area and some are incidental sightings.

Based on nearly 2000 eBird checklists for the birdwatching hotspot called "Confluence of Grand and Speed Rivers", eight species of shorebird are regularly detected as both spring and fall migrants: Semipalmated Plover (*Charadrius semipalmatus*), Dunlin (*Calidris alpina*), Least Sandpiper (*Calidris minutilla*), Semipalmated Sandpiper (*Calidris pusilla*), Wilson's Snipe (*Gallinago delicata*), Solitary Sandpiper (*Tringa solitaria*), Greater Yellowlegs (*Tringa melanoleuca*) and Lesser Yellowlegs (*Tringa flavipes*).

eBird records are provided in Appendix B and divide the species list further into waterfowl, breeding and incidental species. The time of year observed (spring, summer, fall or winter) and last observation date for the site and surrounding area.

Records provided by rare Charitable Research Reserve

A review of *rare* records in the vicinity of the site identified records of 126 bird species monitored in the fall and spring seasons from 2013-2017. The relative rarity[6] of each species is identified in Table 3-3.

Table 3-3: Provincial S-Ranks of Bird Species Recorded in the Vicinity[7] of the Site

Rarity Ranking (SRank)*	Number of Species
S5 (S5, S5B, S5N)	65
S5S4 (S5B, S4N)	1
S4 (S4, S4B, S4N)	51
S3S4 (S3B, S4N)	1
S3 (S3B, S3N)	2
S2S4 (S2N, S4B)	1
S2 (S2B)	1
SNA	4

*S1- Critically Imperiled
S2- Imperiled
S3- Vulnerable
S4- Apparently Secure
S5- Secure
SNA- Not applicable, not suitable for conservation activities

Most of the bird species in the area are common, secure and not at risk. Species ranked S3 and lower are considered to be vulnerable. Based on a review of *rare* records, 5 species ranked S3 or lower were identified as being present within the vicinity of the Study Area (Semipalmated Sandpiper – *Calidris pusilla*; S3BS4N, Black-crowned Night Heron – *Nycticorax nycticorax*; S3BS3N, Caspian Tern – *Hydroprogne caspia*; S3B, Bald Eagle – *Haliaeetus leucocephalus*; S2NS4B, Great Egret – *Ardea alba*; S2B).

- Four species are listed under the ESA as Special Concern
  - Bald Eagle;
  - Canada Warbler;
  - Eastern Wood-pewee; and
  - Wood Thrush.
- Three species are listed as Threatened
  - Bank Swallow;
  - Barn Swallow; and
  - Chimney Swift.

A total of 10 waterfowl species were recorded from the *rare* data for the Study Area. Some of these species are migratory for the area and some breed in the Study Area while a small number are incidental sightings.

A total of 96 species were recorded during fall migrant surveys at *rare* from 2013-2017. Of these, 10 species were recorded in the fall only. Three of the fall migrants are waterfowl species. None of the fall migrants are listed under the ESA.

[6] Rarity based on NatureServe rankings for provincial/state rarity (SRank).
[7] Based on *rare* records at monitoring stations within approximately 700 m of the site boundaries.

rare records are provided in Appendix B and divide the species list further into waterfowl species, species observed during spring migration survey and species observed during fall migration survey. The last observation date for each species is also noted.

3.1.9 Mammals

No background records of mammalian species within the Site were identified during initial background screening. Mammals with the potential to be present are those typical to rural and agricultural environments, including white-tailed deer, coyote, red fox, white-tailed rabbit, groundhog, and various rodent species. The Ontario Wetland Evaluation System (OWES) record for the Speed River PSW Complex indicates the presence of additional mammalian species (beaver, coyote, muskrat, mink, raccoon, skunk).

3.1.10 Reptiles and Amphibians

Records of reptiles and amphibians were obtained from the NHIC and ORAA databases for SAR listed under the ESA. Two Special Concern species (Eastern Ribbonsnake - *Thamnophis sauritus*; Snapping Turtle – *Chelydra serpentina*) were identified as potentially present within the Study Area vicinity. One Threatened species (Blanding's Turtle – *Emydoidea blandingii*) and two Endangered species (Jefferson Salamander – *Ambystoma jeffersonianum*; Queensnake – *Regina septemvittata*) were also noted as having occurrence records within the area. Habitat for these species, if present within the Study Area, would be limited to the Speed River PSW Complex and woodlot to the West of Speed River or the riparian corridor of the river itself (in the case of Queensnake).

Reptiles and amphibians recorded within the vicinity[8] of the Study Area from the above-noted sources are provided in Appendix B.

3.1.11 Fish and Fish Habitat

The Study Area contains a portion of the Speed River approximately 500 m north of its confluence with the Grand River. The Speed River is a major tributary within the Grand River watershed and contains a diversity of cool and warm water fish species. In addition, there is a small tributary to the Speed River which originates in the PSW on the west side of the Speed River.

NHIC and DFO records (Appendix B) indicate potential presence of two species listed as Threatened under the ESA (Silver Shiner – *Notropis photogenis*; Wavy-rayed Lampmussel – *Lampsilis fasciola*). Silver Shiner is listed as Threatened and Wavy-rayed Lampmussel is listed as Special Concern under the federal Species At Risk Act (SARA).

[8] Based on ORAA 10x10 km square covering the site.

The COSEWIC assessment for Silver Shiner states that the species is usually found in streams over 20 m in width and in deep rifles or in pools adjacent to riffles. The species has been found over substrates of rubble, gravel, boulder and sand, with or without vegetation. The species is usually observed in association with other shiner species and chubs. Silver Shiner is somewhat tolerant of disturbance as it inhabits rivers near larger city centers (Waterloo, Cambridge, Oakville etc.). Spawning is thought to take place in deep riffles, runs and flowing pools of streams or rivers, although it has not been observed in Ontario. The species overwinters in deeper pools in rivers and the young are thought to inhabit slower currents of watercourses.

Wavy-rayed Lampmussel has been observed within the Speed River and occurrences are documented by DFO within the first 10 km upstream of the confluence with the Grand River. It inhabits clear rivers and streams and it is most abundant in small to medium-sized watercourses. Typically, the species is observed in sand and gravel around riffles up to 1m in depth. Boulders and cobble are also associated with the preferred habitat for this species.

The Speed River is classified as a warm-water thermal regime watercourse that flows from north to south through the Study Area (MNRF ARA Mapping, 2015). The MNRF ARA mapping does not provide a list of species known to inhabit the Speed River, however MNRF Management Biologist Graham Buck has provided a list of species found within the Study Area (see Appendix C). This list is presented below in Table 3-4.

Table 3-4: Fish Species Historically Observed in the Speed River

Species name	Scientific Name	Thermal Regime Preference
White Sucker	*Catostomus commersonii*	Cool
Northern Hog Sucker	*Hypentelium nigricans*	Warm
Common Shiner	*Luxilus cornutus*	Cool
Striped Shiner	*Luxilus chrysocephalus*	Cool
Rock Bass	*Ambloplites rupestris*	Cool
Smallmouth Bass	*Micropterus dolomieu*	Cool
Greenside Darter	*Etheostoma blennioides*	Warm
Longnose Dace	*Rhinichthys cataractae*	Cool
Bluntnose Minnow	*Pimephales notatus*	Warm
Rainbow Darter	*Etheostoma caeruleum*	Cool
Pumpkinseed	*Lepomis gibbosus*	Warm
Emerald Shiner	*Notropis atherinoides*	Cool
Shiner (Luxilus sp.)	*Luxilus spp.*	-

4.0 Field Investigations

Through the records review, the following features were identified as being in, or in close proximity to, the Study Area:

- Provincially Significant Wetlands (Speed River PSW);

- Significant Valleylands (Grand River and Speed River valleys);
- Habitat of Endangered and Threatened Species (Silver shiner, Wavy-rayed Lampmussel);
- Fish Habitat; and
- Blair-Bechtel-Cruickston Environmentally Significant Landscape.

The records review also identified that some additional natural features may be present, including:

- Significant Wildlife Habitat; and
- Significant Habitat of Endangered and Threatened species (other than the ones previously identified).

Field investigations were conducted in the spring and summer of 2019, in order to:

- Verify the findings of the records review;
- Confirm the presence or absence of any additional features which may be present; ad
- Confirm the boundaries of features.

Field investigations were conducted according to the schedule listed in Table 4-1.

All field investigations were conducted according to the parameters provided in the approved Terms of Reference provided in Appendix A.

Table 4-1: Field Study Methodology

Field Study	Methodology	Staff Involved	Date(s)	Time of Day	Weather Conditions		
					Precipitation / Cloud Cover	Temperature (°C)	Wind (Beaufort Wind Scale)[1]
Ecological Land Classification	Ecological Land Classification for Southern Ontario (Lee et al., 1998) of entire property.	Peter DeCarvalho (Terrestrial Ecologist)	June 10, 2019	0800-1400	Spotty precipitation Partly cloudy/Overcast	21°C on arrival 26°C on departure	0-2 – Calm-slight breeze
Wetland Boundary Delineation	Ontario Wetland Evaluation System (OWES) (MNRF, 2014). Boundary jointly verified by the GRCA and RJ Burnside Ecologists on June 10, 2019.	Peter DeCarvalho (Terrestrial Ecologist) Representatives from the GRCA, City of Cambridge, and *rare*.	June 10, 2019	0800-1400	Spotty precipitation Partly cloudy/Overcast	21°C on arrival 26°C on departure	0-2 – Calm-slight breeze
Bat Maternity Habitat Survey	Survey protocol for Species at Risk bats within treed habitats: Little Brown Myotis, Northern Myotis & Tri-colored Bat (MNRF, 2017)	Meredith Meeker (Ecologist)	September 18, 2020	08:30 – 12:45	No precipitation	N/A	1 – Light Air
			November 24, 2020	9:55 – 13:45	No precipitation Overcast	-1°C on arrival 0°C on departure	1 – Light Air
Aquatic Habitat Assessment	Ontario Ministry of Transportation (MTO) Fisheries Protocol - Environmental Guide for Fish and Fish Habitat (June, 2009)	Chris Pfohl (Sr. Aquatic Ecologist)	June 10, 2019	0830 – 1230	No precipitation Cloudy	17°C on arrival 22°C on departure	1 – Light Air
Spring Migratory Waterfowl and Shorebird Survey	One survey, at least 4 hours using wandering transects through the Study Area during daylight hours, recording all species seen and heard.	Matthew Iles (Burnside sub-contractor)	May 13, 2019	07:30 – 10:00	No precipitation Overcast	4°C on arrival 7°C on departure	2-3 – Gentle breeze
Spring Breeding Bird Survey	Two surveys at least 10 days apart using the method in the Ontario Breeding Bird Atlas Guide for Participants (BSC, March, 2001)	Matthew Iles (Burnside sub-contractor)	June 4, 2019	06:00 – 10:00	No precipitation Overcast	6°C on arrival 18°C on departure	0 - None
			July 2, 2019	06:30 – 09:45	No precipitation Partly cloudy	17°C on arrival 20°C on departure	0 - None
Fall Migratory Waterfowl and Shorebird Survey	One survey, at least 4 hours using wandering transects through the Study Area during daylight hours, recording all species seen and heard.	Meredith Meeker (Ecologist)	September 18, 2020	08:30 – 12:45	No precipitation Clear skies	N/A	1 – Light Air

Field Study	Methodology	Staff Involved	Date(s)	Time of Day	Weather Conditions		
					Precipitation / Cloud Cover	Temperature (°C)	Wind (Beaufort Wind Scale)[1]
Winter Raptor and Waterfowl Habitat Use Survey	One survey, at least 4 hours using wandering transects through the Study Area during daylight hours, recording all species seen and heard.	Meredith Meeker (Ecologist)	November 24, 2020	9:55 – 14:00	No precipitation Overcast	-1°C on arrival 0°C on departure	1 – Light Air
Search for potential wildlife habitats	Meandering survey throughout property. Search for features which could provide habitat for wildlife or Species at Risk Habitat such as: Nests, reptile hibernacula, old barns, structures, uncapped chimneys, foundations, mature forest areas with cavities or other features suitable for bat roosting, turtle nesting or overwintering sites along the Speed River etc.	All staff, all visits	All visits as noted above.	All visits as noted above.	All visits as noted above.	All visits as noted above.	All visits as noted above.
Incidental flora and fauna observations	Visual observations of animals, tracks or scat and compilation of a plant inventory during all site visits.	All staff, all visits	All visits as noted above.	All visits as noted above.	All visits as noted above.	All visits as noted above.	All visits as noted above.

1 Beaufort Wind Scale: 0 = calm, smoke rises vertically (0-2 km/hr); 1 = light air movement, smoke drifts (3-5); 2 = slight breeze, wind felt on face; leaves rustle (6-11); 3= Gentle breeze, leaves & twigs in constant motion (12-19); 4 = moderate breeze, small branches moving, raises dust & loose paper (20-30); 5 = fresh breeze, small trees begin to sway (31-39); 6 = strong breeze, large branches in motion (40-50)

4.1 Findings of Field Investigations

4.1.1 Vegetation Communities

The Study Area is approximately 25 ha in size. Much of the Study Area is within the floodplain of the Speed and Grand Rivers, and include a mix of cultural meadow/thicket, shallow marsh, and lowland forest ecosites as summarized in Table 4-2.

Table 4-2: ELC Vegetation Communities

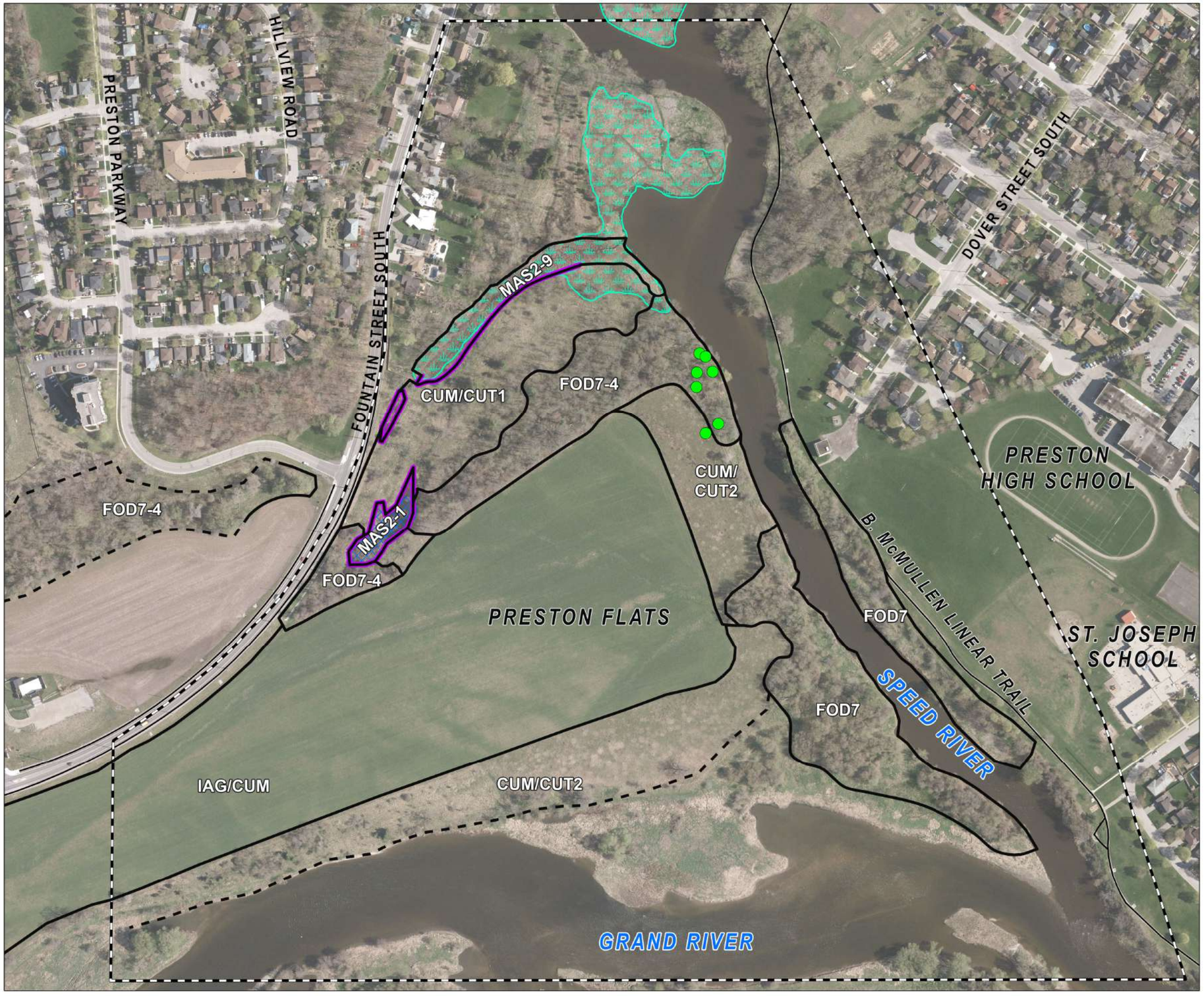
ELC Code	Vegetation Type	Species Association Comments*
Cultural Communities		
CUM/CUT	**Cultural Meadow/Cultural Thicket**	
CUM/CUT1	Dry-Moist Old Field Meadow	This community borders the FOD7-4 woodlot to the south and segments of the Speed River Wetland Complex to the north. Species composition is variable, but typically dominated by grasses (Kentucky Bluegrass – *Poa pratensis*; Timothy – *Phleum pretense*; Smooth Brome – *Bromus inermis*; Orchard Grass – *Dactylis glomerata*) and Canada/Tall Goldenrod (*Solidago canadensis/altissima*). Some areas feature higher density of shrub species (Gray Dogwood – *Cornus racemosa*; European Buckthorn – *Rhamnus cathartica*; Tatarian Honeysuckle – *Lonicera tatarica*).
CUM/CUT2	Dry-Moist Old Field Meadow	This open community comprises linear sections of meadow bordering a central hayfield. Common species include grasses (Kentucky Bluegrass, Timothy, Smooth Brome, Orchard Grass), Canada/Tall Goldenrod, and weedy cosmopolitan species (Black Medic – *Medicago lupulina*; Teasel – *Dipsacus fullonum*; Common Dandelion – *Taraxacum officinale*; Red Clover – *Trifolium pratense*). Some apparent tree planting has occurred in the past, with Trembling Aspen (*Aspen tremuloides*), Sugar Maple, Red Maple (*Acer rubrum*) and White Pine (*Pinus strobus*) present in sections.
CUM/IAG	**Cultural Meadow/Agricultural**	
CUM/IAG	Graminoid Meadow/Hay Field	This polygon was dominated by various grasses (Timothy, Smooth Brome, Orchard Grass) and Alfalfa (*Medicago sativa*) for the purpose of harvesting hay. Plant density was noted as thick (75%+) and relatively uniform throughout.

ELC Code	Vegetation Type	Species Association Comments*
Wetland Communities		
MAS	**Shallow Marsh**	
MAS2-1	Cattail Mineral Shallow Marsh	This open community was dominated almost exclusively by Narrow Leaf Cattail (*Typha angustifolia*), with a few scattered Blue Flag (*Iris versicolor*) and sedges (*Carex sp.*) found in the margins not subject to inundation.
MAS2-9	Forb Mineral Shallow Marsh	A narrow linear wetland system extends west from the Speed River. The western portion of this ecosite was noted as being relatively devoid of plants; it is possible the area had undergone a recent spraying or treatment to kill Purple Loosestrife (*Lythrum salicaria*). Remaining plants in these areas include Pale Smartweed (*Persicaria lapathifolia*), Black Bulrush (*Scirpus atrovirens*), and Rice Cutgrass (*Leersia oryzoides*). As the system approaches the Speed River the vegetation transitions to more of a Narrow Leaf Cattail Mineral Shallow Marsh. The ecosite is within a depression surrounded by occasional Red-osier Dogwood (*Cornus sericea*).
Forest Communities		
FOD	**Deciduous Forest**	
FOD7-4	Fresh-Moist Black Walnut Lowland Deciduous Forest	These forests are typically associated with riparian zones and floodplains in Ontario. This relatively linear ecosite was dominated by Black Walnut (*Juglans nigra*) with Manitoba Maple (*Acer negundo*) approaching co-dominance in areas. Several veteran White Oak (*Quercus alba*) were noted as present; their size and relative maturity indicate that these trees pre-date the existing forest community. Groundcover contribution from the adjacent CUM communities was apparent, with Canada/Tall Goldenrod and meadow grasses present under the canopy. Other common species included Dame's Rocket (*Herperis matronalis*), Garlic Mustard (*Allaria petiolata*), Virginia Creeper (*Parthenocissus quinquefolia*), and River Grape (*Vitis riparia*).

ELC Code	Vegetation Type	Species Association Comments*
FOD7	Fresh-Moist Lowland Deciduous Forest	This ecosite was similar to FOD7-4, but with a more variable canopy. Black Walnut was not the dominant tree species, as the canopy received higher contributions from species such as Manitoba Maple, Sugar Maple (*Acer saccharum*), Hackberry (*Celtis occidentalis*), American Beech (*Fagus grandifolia*) and White Willow (*Salix alba*).

4.1.2 Wetland Boundary Delineation

The southern limit of the Speed River PSW and the unevaluated (MAS2-1) wetland boundaries were delineated using the Ontario Wetland Evaluation System (OWES) protocol. The boundaries were staked by Burnside ecologists and verified by ecologists from the GRCA, the City of Cambridge and *rare* on June 10, 2019. The resulting wetland boundaries are shown on Figure 4-1.



- Potential Bat Maternity Habitat Tree
- ELC Boundary
- ELC Boundary - Undefined
- Staked Wetland (June 10, 2019)
- Unevaluated Wetland (MNRF)
- Speed River Provincially Significant Wetland (MNRF)
- Study Area

ELC Descriptions

CUM: Cultural Meadow
CUT1: Mineral Cultural Thicket Ecosite
CUT2: Bedrock Cultural Thicket Ecosite
FOD7: Fresh-Moist Lowland Deciduous Forest Ecosite
FOD7-4: Fresh-Moist Black Walnut Lowland Deciduous Forest
IAG: Agricultural Infrastructure
MAS2-1: Cattail Mineral Shallow Marsh Type
MAS2-9: Forb Mineral Shallow Marsh

Sources:

1. Ministry of Natural Resources and Forestry, © Queen's Printer for Ontario.
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Region of Waterloo, GIS.

Disclaimer:

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This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.

Datum: North American 1983	
Coord. System: NAD 1983 UTM Zone 17N	
Projection: Transverse Mercator	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
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BURNSIDE

Client
CITY OF CAMBRIDGE

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4.1.3 Wildlife

4.1.3.1 Spring Migratory Bird Community

A total of 37 bird species were observed in the Study Area during spring migrant bird surveys (see Appendix D). Of these species, 12 were species that have a typical life cycle which includes a spring and fall migration. Ten species were true migrants, meaning that no individuals were observed during the breeding bird survey; all individuals of these species migrated through to other areas for breeding.

Five species of swallows were detected during the survey, including Bank Swallow (*Riparia riparia*), Barn Swallow (*Hirundo rustica*), Cliff Swallow (*Petrochelidon pyrrhonota*), Northern Roughed-winged Swallow (*Stelgidopteryx serripennis*) and Tree Swallow (*Tachycineta bicolor*). Apart from several flyovers, the vast majority of the greater than 250 birds observed were feeding in up to two large congregations at, or within, 50 m of the confluence of the Speed and Grand Rivers, just outside of the Study Area. Swallows were migrating in force through southern Ontario during this time in May, and many of these birds may have been migrants. There is potential for any of these species to nest in this region or local area; however, no breeding evidence was exhibited for any of these species during subsequent breeding bird surveys.

Eastern Meadowlark were noted as present and singing (breeding evidence) during the spring migration survey only. This species was not detected during breeding bird surveys. A single flyover Bobolink was detected during the spring migrant survey and was presumed to be a migrant. However, this species was later confirmed as breeding during the second breeding bird visit (July 2, 2019).

Two migrant warbler species were detected, both most numerous along the trail east of the Speed River. Palm Warbler (*Setophaga palmarum palmarum*) was observed south of its breeding range. Yellow-rumped Warbler (*Setophaga coronata*) was observed outside of its preferred breeding habitat. Neither were exhibiting breeding evidence. Blue-gray Gnatcatcher (*Polioptila caerulea*) was not exhibiting breeding behaviour and was not detected on late breeding bird surveys. The habitat located along both sides of the Speed River, within the Study Area, serves as a useful urban habitat corridor that appears to be used by migration songbird species, particularly warblers.

No migrant shorebirds were detected during the spring survey. Potential limited habitat for shorebird stopover could be present along the banks of the Speed River in the Study Area. It is unlikely to be used by many migratory shorebirds during the spring, and particularly during the spring of 2019, due to higher water levels (than in the fall). The riverbanks in the Study Area are also of much less significance than the area at the confluence of the Speed and Grand Rivers, or on the Grand River itself, which could provide much more substantial habitat than in the Study Area or along the Speed River.

Four bird species listed as both provincially and federally significant were observed in the Study Area during spring migrant surveys: Bank Swallow (Threatened), Barn Swallow (Threatened), Bobolink (Threatened) and Eastern Meadowlark (Threatened). A SAR Screening Table for the Study Area is included in Appendix E. Bank Swallow, Barn Swallow and Eastern Meadowlark were migrants and were not observed during breeding bird surveys. Bobolink was observed during spring migrant surveys and later recorded as a confirmed breeder during breeding bird surveys. The significance of these species is discussed in further detail in Section 5.1 of this report.

4.1.3.2 Breeding Bird Community

A total of 31 summer resident bird species exhibiting some level of breeding evidence (possible, probable or confirmed) were observed in the Study Area during targeted breeding bird surveys (see Appendix D).

Six species were observed in the Study Area during the breeding bird window but no breeding evidence (i.e., suitable breeding habitat or breeding behavior) was recorded: Canada Goose (*Branta canadensis*), Chimney Swift (*Chaetura pelagica*), Great Blue Heron (*Ardea herodias*), Osprey (*Pandion haliaetus*), Tree Swallow (*Tachycineta bicolor*) and Turkey Vulture (*Cathartes aura*). Justification to identify these as non-breeders is as follows:

- Fifty Canada Geese were seen flying over the Study Area. This species generally prefers to nest along shorelines or small islands (Cadman et al 2007). Neither of these habitat features were found in the Study Area.
- One Chimney Swift was seen flying over the Study Area. This species historically nested in large hollow trees, other tree cavities and cracks in cliffs. Currently, most are found in developed areas in large, uncapped chimneys (Cadman et al 2007). Although some chimneys are present in the Study Area, they are all either capped or lined and therefore not suitable nesting habitat.
- One Great Blue Heron was seen flying over the Study Area. This species prefers to nest in colonies in wet or dry forest, sparsely treed islands, beaver ponds or marshes (Cadman et al 2007). Although a couple of small marshes are present in the Study Area, there is no suitable nesting habitat within the boundaries of the Study Area.
- One Osprey was seen flying over the Study Area. This species prefers to nest in dead trees, living trees with dead tops, utility poles or towers, or other structures, usually close to or over water in marshes, swamps, bogs and flooded areas, on islands or along shorelines of lakes and rivers (Cadman et al 2007). Although river shoreline habitat and marsh habitat are present in the Study Area, this individual was likely nesting outside of the Study Area.
- Four Tree Swallow were seen flying over the Study Area. This species will readily nest in artificial nest boxes installed in rural and urban areas. This species will also use natural cavities excavated by woodpeckers or other species. They are typically found in open areas including fields, marshes, and shorelines, as well as in wooded

swamps (Cadman et al 2007). Although suitable nesting habitat is present in the Study Area, there was no breeding evidence observed for this species during either breeding bird survey.

- One Turkey Vulture was seen flying over the Study Area. This species nests in a wide variety of habitats but prefers agricultural landscapes interspersed with forest to provide sources of carrion and nest sites. It will nest on cliff ledges, in crevices and caves, and among boulders on talus slopes and rocky outcroppings of shield and escarpment areas; in deciduous and mixed woodlands where nests are situated in standing hollow trees and stumps and hollow fallen logs and on the ground beside logs and piled wood; and in abandoned buildings (Cadman et al 2007). Although there is some agricultural landscape found in the Study Area, the deciduous forest habitat is small and insignificant and not suitable for nesting habitat.

Two bird species listed as both provincially and federally significant were observed in the Study Area during breeding bird surveys: Bobolink (Threatened) and Chimney Swift (Threatened). A SAR Screening Table for the Study Area is included in Appendix E. Bobolink was recorded as a confirmed breeder and Chimney Swift was observed with no breeding evidence. The significance of these species is discussed in more detail in Section 5.1.3 and Section 5.1.4 of this report.

4.1.3.3 Fall Migratory Waterfowl and Shorebird Survey

A total of 43 bird species were observed in the Study Area during fall migrant bird surveys (see Appendix D). Eighteen of the species observed during fall migratory survey were not detected during the breeding bird period.

Six warbler species were detected during the fall migratory survey, American Redstart (*Setophaga ruticilla*), Black-throated Green Warbler (*Setophaga virens*), Connecticut Warbler (*Oporornis agilis*), Nashville Warbler (*Oreothlypis ruficapilla*), Pine Warbler(*Setophaga pinus*), and Yellow Warbler (*Setophaga petechia*). The majority of these sightings occurred along forest edge adjacent to the proposed trail and along both sides of the Speed River, within the Study Area.

Five shorebirds were detected during the fall survey along the banks of the Speed River and at the confluence of the Grand River and the Speed River Greater Yellowlegs (*Tringa melanoleuca*), Killdeer (*Charadrius vociferus*), Lesser Yellowlegs (*Tringa flavipes*), Solitary Sandpiper (*Tringa solitaria*) and Spotted Sandpiper (*Actitis macularius*). Potential limited habitat for shorebird stopover could be present along the banks of the Speed River in the Study Area.

Three waterfowl species were observed during the fall migratory survey along the Speed River, Canada Goose (*Branta canadensis*), Common Merganser (*Mergus merganser*), and Mallard (*Anas platyrhynchos*).

4.1.3.4 Winter Bird Community

A total of 26 bird species were observed in the Study Area during winter raptor and waterfowl bird surveys (see Appendix D). Seventeen of the species observed during the winter survey were not detected during the breeding bird period.

One raptor species was detected during the fall migratory survey, Red-tailed Hawk (*Setophaga ruticilla*). The Red-tailed Hawk was observed flying over the Speed River within the Study Area.

Eight waterfowl species were observed during the winter survey along the Speed River and at the confluence of the Grand River: Blue-winged Teal, Bufflehead, Canada Goose (*Branta canadensis*), Common Goldeneye, Common Merganser (*Mergus merganser*), Gadwall (*Anas strepera*), Hooded Merganser (*Lophodytes cucullatus*), and Mallard (*Anas platyrhynchos*).

4.1.3.5 Bat Habitat

There are four bat species in Ontario which are listed as Endangered due to an emergent pathogenic fungus affecting bat populations across North America. The distribution of these species (Eastern Small-footed Myotis, *Myotis leibii*; Little Brown Myotis, *Myotis lucifugus*; Northern Myotis, *Myotis septentrionalis*; Tri-colored Bat, *Perimyotis subflavus*) is generally poorly understood. Surveys to identify potential roost trees for these species were conducted on September 18 and November 24, 2020.

No candidate habitat tree species were identified as a result of the leaf-on survey conducted on September 18, 2020.

A second survey was conducted during the leaf-off period on November 24, 2020. Seven snags were identified along the Speed River, where the proposed trail crossing is to be installed (Figure 4-1).

The seven snags identified are located at the edge of FOD7-4 and along the Speed River allowing for direct sun exposure allowing those with relatively large diameter at breast height (DBH) to retain heat during cool nighttime temperatures. Additionally, the openness of the edge habitat provides unobstructed access to roosting trees while the surrounding communities provide foraging opportunities.

The surrounding habitat, including the remainder of FOD4-7 will not be impacted the trail and consists of large trees and snags of desirable species (i.e. Oaks and Maples) suppling higher quality roosting opportunities.

Table 4-3 summarizes the characteristics of the candidate maternity roosting habitat trees identified within the footprint of the crossing.

Table 4-3: Characteristics of Candidate Maternity Roosting Habitat Trees

Snag ID	Community	Tree Species	Diameter (DBH in cm)	Approximate Tree Height (m)	Decay Class[1]	Significant Features
1	FOD7-4	Manitoba Maple (*Acer negundo*)	40	6	2	Large 30cm crack, small cavity, woodpecker activity, and dead limb
2	FOD7-4	Manitoba Maple (*Acer negundo*)	35	8	2	Small areas of peeling bark.
3	FOD7-4	White Willow (*Salix alba.*)	60	5	5	Woodpecker activity, cracks, mushroom growth, and 3 medium cavities.
4	FOD7-4	Manitoba Maple (*Acer negundo*)	75	8	2	Peeling bark, large deep crack, woodpecker activity, and multiple holes of various sizes
5	FOD7-4	Manitoba Maple (*Acer negundo*	55	10	2	Peeling bark, medium cavity, and mushroom growth
6	FOD7-4	White Willow (*Salix alba.*)	95	12	2	Dead limbs, small areas of peeling bark, small cavity, and woodpecker activity
7	FOD7-4	White Willow (*Salix alba.*)	60	15	1	Large crack turns into cavity, broken limb, and along the waters edge

4.1.3.6 Incidental Wildlife Observations

Incidental observations of wildlife, including Lepidoptera, were collected during field investigations. Observations were documented to provide a general characterization of the habitat functions of the site. Examples include tracks, scat, carcasses, live sightings, etc.

MNRFs provincial ranks (i.e., S1 to S5) are used to set protection priorities for rare species and natural communities. With the exception of Monarch, the remaining species observed are not listed as provincially and/or federally significant and are listed as secure or apparently secure in Southern Ontario (in other words, they are ranked as S5 or S4, which is defined by the MNRF as species that are common, widespread and abundant in the province or uncommon but not rare). Refer to Table 4-5 for a summary of incidental observations.

Table 4-4: Summary of Incidental Wildlife Observations on the Subject Lands and in the Study Area.

Common Name	Scientific Name	Number Observed on Subject Lands	S-Rank	Comments
Muskrat	*Ondatra zibethicus*	1	S5	Observed on west bank of Speed River.
Coyote		1		Tracks only seen.
Eastern Grey Squirrel	*Sciurus carolinensis*	1	S5	
White-tailed Deer	*Odocoileus virginianus*	1	S5	Tracks only seen.
Eastern Cottontail	*Sylvilagus floridanus*	1	S5	
Red Squirrel	*Tamiasciurus hudsonicus*	1	S5	
American Toad	*Anaxyrus americanus*	1	S5	
Monarch	*Danaus plexippus*	3	S2N, S4B	Observed a few individuals in open CUM/CUT ecosites (see Figure 4-1).

Common Name	Scientific Name	Number Observed on Subject Lands	S-Rank	Comments
American Woodcock	*Scolopax minor*	1	S4B	Observed in wetland towards Speed River.

4.1.4 Aquatic Habitat Characterization

The Speed River flows from north to south through the Study Area in a single thread channel. The channel meanders slightly through the Study Area. The morphology of the watercourse primarily comprised of moderate depth runs and flats (Photos Photo 4-1 and Photo 4-2). The wetted width ranges from 32 to 41m through the Study Area. Wetted depth ranges from 0.25 to 0.6 m in the runs and flats. A backwater depositional area exists within the upstream reach of the Study Area that had a total wetted width of 42 m. Bankfull width varied through the Study Area and was measured 37 to 46 m. Bank full depth was estimated to range from 1.3 to 2.5m depending on morphology.

Photo 4-1: Looking south (downstream) from the west bank of the Speed River.

Photo 4-2: Looking north (upstream) from the west bank of the Speed River.

The substrate was comprised primarily of cobble and gravel sized stone, with sand and silt present in depositional areas (Photo 4-3 and Photo 4-4). Finer grained materials filled the void space within the larger substrate. Areas of loose granular substrate was observed while wading and assessing the existing conditions. Both the left and right upstream banks in the Study Area are stable, with the exception of minor erosion from seasonal flows typically occurring in the spring.

Photo 4-3: Looking east towards the Dover Street pumphouse and the granular substrate.

Photo 4-4: Range of substrate types including woody debris that provides aquatic habitat.

The left and right banks (looking upstream) are densely vegetated with grasses, forbs, shrubs as well as areas of mature riparian vegetation (Photo 4-5 and Photo 4-6). Aquatic macrophytes (coontail and cladophora) were observed within runs and flats and provides cover for fish within the system (Photo 4-7 and Photo 4-8). Spawning nests were observed in select locations and identified by clearing of existing granular substrate with an increased depth. Male Smallmouth bass *(Micropterus dolomieu)* were observed guarding the nest areas and fending off Rock bass *(Ambloplites rupestris)* from invading and potential predation on the Young of the Year (Photo 4-9). Numerous gravel “mounds” known to be built by spawning Chub species were also observed (Photo 4-10).

Photo 4-5: Looking north (upstream) from the southern end of the Study Area, note mature riparian vegetation.

Photo 4-6: Looking north east (upstream) from the northern edge of the Study Area, note mature riparian vegetation.

Photo 4-7: Aquatic macrophytes (Coontail) observed within the Speed River.

Photo 4-8: Stands of Cladophora, a type of algae that is predominant in the Speed and Grand River.

Photo 4-9: Smallmouth bass spawning nest observed within the Study Area.

Photo 4-10: Gravel mounds observed for Chub spawning.

Numerous crayfish were observed amongst the substrate in the Speed River throughout the Study Area. In addition, darter, cyprinid, and young-of-the-year species of fish were observed throughout the reach.

A small channel originating from a wetland pocket that overflows and connects to a SWM outlet was observed to connect to the main river. The channel did not appear to have good connectivity to the wetland pocket although more defined with the SWM outlet from the adjacent road and residential area (Photo 4-11). This channel would have higher water levels in the spring or during peak flow events and most likely dries up during summer low flows. Fish have been documented in the connected wetland pocket (personal correspondence, Tom Woodcock, *rare*) most likely due to high water movements and being trapped in the ponded area when water levels drop. The channel was linear in morphology and had uniform substrate (primarily silt and organics). No fish were observed in the channel during the site visit. An overview of the aquatic features within the study area is provided on Figure 4-2 below.

Photo 4-11: Channel conveying overland flow from the wetland pocket and the SWM outlet on the west side of the Study Area.

- Spawning Area
- Stormwater Outlet
- Flow
- Unnamed Tributary of the Speed River (Warm)
- Staked Wetland (June 10, 2019)
- Wetland (MNRF)
- Species at Risk Habitat
- Study Area

Sources:

1. Ministry of Natural Resources and Forestry, © Queen's Printer for Ontario.
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
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This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.

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Figure Title

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4.1.4.1 Habitat for Aquatic Species at Risk

Wavy-rayed Lampmussel

Wavy-rayed Lampmussel (listed as Special Concern) prefers small to medium sized rivers with clear water and clean sand and gravel substrates. They require host fish species carry on their life cycle, preferring Smallmouth Bass in riverine environments.

Suitable habitat and substrate for mussel SAR was observed within the main river channel. Areas of loose gravel used for burying during winter refuge was also observed along with remnant shells identified as mussel SAR. This reach of the Speed River has been identified as occupied reach for Wavy-rayed Lampmussel by DFO based on a review of Aquatic SAR mapping (DFO 2019).

Silver Shiner

The Silver Shiner is a minnow species that has been listed as Threatened under the *Endangered Species Act*. This species of minnow prefers specific habitat features that support its life history and survival. Based on a review of the "General Habitat Description for the Silver Shiner (*Notropis photogenis)"* (MNRF 2012), the preferred habitat for this species consists of moderate to large riverine systems with swift flowing currents (20 to 200 cm depths) associated with riffle pool sequences and clean gravel, cobble/boulder substrates. Suitable habitat for this species exists in the lower Speed River and the most recent observation based on background data was prior to 1981. This species was not observed during field investigations, although fish sampling was not conducted.

5.0 Habitat Significance

The following sections document how the results of field investigations were analyzed to determine whether Habitat for Endangered and Threatened Species or Significant Wildlife Habitat is present.

5.1 Significant Habitat for Endangered and Threatened Species

The records reviewed and field investigations identified 8 Endangered and 8 Threatened species which have been recorded in the City of Cambridge and are, therefore, known to inhabit the general vicinity.

A screening was conducted to determine if suitable habitat for any of these species is present in the Study Area. The screening is presented in Appendix E.

Of the 16 species, only 12 have habitat requirements which could be provided on, or adjacent to, the Study Area. These species include:

- Barn Swallow;
- Bank Swallow;
- Bobolink;
- Chimney Swift;
- Eastern Meadowlark;
- Little Brown Myotis;
- Northern Myotis;
- Tri-coloured Bat;
- Silver Shiner;
- Wavy-rayed Lampmussel;
- American Chestnut; and
- Blanding's Turtle.

A description of each of these species is provided below.

5.1.1 Barn Swallow

Although this species was not recorded during breeding bird surveys, this species was recorded foraging over the open areas of the Study Area during spring migrant surveys. Suitable breeding habitat could potentially be present on structures associated with the residences on the east side of the river and the pumping station structure, although no nests were observed during field investigations.

5.1.2 Bank Swallow

Although this species was not recorded during breeding bird surveys, this species was recorded foraging over the open areas of the Study Area during spring migrant surveys. Possible breeding habitat is present along the Speed River but no nests were observed along the banks in the vicinity of the project.

5.1.3 Bobolink

Bobolink was confirmed breeding on site during the breeding bird surveys. Its breeding habitat was confirmed present near the southeast corner of the IAG/CUM meadow in the Study Area. Regulated habitat for this species includes the fallow agricultural lands and adjacent meadows (IAG and CUM/CUT2 communities, as shown on Figure 5-1 and in Photo 1).

5.1.4 Chimney Swift

Chimney Swift were observed flying over the Study Area during breeding bird surveys however no breeding evidence was noted and it was determined that no suitable breeding habitat is present in the Study Area.

5.1.5 Eastern Meadowlark

As noted in Section 4.1.3.1, Eastern Meadowlark were noted as present and singing (breeding evidence) during the spring migration survey only. This species was not detected during breeding bird surveys. As such, regulated habitat for this species has not been identified in the Study Area.

5.1.6 Bat Species

Acoustic surveys to confirm the presence of Endangered bat species were not conducted. Candidate habitats for bats was identified and is shown in Figure 4-1 and discussed in Section 4.1.3.5.

5.1.7 Silver Shiner

Regulated habitat for the Silver Shiner is confirmed in the Speed River on site and is shown on Figure 5-1. Regulated habitat for this species includes the river and its floodplain.

5.1.8 Wavy-rayed Lampmussel

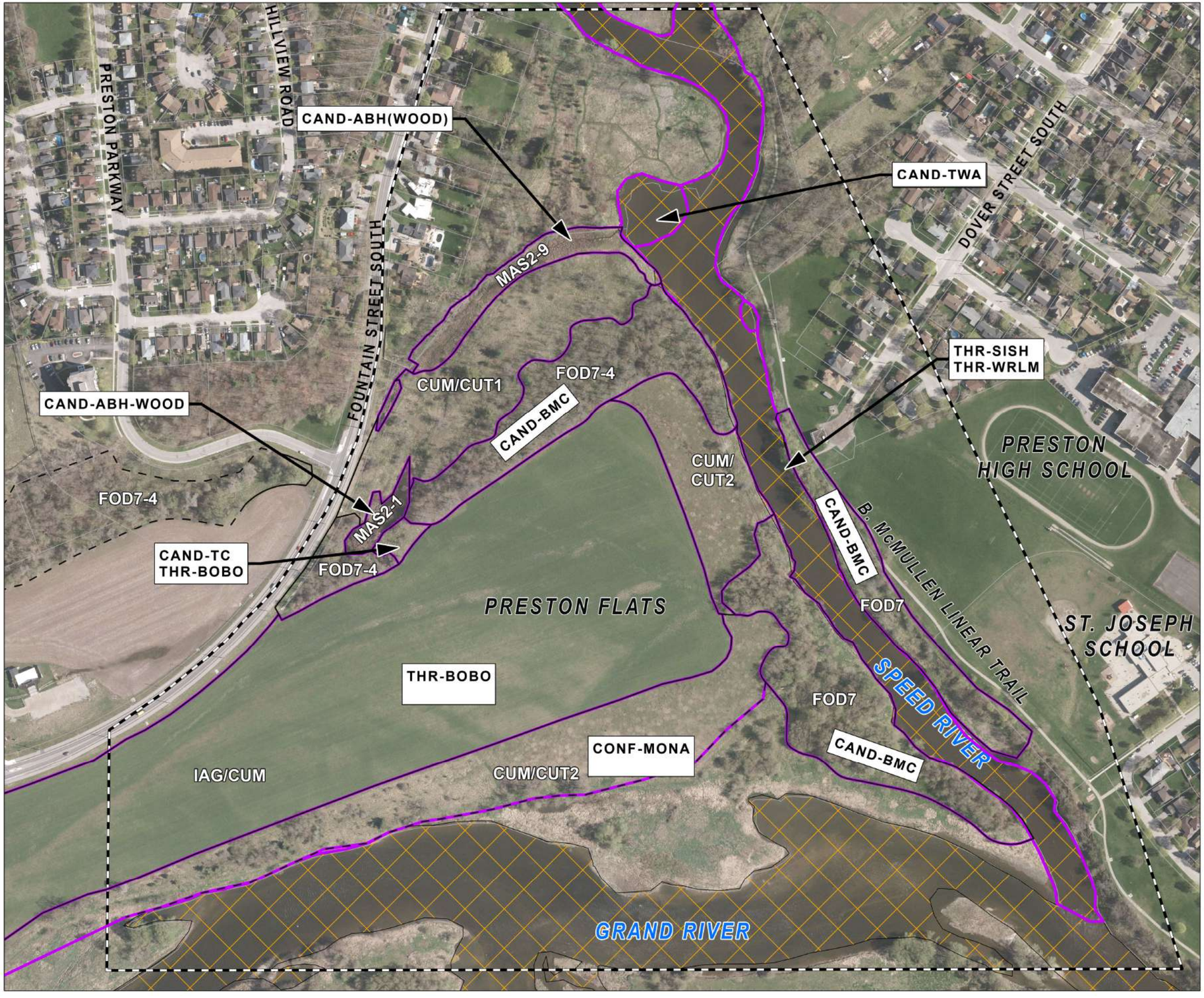
Suitable habitat is present within the Study area for the Wavy-rayed Lampmussel. The shells and critical habitat for this species, including the host species (Smallmouth bass) were observed on site during field investigations. Regulated habitat for this species is shown on Figure 5-1.

5.1.9 American Chestnut

No American Chestnut were observed during vegetation surveys.

5.1.10 Blanding's Turtle

Although Blanding's Turtle were not observed during field surveys, there is suitable habitat present in the Speed River Wetland Complex and MAS2-1 wetland south of the PSW. These areas are identified as Candidate habitats on Figure 5-1.



ELC Boundary

ELC Boundary - Undefined

Significant/SAR Wildlife Habitat Boundary

Study Area

Waterfowl Winter Concentration Area

HABITAT FOR ENDANGERED AND THREATENED SPECIES:
THR-BOBO: THREATENED BOBOLINK HABITAT (CONFIRMED)
THR-SISH: THREATENED SILVER SHINER HABITAT (CONFIRMED)
THR-WRLM: THREATENED WAVY-RAYED LAMPMUSSEL HABITAT (CONFIRMED)
CAND-BMC: BAT MATERNITY COLONY

SIGNIFICANT WILDLIFE HABITAT:
CONF-MONA: CONFIRMED SPECIAL CONCERN AND RARE WILDLIFE SPECIES (MONARCH HABITAT)
CAND-TWA: CANDIDATE TURTLE WINTERING AREA
CAND-ABH (WOOD): CANDIDATE AMPHIBIAN BREEDING HABITAT (WOODLAND)
CAND-TC: CANDIDATE TERRESTRIAL CRAYFISH

Sources:

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Figure Title

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SIGNIFICANT AND SAR WILDLIFE HABITATS

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5.2 Significant Wildlife Habitat

According to the Natural Heritage Reference Manual (MNR, 2010) and Significant Wildlife Habitat Technical Guide (MNR, 2000), there are four types of Significant Wildlife Habitat ("SWH"), as follows:

- Habitats of Seasonal Concentrations of Animals;
- Rare Vegetation Communities / Specialized Habitats;
- Habitats of Species of Conservation Concern; and
- Animal Movement Corridors.

Significant Wildlife Habitat (SWH) is designated at the local planning level (i.e., municipality). Local designations occur because conditions and features vary widely between municipalities and what is important and unique in one area may be common and secure in another.

The City of Cambridge has not specifically identified criteria for defining SWH, however, any known wildlife habitat is generally provided within the Core Areas.

As such, this assessment will use broad habitat descriptions from the Significant Wildlife Habitat Technical Guide (SWHTG) and the SWHTG Ecoregion 6E Criterion Schedule (MNRF, 2015) as well as our professional judgement to determine whether any habitats may be potentially present.

Through field investigations it was determined that most habitats described in the Ecoregion 6E Criterion Schedule are not present. The results of the SWH screening are presented in Appendix F.

5.2.1 Confirmed Significant Wildlife Habitats

One SWH was confirmed to be present in the Study Area:

- Special Concern and Rare Wildlife Species.

The following Special Concern species and its habitat was confirmed present in the Study Area during 2019 field investigations:

- Within the CUM/CUT2 community along the Grand River:
  - Monarch.

The location of habitat for this species is shown on Figure 5-1.

Background reviews also identified the presence of a Winter Waterfowl Concentration Area in the Grand and Speed Rivers in the Study Area. This is not a type of habitat listed in the Ecoregion 6E Criterion Schedule; however, it is recognized that this area is an important site for waterfowl and does warrant consideration. This type of habitat

closely aligns with the habitat type “Waterfowl Stopover and Staging Areas (Aquatic)” which is listed in the Ecoregion criteria schedule. Although this type of habitat refers to migratory habitat rather than wintering habitat, we are considering them to be similar and present in the area. As reported by *rare* and documented by Burnside field ecologists, the highest concentrations of waterfowl use is in the protected bays and shallows of the Grand River just upstream of the confluence.

5.2.2 Candidate Significant Wildlife Habitats

There are additional types of habitat which were not confirmed present but which could also not be confirmed absent in the Study Area. These are identified as “Candidate Habitats” and include:

- Candidate Turtle Wintering Areas;
- Candidate Amphibian Breeding Habitat (Woodland); and
- Candidate Terrestrial Crayfish Habitat.

A number of Species of Conservation Concern may also inhabit the Study Area but were not confirmed present or absent. These include:

- Midland Painted Turtle, *Chrysemys picta marginata* and Snapping Turtle, *Chelydra serpentine.* Habitats for these species correspond with the Candidate Turtle Wintering Areas noted above and are assessed in conjunction with this habitat type.
- Western Chorus Frog, *Pseudacris triseriata.* Habitats for this species correspond with the Candidate Amphibian Breeding Habitat noted above and are assessed in conjunction with this habitat type.
  Bald Eagle, *Haliaeetus leucocephalus*. Bald Eagles are known to winter along the grand River through Cambridge. They have been recorded foraging and traveling through lands close to the Study Area. Key wintering roosts are not known to occur within the Study Area itself. As previously noted, Bald Eagles are a species of ecological and cultural importance to the Six Nations.

The following sections discuss the candidate habitats present in the Study Area.

5.2.2.1 Candidate Turtle Wintering Areas

This candidate habitat is confined to a bend in the river just north of the Study Area that offers a shallow, sheltered area with deep mud bottom. This is part of the PSW and may be used for overwintering by turtles.

5.2.2.2 Candidate Amphibian Breeding Habitat (Woodland)

This candidate habitat is in the two wetlands present in the Study Area that are >500 m^2 and found adjacent to a forested ecosite and the PSW beyond (see Figure 5-1).

5.2.2.3 Candidate Terrestrial Crayfish Habitat

A high-level search was made for evidence of terrestrial crayfish chimneys. None were observed; however, vegetation in the CUM/CUT2 field adjacent to the MAS2-1 wetland made it difficult to confirm the presence or absence of chimneys. As such, candidate habitat is identified in portions of the small meadow habitat (CUM/CUT2) directly adjacent to the wetland (see Figure 5-1).

6.0 Summary of Natural Features

The following Provincially Significant Natural Features are present or may be present:

- Speed River Provincially Significant Wetland and unevaluated wetland to the south, which provide:
  - Nesting habitat for migratory birds;
  - Candidate Turtle Wintering Area;
  - Candidate Habitat for Blanding's Turtle;
  - Candidate Terrestrial Crayfish Habitat; and
  - Candidate Amphibian Breeding Habitat (Woodland).
- Significant Valleyland and Speed River, which provide:
  - Fish Habitat;
  - Regulated habitat for Silver Shiner;
  - Regulated habitat for Wavy-rayed Lampmussel; and
  - A Winter Waterfowl Concentration Area (similar to the Waterfowl Stopover and Staging list in the Ecoregion 6ECriteria Schedule).
- Naturalizing agricultural fields and meadows, which provide:
  - Nesting habitat for migratory birds;
  - Regulated habitat for Bobolink;
  - Habitat for Monarch; and
  - Candidate Terrestrial Crayfish Habitat (only in the meadow adjacent to the wetland).
- Upland forest areas, which provide:
  - Nesting habitat for migratory birds;
  - Candidate habitat for SAR bats.

Additionally, the regionally designated Environmentally Significant Landscape (ESL) #2 (Blair-Bechtel-Cruickston) encompasses the entire Study Area.

Three trail and bridge Alternatives were identified and are described in the Project File Report. An evaluation of the alternatives including potential impacts to natural features is also presented in the Project File Report.

7.0 Conclusions

Burnside has been retained by the City of Cambridge to prepare a Schedule B MCEA in support of the development of a trail and pedestrian bridge spanning the Speed River through lands owned and managed by the *rare* Charitable Research Reserve. The proposed construction will create a connection between the B. McMullen Linear Trail to the east and the existing multi-use trail on Fountain Street to the west. This connection will include a crossing over the Speed River, upstream of its confluence with the Grand River.

The Study Area includes a variety of natural features including the Speed River Provincially Significant Wetland Complex, a Significant Valleyland and a variety of terrestrial and aquatic habitats for Species at Risk and other wildlife. The Study Area also lies within the Environmentally Significant Landscape (Blair-Bechtel-Cruickston).

Three alternatives bridge locations are under consideration as well as an option to “Do Nothing” or not construct the bridge. The naturals identified in this NHR have been considered in the evaluation of Alternatives presented int eh Project File Report.

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Appendix A

Terms of Reference

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Technical Memorandum

Date: April 22, 2019 **Project No.:** 300043765.0000

Project Name: Blair-Preston Trail and Bridge Schedule B Municipal Class Environmental Assessment

Re: Natural Heritage Report Terms of Reference

Submitted To: Shane Taylor, City of Cambridge

Submitted By: Peter DeCarvalho, Ecologist

Reviewed By: Tricia Radburn, MCIP, RPP, Project Manager

1.0 Introduction

R.J. Burnside & Associates Limited (Burnside) has been retained by the City of Cambridge to prepare a Schedule B Municipal Class Environmental Assessment (MCEA) in support of the development of a trail and pedestrian bridge spanning the Speed River through lands owned and managed by *rare* Charitable Research Reserve (*rare*). The proposed construction will create a connection between the B. McMullen Linear Trail (Linear Trail) to the east and the existing multi-use trail on Fountain Street to the west. This connection will include a crossing over the Speed River, upstream of its confluence with the Grand River.

The MCEA will consider several routing alternatives for the trail and bridge through the study area, as shown on Figure 1. An option to do nothing and not construct the trail and bridge will also be considered.

As part of the MCEA, a natural heritage report (NHR) will be prepared to assess existing ecology and anticipate potential impacts from proposed works.

This Terms of Reference (TOR) has been prepared to confirm the scope of work of the NHR. This document includes:

- A summary of applicable natural heritage policies affecting the Site;
- A description of existing natural features identified through a search of existing information sources;

- A suggested scope for the ecological investigation, based on the findings of the background review;
- A description of proposed field investigations to be completed over 2019; and
- A description of how the assessment will be carried out.

The purpose of this TOR is to solicit comments and suggestions on our proposed methodology to ensure that the final MCEA will meet all provincial, municipal and Conservation Authority requirements.

It is noted that the MCEA represents a high-level planning process. The purpose of this study will be to identify a preferred route. Detailed design and permitting will be carried out upon completion of the MCEA. As such, the studies proposed herein are intended to provide sufficient information with which to make a routing decision. The need for additional fieldwork, studies and permitting may be identified through the environmental assessment process.

1.1 Project Description and Justification

The City of Cambridge Trails Masterplan (2010) identified the need for a connection between the villages of Preston and Blair. The Masterplan recommended a path and bridge between the B. McMullin Linear Trail in Preston and the multi-use trail along Fountain Street on the Blair side of the Speed River. The study area includes lands from the Linear Park near Preston High School to the west, the shoreline on the Speed River where the pedestrian bridge is proposed, and *rare*- owned lands east of Fountain Street. These lands include a mix of woodland, wetland, shrub, open meadow, active agricultural areas, and riparian shoreline of the Speed River.

The proposed connection involves lands that are near portions of the Speed River Provincially Significant Wetland (PSW) complex. The study area is located entirely within the Grand River Watershed and lands regulated by the Grand River Conservation Authority through O. Reg. 150/06. Waters associated with the confluence of the Speed and Grand Rivers have also been identified as important wintering and migratory stopover areas for certain waterfowl, raptors, and other wildlife.

2.0 Planning Context

2.1 Provincial Policy Statement

The PPS (MMAH, 2014) provides general policies on land use patterns, resources, and public health and safety that guide development across Ontario. This report will address Section 2.1 (Natural Heritage).

Eight types of natural heritage features are identified in Section 2.1 of the PPS. In summary, development and site alteration are not permitted within:

- *Significant wetlands in Ecoregions 5E, 6E and 7E; and*
- *Significant coastal wetlands.*

In addition, development and site alteration are not permitted within, or adjacent to, the following features unless it can be demonstrated that there will be no negative impacts to the feature or its ecological functions:

- *Significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E;*
- *Significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);*
- *Significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);*
- *Significant Wildlife Habitat (SWH);*
- *Significant Areas of Natural and Scientific Interest (ANSI); and*
- *Coastal wetlands in Ecoregions 5E, 6E and 7E.*

In addition, development and site alteration on, and adjacent to, fish habitat and the habitat of endangered and threatened species will only be permitted in accordance with provincial and federal regulatory requirements.

The presence or potential presence of some of these features has been identified on, and in the vicinity of, the subject lands.

2.2 Growth Plan for the Greater Golden Horseshoe

The Growth Plan (2017) provides a framework for growth in the Greater Golden Horseshoe (GGH) region. The Plan provides guidance on how and where to grow, how to make efficient use of infrastructure and how to build public transit-friendly communities. The Plan also includes policies on protecting natural and water resources, consistent with the policies under other provincial plans.

The Province has developed a Natural Heritage System for lands outside of Settlement Areas in the GGH. In the Natural Heritage System includes policies to protect Key Natural Heritage Features (KNHFs) and Key Hydrologic Features (KHFs).

KNHFs include:

- Habitat of endangered and threatened species;
- Fish habitat;
- Wetlands;
- Life Science Areas of Natural and Scientific Interest;

- Significant Valleylands;
- Significant Woodlands;
- Significant Wildlife Habitat;
- Sand Barrens, savannahs and tallgrass prairies; and
- Alvars.

KHFs include:

- Permanent and intermittent streams;
- Inland lakes and their littoral zones;
- Seepage areas and springs; and
- Wetlands.

Outside of Settlement Areas, development or site alteration is not permitted within any of these features or within a 30 m setback with the exception of *"small-scale structures for recreational uses, including boardwalks, footbridges, fences, docks and picnic facilities, if measures are taken to minimize the number of such structures and their negative impacts."* (Section 4.2.3.1.g)

2.3 City of Cambridge Official Plan

The City of Cambridge Official Plan (CCOP) Maps 1A and 1B identify lands west of the Speed River as Protected Countryside, and areas to the east as Built-up Area. Map 2 designates riparian lands along the Speed River as well as lands to the west as part of the municipal Natural Open Space System.

Section 2.10.2 of the CCOP stipulates that land use within protected countryside is regulated in accordance with the underlying policies applied to Prime Agricultural, Rural, or Landscape Level System designations of the CCOP. Section 3.0 c) states that Landscape Level Systems are managed under the City's Natural Heritage System, and Section 3.A.2 stipulates that these systems are identified and designated by the region. It is indicated that lands along the Speed River identified as Landscape Level Systems are considered to be Significant Valleys. Section 3.A.3 #14 indicates that the City of Cambridge will coordinate with the Region of Waterloo and the GRCA to preserve and enhance he cultural heritage resources of recreational and scenic value that Significant Valleys represent.

2.4 Region of Waterloo Official Plan

The Region of Waterloo Official Plan (RWOP) indicates that lands the east side of the Speed River are within the Settlement Area limits; these lands are designated as Built-up Areas. The lands West of the Speed River are within the Regional Greenlands Network and are Rural Areas, Significant Valleylands and part of Environmentally Significant Landscape (ESL) #2 (Blair-Bechtel-Cruickston). Riparian lands on either side of the Speed River and the Speed River Provincially Significant Wetland (PSW) Complex are Core Environmental Features.

According to Section 7.B.9 development applications within Environmentally Sensitive Landscapes that a) establish or expand *recreational or tourism uses or rural institutional uses* may be considered for approval if it can be demonstrated that no adverse environmental impacts will result to the features or function, existing corridors or linkages, watercourses or groundwater within or continuous with the ESL as a result. Additionally, it should be assured that disturbance of existing natural vegetation will be minimized, and that developments will be buffered from existing natural features by an appropriate natural vegetation buffer.

Significant Valleys are addressed in Section 7.B.20 and 7.B.21. The Region and Municipality, in collaboration with the GRCA, endeavor to maintain the character of these features by conservation and enhancement of cultural heritage resources of recreational and scenic value. It is anticipated that the path and pedestrian bridge will enhance the recreational and scenic value of this area.

2.5 Conservation Authority Regulations

The Grand River Conservation Authority regulates development in or around hazard lands (i.e., floodplains, slopes, wetlands) through *Ontario Regulation 150/06*.

The Authority *"may grant permission for development in [regulated areas] if, in its opinion, the control of flooding, …pollution or the conservation of land will not be affected by the proposed development."* (Section 3(1)).

The entire study area is within a floodplain and is regulated by the GRCA. A portion of steep slope/erosion hazard lands is located on the east bank of the Speed River adjacent to St. Joseph Catholic Elementary School.

2.6 Provincial Endangered Species Act, 2007

The *Endangered Species Act* 2007 (ESA) provides protection for species at risk (SAR) and their habitat. The ESA, 2007 helps protect species (Section 9) and their habitat (Section 10). Section 9(1)(a) of the ESA states,

> *"No person shall kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as extirpated, endangered or threatened."*

Section 10(1)(a) of the ESA states,

> *"No person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario List as an endangered or threated species."*

There is potential for SAR to be present within the study area.

2.7 Migratory Birds Convention Act, 1994

The *Migratory Birds Convention Act, 1994* (MBCA) and the *Migratory Bird Regulations* (MBR) are federal legislative requirements that are binding on members of the public and all levels of government, including federal and provincial governments. The legislation protects certain species[1], controls the harvest of others, and prohibits commercial sale of all species.

One key responsibility under the MBCA is described in Section 6 of the associated MBR:

> *"Subject to subsection 5(9), no person shall*
>
> - *Disturb, destroy or take a nest, egg, nest shelter, eider duck shelter or duck box of a migratory bird, or*
> - *Have in his possession a live migratory bird, or a carcass, skin, nest, or egg of a migratory bird except under authority of a permit therefor."*

It is anticipated that migratory birds are present on the Site.

2.8 Federal Fisheries Act

The Federal Fisheries Act is administered by Fisheries and Oceans Canada (DFO) and provides protection for fish habitat across Canada. Section 35 of the Act prohibits: *"the carrying out of a work, undertaking or activity that results in serious harm to fish that are part of or support a commercial recreational or Aboriginal fishery."*

> *"Serious harm to fish" is defined in the Act as "the death of fish or the permanent alteration to, or destruction of, fish habitat," with fish habitat defined as "spawning grounds and any other areas, including nursery, rearing, food supply and migration areas, on which fish depend directly or indirectly in order to carry out their life processes."*

Fish habitat has been identified within the study area in association with the Speed and Grand Rivers.

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[1] Bird species not regulated under the Act include: Rock Dove, American Crow, Brown-headed Cowbird, Common Grackle, House Sparrow, Red-winged Blackbird, and European Starling. In addition, raptors are not regulated under the MBCA. However, they are protected under provincial legislation which restricts and regulates the taking or possession of eggs and nests. Furthermore, if the species identified is protected under Ontario's *Endangered Species Act, 2007* additional restrictions may apply.

3.0 Records Review

3.1 Review of Secondary Source Information

A comprehensive desktop assessment was completed to compile and review existing natural heritage information available for the study area. All areas within 120 m of the site were reviewed as part of the high-level assessment in order to identify significant natural heritage features located within or directly adjacent to the subject lands that may be impacted by the proposed works. Information acquired through this screening process was used to help guide field efforts and evaluate the significance of on-site observations. Information was reviewed from the following sources:

- Aerial photographic imaging and 1:10,000 Ontario Base Mapping (OBM);
- Ontario Hydrology Network (OHN) mapping;
- MNRF Natural Heritage Information Centre (NHIC) database for significant species and designated natural features within 120 m of the subject lands;
- Ontario Breeding Bird Atlas (OBBA) database for avian species records within the area;
- Ontario Reptile and Amphibian Atlas (ORAA) database for herpetofaunal species records within the area;
- MNRF Land Information Ontario (LIO) database;
- GRCA regulated features, mapping and information;
- Ministry of Agriculture, Food, and Rural Affairs Mapping (2017);
- Ministry of Natural Resources and Forestry (MNRF) Aquatic Resource Area mapping (2015);
- Fisheries and Oceans Canada (DFO) Aquatic Species at Risk mapping (2018); and
- *rare* Environmental Management Plan (*rare, 2014).*

A number of detailed ecological field studies will be undertaken to fill in any significant gaps in the existing background knowledge.

4.0 Records Review Results

Through the background data review, multiple natural heritage records were identified on, and in the vicinity of, the study area. A summary of findings is presented below.

4.1 Avifauna

A review of the Ontario Breeding Bird Atlas (OBBA) identified records of 116 bird species in the vicinity of the site. The relative rarity[2] of each species is identified in Table 4-1.

[2] Rarity based on NatureServe rankings for provincial/state rarity (SRank).

Table 4-1: Provincial S-Ranks of Bird Species Recorded in the Vicinity[3] of the Site

Rarity Ranking (SRank)*	Number of Species
S5 (S5, S5B, S5N)	56
S4 (S4, S4B, S4N)	56
S3S4 (S3S4B)	1
SNA	4

*S1- Critically Imperiled
S2- Imperiled
S3- Vulnerable
S4- Apparently Secure
S5- Secure
SNA- Not applicable, not suitable for conservation activities

Most of the bird species in the area are common, secure and not at risk. Species ranked S3 and lower are considered to be vulnerable. Based on a review of OBBA records, one species ranked S3 or lower (Purple Martin – *Progne subis*; S3S4B) was identified as being present within the vicinity of the study area.

Five species are listed under the ESA as Special Concern (Canada Warbler – *Cardellina canadensis*; Common Nighthawk – *Chordeiles minor*; Eastern Wood-pewee – *Contopus virens*; Golden-winged Warbler – *Vermivora chrysoptera*; Wood Thrush - *Hylocichla mustelina;*), Five species are listed as Threatened (Barn Swallow – *Hirundo rustica*; Bank Swallow – *Riparia riparia*; Bobolink – *Dolichonyx oryzivorus*; Chimney Swift – *Chaetura pelagica*; Eastern Meadowlark – *Sturnella magna*). Threatened and Endangered species, as well as habitats that support them, are protected in Ontario.

OBBA and NHIC records are provided in Appendix A.

4.1.1 Mammals

No background records of mammalian species within the Site were identified during initial background screening. Mammals with the potential to be present are those typical to rural and agricultural environments, including white-tailed deer, coyote, red fox, white-tailed rabbit, groundhog, various rodent species.

There are four bat species in Ontario which are listed as Endangered due to an emergent pathogenic fungus affecting bat populations across North America. The distribution of these species (Eastern Small-footed Myotis – *Myotis leibii*; Little Brown Myotis – *Myotis lucifugus*; Northern Myotis – *Myotis septentrionalis*; Tri-colored Bat – *Perimyotis subflavus*) is generally poorly understood. Based on aerial photo interpretation, it appears as though the wooded area adjacent to the Site may provide suitable roosting habitat for these species.

[3] Based on OBBA 10x10 km square covering the site.

4.1.2 Reptiles and Amphibians

Records of reptiles and amphibians were obtained from the NHIC and ORAA databases for SAR listed under the ESA. Two Special Concern species (Eastern Ribbonsnake – *Thamnophis sauritus*; Snapping Turtle – *Chelydra serpentina*) were identified as potentially present within the study area vicinity. One Threatened species (Blanding's Turtle – *Emydoidea blandingii*) and two Endangered species (Jefferson Salamander – *Ambystoma jeffersonianum*; Queensnake – *Regina septemvittata*) were also noted as having occurrence records within the area. Habitat for these species, if present within the study area, would be limited to the Speed River PSW Complex and woodlot to the West of Speed River or the riparian corridor of the river itself (in the case of Queensnake).

Reptiles and amphibians recorded within the vicinity[4] of the study area from the above-noted sources are provided in Appendix A.

4.1.3 Fish and Fish Habitat

The study area contains a portion of the Speed River approximately 500 m north of its confluence with the Grand River. The Speed River is a major Commercial, Recreational, or Aboriginal (CRA) watercourse within the Grand River watershed and contains a high diversity of fish species. A small tributary to the Speed River is also mapped extending from the PSW on the western side of the river that is noted by DFO as supporting fish. The *Fisheries Act* prohibits works that result in serious harm to fish or fishy habitat.

NHIC and DFO records indicate potential presence of two species listed as Threatened under the ESA (Silver Shiner – *Notropis photogenis*; Wavy-rayed Lampmussel – *Lampsilis fasciola*).

No in-water works are anticipated within the Speed River or its associated tributary. Development of a pedestrian bridge and associated trails would be considered works near water, which will require a self-assessment to determine whether harm to fish or fish habitat can be avoided or mitigated.

4.1.4 Vegetation

The NHIC background review identified a record of American Chestnut (*Castanea dentata*) from 1988 within the study area vicinity. All treed areas will be screened for the presence of American Chestnut and suitable habitat for the species during vegetation community field studies.

[4] Based on ORAA 10x10 km square covering the site.

4.1.5 *Rare* Charitable Research Reserve Data

Rare has conducted numerous studies and ecological inventories of the research reserve lands. It is anticipated that much of this information can be obtained and incorporated into the assessment. In 2014 *rare* produced an updated Environmental Management Plan (EMP) for areas including the Blair-Preston study area. This report indicates that the study area includes lands identified by *rare* as providing habitat for shorebird and songbird migratory stopover, Bald Eagle perching and roosting sites for wintering and migrating waterfowl.

More recent breeding bird data as well as amphibian and benthic data from the pond on site is also available but has not yet been reviewed. We anticipate that this information can be obtained and will be used in the study.

4.2 Records Review Summary

Based on the records review, several significant natural features are, or may be present, in the study area. The results of the background data review are summarized in Table 4-2.

Table 4-2: Natural Heritage Features Recorded Previously in Vicinity of the study area

Feature	Existing Records	Data Source
Provincially Significant Features		
Provincially Significant Wetland	A section of the Speed River PSW Complex is present on the northern edge of the property along the western side of the Speed River.	NHIC
Significant Woodlands	May be present. The City and Region include criteria for identifying Significant Woodlands, including a minimum size criterion of 4 ha. It appears that the woodlands on site are smaller. Significance will be determined through the NHR.	City of Cambridge and Region of Waterloo Official Plans
Significant Areas of Natural and Scientific Interest	ANSIs are not present in the study area.	NHIC
Significant Valleyland	Both the City and Regional Official Plans identify the study area as being within a Significant Valleyland.	City of Cambridge and Region of Waterloo Official Plans
Significant Wildlife Habitat	According to the 2014 *rare* EMP, the study area may support several significant wildlife habitats including: • Bald Eagle perching and feeding sites; • Roosting for wintering and migrating waterfowl; and • Shorebird migratory stopover sites; songbird migratory stopover sites.	*Rare* Environment Management Plan, 2014

Feature	Existing Records	Data Source
Fish Habitat	Fish habitat is present within the Speed River and the unnamed tributary extending from the Speed River PSW complex on the western side of the Speed River.	MNRF ARA Mapping
Species of Conservation Concern	Multiple Species of Conservation Concern were identified as potentially present during the initial background screening: • Avian – Canada Warbler; – Common Nighthawk; – Eastern Wood-pewee; – Golden-winged Warbler; – Purple Martin; – Wood Thrush. • Reptiles and Amphibians – Snapping Turtle.	DFO SAR Mapping, NHIC, OBBA, ORAA
Species at Risk	Multiple Species at Risk were identified as potentially present during the initial background screening: • Avian – Barn Swallow – Bank Swallow – Bobolink – Chimney Swift – Eastern Meadowlark • Mammalian – Eastern Small-footed Myotis – Little Brown Myotis – Northern Myotis – Tri-colored Bat • Reptiles and Amphibians – Blanding's Turtle – Jefferson Salamander – Queensnake • Fish – Silver Shiner – Wavy-rayed Lampmussel • Vegetation – American Chestnut	DFO SAR Mapping, NHIC, OBBA, ORAA

Feature	Existing Records	Data Source
Locally and Regionally Significant Features		
Unevaluated Wetland	A small pond/unevaluated wetland is present within the woodland along the northern boundary of the farm field.	Air photos, *rare* EMP 2014
Environmentally Significant Landscape #2 (Blair-Bechtel-Cruickston	The study area is entirely within the ESL.	Region of Waterloo Official Plan

5.0 Proposed Field Investigations

Field investigations will be conducted according to the schedule listed in Table 5-1. The purpose of field investigations will be to verify whether the features identified in the background data review are present and, if so, to confirm their boundaries. The purpose will also be to identify any other natural features not previously documented.

Table 5-1: Proposed Field Study Methodology

Field Study	Methodology	Staff Involved	Proposed Survey Timing	Required Weather Conditions
Ecological Land Classification	Ecological Land Classification for Southern Ontario (Lee et al., 1998) of entire property.	Terrestrial Ecologist	Summer 2019	N/A
Wetland Boundary Delineation	Ontario Wetland Evaluation System (OWES) (MNRF, 2014)	OWES – Certified Terrestrial Ecologist	Summer 2019	N/A
Bat Maternity Habitat Survey	Meandering survey through all treed habitats to assess the potential for maternity roosting habitats within suitable mature snag trees.	Terrestrial Ecologist	November 2019- March 2020	N/A
Aquatic Habitat Characterization	General description and characterization of the unnamed tributary to the Speed River. No in-water works are proposed, so there is no anticipated need for fish, benthic, or mussel sampling.	Aquatic Ecologist	N/A	N/A
Spring Migratory Waterfowl and Shorebird Survey	One survey, at least 4 hours using wandering transects through the study area during daylight hours, recording all species seen and heard.	Avian Ecologist	Early April 2019	Clear, good visibility (No fog), minimal precipitation (Occasional light drizzle)
Spring Breeding Bird Survey	Two surveys at least 10 days apart using the method in the Ontario Breeding Bird Atlas Guide for Participants (BSC, March, 2001)	Avian Ecologist	May 15-July 10, 2019	Clear, good visibility (No fog), minimal precipitation (Occasional light drizzle)
Fall Migratory Waterfowl and Shorebird Survey	One survey, at least 4 hours using wandering transects through the study area during daylight hours, recording all species seen and heard.	Avian Ecologist	September-October 2019	Clear, good visibility (No fog), minimal precipitation (Occasional light drizzle)

Field Study	Methodology	Staff Involved	Proposed Survey Timing	Required Weather Conditions
Winter Raptor and Waterfowl Habitat Use Survey	One survey, at least 4 hours using wandering transects through the study area during daylight hours, recording all species seen and heard.	Avian Ecologist	November 2019-February 2020	Clear, good visibility (No fog), minimal precipitation (Occasional light drizzle)
Search for potential wildlife habitats	Meandering survey throughout property. Search for features which could provide habitat for wildlife or Species at Risk Habitat such as: Nests, reptile hibernacula, old barns, structures, uncapped chimneys, foundations, mature forest areas with cavities or other features suitable for bat roosting, turtle nesting or overwintering sites along the Speed River etc.	Terrestrial Ecologist	During all visits throughout the spring and summer and early fall	N/A
Incidental flora and fauna observations	Visual observations of animals, tracks or scat and compilation of a plant inventory during all site visits.	All staff on site.	All surveys	N/A

6.0 Scope of the Assessment

The NHR will generally be prepared in accordance with municipal and provincial land use planning policies and guidance documents, including:

- The PPS and relevant guides:
  - Section 2.1 (Natural Heritage) of the Provincial Policy Statement (PPS; MMAH, 2014); and
  - Natural Heritage Reference Manual for Natural Heritage Policies of the PPS, 2005 (MNR, 2010).
- Applicable policies from the City of Cambridge and Region of Waterloo Official Plans; and
- O. Reg. 150/06.

As such, the NHR will include:

- A summary of the policies of the City of Cambridge and Region of Waterloo Official Plans, and the Provincial Policy Statement (PPS);
- Identification of the significance of natural features at a Provincial, Regional and Local level, with reference to standard information sources from the Province and GRCA.

The information from the NHR will be incorporated into the evaluation of alternatives, along with other social, archaeological, technical and financial criteria. Once a preferred alternative is selected, the NHR will also include an assessment of potential impacts resulting from the preferred alternative, recommended mitigation measures and future studies and permitting requirements.

The type of impacts to be assessed will include:

- Any direct impacts associated with the footprint of the project;
- Consideration for appropriate buffers from the woodland, PSW, Speed River and associated riparian habitats; and
- Indirect effects associated with construction and increased human presence and activity in the area, including unauthorized dumping, woodlot/PSW access, among others.

6.1 Data Request

A data request has been submitted to MNRF and MECP biologists for input to additional Species at Risk, significant natural features, and any other information pertinent to ecology of the project area and surrounding lands. At this time, we are requesting any additional records or background information from the City, Region, and Conservation Authority that would assist in preparing the NHR.

7.0 Conclusions

This TOR has been prepared to confirm the scope of work which will be required to complete the NHR and demonstrate conformity with all applicable natural heritage policies. Through this TOR, we are soliciting comments and suggestions on our proposed methodology to ensure that the final NHR will meet all provincial, municipal and Conservation Authority municipal review requirements associated with the proposed development.

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R.J. Burnside & Associates Limited

Peter DeCarvalho
Terrestrial Ecologist

PD:sgd

Enclosure(s) Figures
Appendix A: Background Review Records

cc: John Brum, GRCA (enc.) (Via: Email)
Tony Zammit, GRCA (enc.) (Via: Email)
Kathy Padgett, City of Cambridge (enc.) (Via: Email)
Jane Gurney, Region of Waterloo (enc.) (Via: Email)

BURNSIDE

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Figures

Study Area

Existing Multi Use Trail

Proprosed Rare-Link Trail Alternatives 2,3,4

Proposed Rare-Link Pedestrian Bridge Alternatives 2,3,4

*Proposed Rare-Link Trail Alternative 1: Do Nothing

Sources:

1. Ministry of Natural Resources and Forestry, © Queen's Printer for Ontario.
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Region of Waterloo, GIS.

Disclaimer:

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This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.

Datum: North American 1983 CSRS	
Coord. System: NAD 1983 CSRS UTM Zone 17N	
Projection: Transverse Mercator	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: 0°	Scale Factor: 0.99960

N

Grid North

0 50 100 150 200

Metres

BURNSIDE

Client

CITY OF CAMBRIDGE

Figure Title

BLAIR PRESTON TRAIL EA

PROPOSED ALTERNATIVES

Drawn	Checked	Date	Figure No.
HN	AB	2019/04/03	1
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BURNSIDE

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Appendix A

Background Review Records

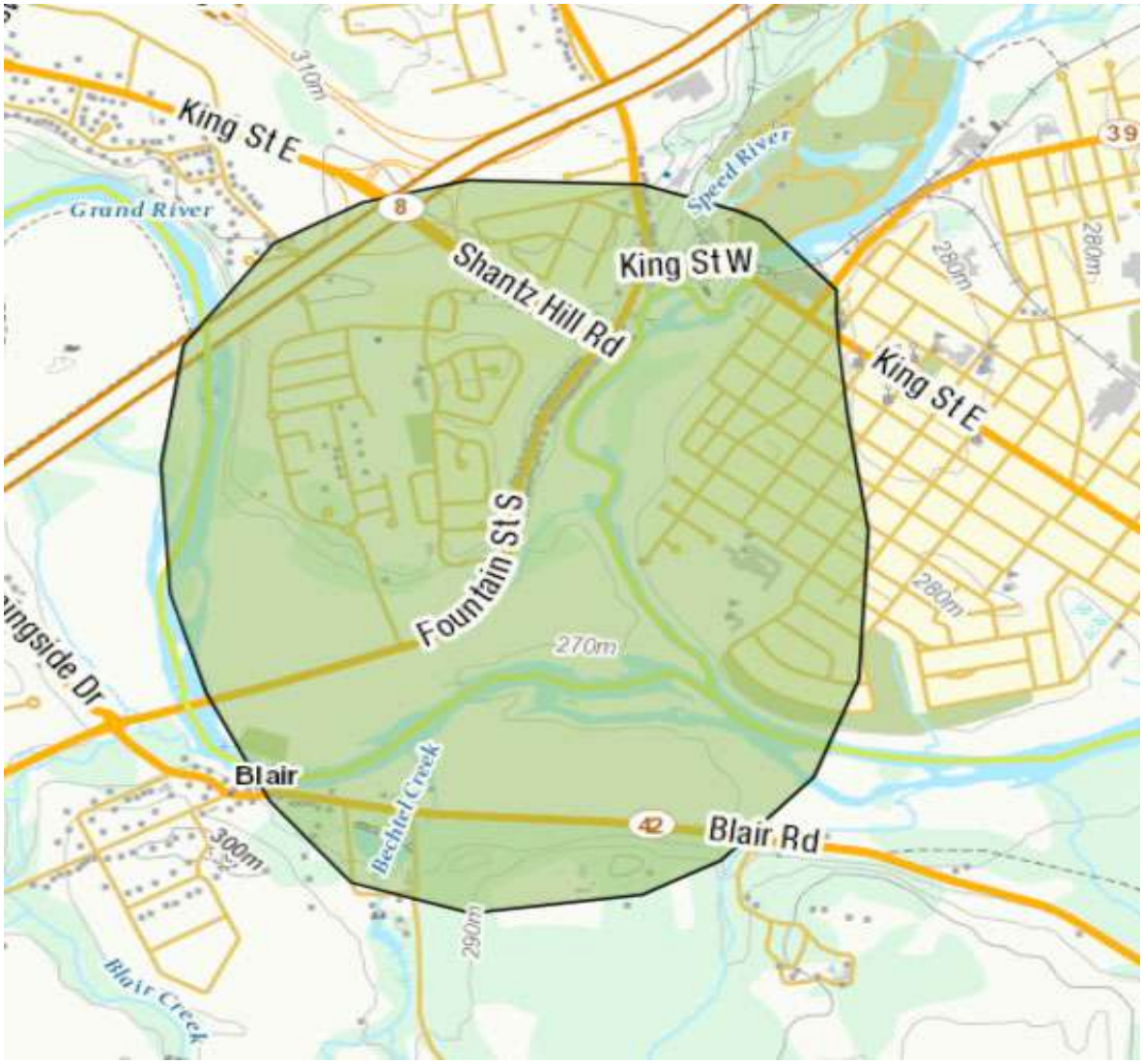
Species list for square 17NJ50 (number of entries returned: 116)

Region	Square	Species
7	17NJ50	Canada Goose
7	17NJ50	Trumpeter Swan
7	17NJ50	Wood Duck
7	17NJ50	Mallard
7	17NJ50	Blue-winged Teal
7	17NJ50	Green-winged Teal
7	17NJ50	Hooded Merganser
7	17NJ50	Common Merganser
7	17NJ50	Ruffed Grouse
7	17NJ50	Wild Turkey
7	17NJ50	Pied-billed Grebe
7	17NJ50	Great Blue Heron
7	17NJ50	Green Heron
7	17NJ50	Turkey Vulture
7	17NJ50	Osprey
7	17NJ50	Sharp-shinned Hawk
7	17NJ50	Cooper's Hawk
7	17NJ50	Red-tailed Hawk
7	17NJ50	American Kestrel
7	17NJ50	Virginia Rail
7	17NJ50	Sora
7	17NJ50	American Coot
7	17NJ50	Sandhill Crane
7	17NJ50	Killdeer
7	17NJ50	Rock Pigeon
7	17NJ50	Spotted Sandpiper
7	17NJ50	American Woodcock
7	17NJ50	Mourning Dove
7	17NJ50	Yellow-billed Cuckoo
7	17NJ50	Black/Yellow-billed Cuckoo
7	17NJ50	Black-billed Cuckoo
7	17NJ50	Eastern Screech-Owl
7	17NJ50	Great Horned Owl
7	17NJ50	Northern Saw-whet Owl
7	17NJ50	Common Nighthawk
7	17NJ50	Chimney Swift
7	17NJ50	Ruby-throated Hummingbird
7	17NJ50	Belted Kingfisher
7	17NJ50	Red-bellied Woodpecker
7	17NJ50	Downy Woodpecker
7	17NJ50	Hairy Woodpecker
7	17NJ50	Northern Flicker
7	17NJ50	Pileated Woodpecker

Region	Square	Species
7	17NJ50	Eastern Wood-Pewee
7	17NJ50	Alder Flycatcher
7	17NJ50	Willow Flycatcher
7	17NJ50	Least Flycatcher
7	17NJ50	Eastern Phoebe
7	17NJ50	Great Crested Flycatcher
7	17NJ50	Eastern Kingbird
7	17NJ50	Warbling Vireo
7	17NJ50	Red-eyed Vireo
7	17NJ50	Blue Jay
7	17NJ50	American Crow
7	17NJ50	Horned Lark
7	17NJ50	Purple Martin
7	17NJ50	Tree Swallow
7	17NJ50	Northern Rough-winged Swallow
7	17NJ50	Bank Swallow
7	17NJ50	Cliff Swallow
7	17NJ50	Barn Swallow
7	17NJ50	Black-capped Chickadee
7	17NJ50	Red-breasted Nuthatch
7	17NJ50	White-breasted Nuthatch
7	17NJ50	Brown Creeper
7	17NJ50	Carolina Wren
7	17NJ50	House Wren
7	17NJ50	Winter Wren
7	17NJ50	Marsh Wren
7	17NJ50	Golden-crowned Kinglet
7	17NJ50	Eastern Bluebird
7	17NJ50	Veery
7	17NJ50	Wood Thrush
7	17NJ50	American Robin
7	17NJ50	Gray Catbird
7	17NJ50	Brown Thrasher
7	17NJ50	European Starling
7	17NJ50	Cedar Waxwing
7	17NJ50	Blue-winged Warbler
7	17NJ50	Golden-winged Warbler
7	17NJ50	Yellow Warbler
7	17NJ50	Chestnut-sided Warbler
7	17NJ50	Magnolia Warbler
7	17NJ50	Yellow-rumped Warbler
7	17NJ50	Black-throated Green Warbler
7	17NJ50	Pine Warbler
7	17NJ50	Black-and-white Warbler
7	17NJ50	American Redstart

Region	Square	Species
7	17NJ50	Ovenbird
7	17NJ50	Northern Waterthrush
7	17NJ50	Mourning Warbler
7	17NJ50	Common Yellowthroat
7	17NJ50	Canada Warbler
7	17NJ50	Eastern Towhee
7	17NJ50	Chipping Sparrow
7	17NJ50	Clay-colored Sparrow
7	17NJ50	Field Sparrow
7	17NJ50	Vesper Sparrow
7	17NJ50	Savannah Sparrow
7	17NJ50	Song Sparrow
7	17NJ50	Swamp Sparrow
7	17NJ50	White-throated Sparrow
7	17NJ50	Scarlet Tanager
7	17NJ50	Northern Cardinal
7	17NJ50	Rose-breasted Grosbeak
7	17NJ50	Indigo Bunting
7	17NJ50	Bobolink
7	17NJ50	Red-winged Blackbird
7	17NJ50	Eastern Meadowlark
7	17NJ50	Common Grackle
7	17NJ50	Brown-headed Cowbird
7	17NJ50	Orchard Oriole
7	17NJ50	Baltimore Oriole
7	17NJ50	House Finch
7	17NJ50	American Goldfinch
7	17NJ50	House Sparrow

Download results



Critical habitat for these species is found within the outlined area:

No critical
habitat

Species at risk found (or potentially found) within the outlined area:

Wavy-rayed Lampmussel - Special Concern

17NJ5004

Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	Last Obs Date	EO ID
NATURAL AREA	Speed River Wetland Complex						8882
SPECIES	Silver Shiner	Notropis photogenis	S2S3	THR	THR	5/13/1981	15517
NATURAL AREA	Grand River						18525
SPECIES	Wavy-rayed Lampmussel	Lampsilis fasciola	S1	THR	SC	4/24/2016	115780
SPECIES	American Chestnut	Castanea dentata	S1S2	END	END	1988-00-00	115958

17NJ5104

Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	Last Obs Date	EO ID
NATURAL AREA	Speed River Wetland Complex						8882
SPECIES	Silver Shiner	Notropis photogenis	S2S3	THR	THR	5/13/1981	15517
NATURAL AREA	Grand River						18525
SPECIES	Wavy-rayed Lampmussel	Lampsilis fasciola	S1	THR	SC	4/24/2016	115780
SPECIES	American Chestnut	Castanea dentata	S1S2	END	END	1988-00-00	115958

17NJ5003

lement Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	Last Obs Date	EO ID
NATURAL AREA	Orrs Lake Bechtel Creek Wetland						8888
NATURAL AREA	Grand River						18525
SPECIES	Wavy-rayed Lampmussel	Lampsilis fasciola	S1	THR	SC	4/24/2016	115780
SPECIES	American Chestnut	Castanea dentata	S1S2	END	END	1988-00-00	115958

17NJ5103

Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	Last Obs Date	EO ID
SPECIES	Silver Shiner	Notropis photogenis	S2S3	THR	THR	5/13/1981	15517
NATURAL AREA	Grand River						18525
NATURAL AREA	Barries Lake Bauman Creek Wetland Complex						18546
RESTRICTED SPECIES	RESTRICTED SPECIES	RESTRICTED SPECIES				9/29/1972	93798
SPECIES	Barn Swallow	Hirundo rustica	S4B	THR	THR	5/25/2016	106272
SPECIES	Wavy-rayed Lampmussel	Lampsilis fasciola	S1	THR	SC	4/24/2016	115780
SPECIES	American Chestnut	Castanea dentata	S1S2	END	END	1988-00-00	115958
WILDLIFE CONCENTRATION AREA	Mixed Wader Nesting Colony					1986-00-00	977099
WILDLIFE CONCENTRATION AREA	Mixed Wader Nesting Colony					11/11/1991	977100

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix B

Records Review

Species list for square 17NJ50 (number of entries returned: 116)

Region	Square	Species
7	17NJ50	Canada Goose
7	17NJ50	Trumpeter Swan
7	17NJ50	Wood Duck
7	17NJ50	Mallard
7	17NJ50	Blue-winged Teal
7	17NJ50	Green-winged Teal
7	17NJ50	Hooded Merganser
7	17NJ50	Common Merganser
7	17NJ50	Ruffed Grouse
7	17NJ50	Wild Turkey
7	17NJ50	Pied-billed Grebe
7	17NJ50	Great Blue Heron
7	17NJ50	Green Heron
7	17NJ50	Turkey Vulture
7	17NJ50	Osprey
7	17NJ50	Sharp-shinned Hawk
7	17NJ50	Cooper's Hawk
7	17NJ50	Red-tailed Hawk
7	17NJ50	American Kestrel
7	17NJ50	Virginia Rail
7	17NJ50	Sora
7	17NJ50	American Coot
7	17NJ50	Sandhill Crane
7	17NJ50	Killdeer
7	17NJ50	Rock Pigeon
7	17NJ50	Spotted Sandpiper
7	17NJ50	American Woodcock
7	17NJ50	Mourning Dove
7	17NJ50	Yellow-billed Cuckoo
7	17NJ50	Black/Yellow-billed Cuckoo
7	17NJ50	Black-billed Cuckoo
7	17NJ50	Eastern Screech-Owl

Species list for square 17NJ50 (number of entries returned: 116)

Region	Square	Species
7	17NJ50	Great Horned Owl
7	17NJ50	Northern Saw-whet Owl
7	17NJ50	Common Nighthawk
7	17NJ50	Chimney Swift
7	17NJ50	Ruby-throated Hummingbird
7	17NJ50	Belted Kingfisher
7	17NJ50	Red-bellied Woodpecker
7	17NJ50	Downy Woodpecker
7	17NJ50	Hairy Woodpecker
7	17NJ50	Northern Flicker
7	17NJ50	Pileated Woodpecker
7	17NJ50	Eastern Wood-Pewee
7	17NJ50	Alder Flycatcher
7	17NJ50	Willow Flycatcher
7	17NJ50	Least Flycatcher
7	17NJ50	Eastern Phoebe
7	17NJ50	Great Crested Flycatcher
7	17NJ50	Eastern Kingbird
7	17NJ50	Warbling Vireo
7	17NJ50	Red-eyed Vireo
7	17NJ50	Blue Jay
7	17NJ50	American Crow
7	17NJ50	Horned Lark
7	17NJ50	Purple Martin
7	17NJ50	Tree Swallow
7	17NJ50	Northern Rough-winged Swallow
7	17NJ50	Bank Swallow
7	17NJ50	Cliff Swallow
7	17NJ50	Barn Swallow

Species list for square 17NJ50 (number of entries returned: 116)

Region	Square	Species
7	17NJ50	Black-capped Chickadee
7	17NJ50	Red-breasted Nuthatch
7	17NJ50	White-breasted Nuthatch
7	17NJ50	Brown Creeper
7	17NJ50	Carolina Wren
7	17NJ50	House Wren
7	17NJ50	Winter Wren
7	17NJ50	Marsh Wren
7	17NJ50	Golden-crowned Kinglet
7	17NJ50	Eastern Bluebird
7	17NJ50	Veery
7	17NJ50	Wood Thrush
7	17NJ50	American Robin
7	17NJ50	Gray Catbird
7	17NJ50	Brown Thrasher
7	17NJ50	European Starling
7	17NJ50	Cedar Waxwing
7	17NJ50	Blue-winged Warbler
7	17NJ50	Golden-winged Warbler
7	17NJ50	Yellow Warbler
7	17NJ50	Chestnut-sided Warbler
7	17NJ50	Magnolia Warbler
7	17NJ50	Yellow-rumped Warbler
7	17NJ50	Black-throated Green Warbler
7	17NJ50	Pine Warbler
7	17NJ50	Black-and-white Warbler
7	17NJ50	American Redstart
7	17NJ50	Ovenbird
7	17NJ50	Northern Waterthrush
7	17NJ50	Mourning Warbler

Species list for square 17NJ50 (number of entries returned: 116)

Region	Square	Species
7	17NJ50	Common Yellowthroat
7	17NJ50	Canada Warbler
7	17NJ50	Eastern Towhee
7	17NJ50	Chipping Sparrow
7	17NJ50	Clay-colored Sparrow
7	17NJ50	Field Sparrow
7	17NJ50	Vesper Sparrow
7	17NJ50	Savannah Sparrow
7	17NJ50	Song Sparrow
7	17NJ50	Swamp Sparrow
7	17NJ50	White-throated Sparrow
7	17NJ50	Scarlet Tanager
7	17NJ50	Northern Cardinal
7	17NJ50	Rose-breasted Grosbeak
7	17NJ50	Indigo Bunting
7	17NJ50	Bobolink
7	17NJ50	Red-winged Blackbird
7	17NJ50	Eastern Meadowlark
7	17NJ50	Common Grackle
7	17NJ50	Brown-headed Cowbird
7	17NJ50	Orchard Oriole
7	17NJ50	Baltimore Oriole
7	17NJ50	House Finch
7	17NJ50	American Goldfinch
7	17NJ50	House Sparrow

Appendix B: eBird Records Summary Table

Analysis Conducted by: Nadine Price

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Waterfowl Species	Breeding	Time of Year Observed - Spring	Time of Year Observed - Summer	Time of Year Observed - Winter	Time of Year Observed - Fall	Incidental	Last Observation Date	Comments
American Bittern	*Botaurus lentiginosus*	S4B					X				August 26, 2015	
American Black Duck	*Anas rubripes*	S4		X		X		X			May 2, 2019	
American Coot	*Fulica americana*	S4B						X			December 20, 2016	
American Crow	*Corvus brachyrhynchos*	S5B			X	X	X	X			July 4, 2019	
American Goldfinch	*Spinus tristis*	S5B			X		X				July 8, 2019	
American Kestrel	*Falco sparverius*	S4				X		X			April 3, 2019	
American Pipit	*Anthus rubescens*	S4				X		X			May 6, 2018	
American Redstart	*Setophaga ruticilla*	S5B			X	X					June 21, 2019	
American Robin	*Turdus migratorius*	S5B			X	X	X				July 8, 2019	
American Tree Sparrow	*Spizella arborea*	S4B				X		X			April 19, 2019	
American Wigeon	*Anas americana*	S4		X		X			X		April 2, 2019	
Bald Eagle	*Haliaeetus leucocephalus*	S2N, S4B	SC		X		X	X	X		June 28, 2019	
Baltimore Oriole	*Icterus galbula*	S4B			X	X	X				July 7, 2019	
Bank Swallow	*Riparia riparia*	S4B	THR		X	X	X				July 7, 2019	
Barn Swallow	*Hirundo rustica*	S4B	THR		X	X	X				June 28, 2019	
Belted Kingfisher	*Megaceryle alcyon*	S4B			X	X	X	X			July 7, 2019	
Black-and-white Warbler	*Mniotilta varia*	S5B				X					May 13, 1996	
Black-billed Cuckoo	*Coccyzus erythropthalmus*	S5B			X		X				July 1, 2019	
Blackburnian Warbler	*Setophaga fusca*	S5B				X					May 14, 2016	
Black-capped Chickadee	*Poecile atricapillus*	S5			X		X	X			June 29, 2019	
Black-crowned Night-Heron	*Nycticorax nycticorax*	S3B, S3N					X				September 2, 2017	

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Waterfowl Species	Breeding	Time of Year Observed - Spring	Time of Year Observed - Summer	Time of Year Observed - Winter	Time of Year Observed - Fall	Incidental	Last Observation Date	Comments
Blackpoll Warbler	*Setophaga striata*	S4B				X					May 22, 2019	
Black-throated Blue Warbler	*Setophaga caerulescens*	S5B				X					May 22, 2019	
Blue Jay	*Cyanocitta cristata*	S5			X	X	X				July 7, 2019	
Blue-gray Gnatcatcher	*Polioptila caerulea*	S4B				X					May 6, 2018	
Blue-winged Teal	*Anas discors*	S4		X	X	X					March 24, 2019	
Bobolink	*Dolichonyx oryzivorus*	S4B	THR				X				August 19, 2014	
Bonaparte's Gull	*Chroicocephalus philadelphia*	S4B, S4N					X				September 3, 2017	
Brant	*Branta bernicla*	S4N		X					X	X	November 2, 2008	
Broad-winged Hawk	*Buteo platypterus*	S5B				X					April 30, 2018	
Brown Creeper	*Certhia americana*	S5B						X			March 20, 2019	
Brown Thrasher	*Toxostoma rufum*	S4B				X					May 14, 2016	
Brown-headed Cowbird	*Molothrus ater*	S4B			X	X	X				July 7, 2019	
Bufflehead	*Bucephala albeola*	S4		X		X		X			May 4, 2019	
Cackling Goose	*Branta hutchinsii*	S4M		X				X	X	X	December 1, 2018	
Canada Goose	*Branta canadensis*	S5		X	X	X	X				July 8, 2019	
Canada Warbler	*Cardellina canadensis*	S4B	SC		X	X					May 22, 2019	
Canvasback	*Aythya valisineria*	S1B, S4N		X				X		X	March 5, 2008	
Cape May Warbler	*Setophaga tigrina*	S5B				X					May 14, 2019	
Carolina Wren	*Thryothorus ludovicianus*	S4					X	X	X		November 29, 2018	
Caspian Tern	*Hydroprogne caspia*	S3B					X				July 7, 2019	
Cedar Waxwing	*Bombycilla cedrorum*	S5B			X	X	X				July 8, 2019	
Chestnut-sided Warbler	*Setophaga pensylvanica*	S5B			X	X					May 25, 2019	
Chimney Swift	*Chaetura pelagica*	S4B, S4N	THR		X		X				July 7, 2019	

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Waterfowl Species	Breeding	Time of Year Observed - Spring	Time of Year Observed - Summer	Time of Year Observed - Winter	Time of Year Observed - Fall	Incidental	Last Observation Date	Comments
Chipping Sparrow	*Spizella passerina*	S5B			X		X				July 7, 2019	
Cliff Swallow	*Petrochelidon pyrrhonota*	S4B			X	X					May 8, 2019	
Common Goldeneye	*Bucephala clangula*	S5		X		X		X			April 22, 2019	
Common Grackle	*Quiscalus quiscula*	S5B			X	X	X				July 8, 2019	
Common Loon	*Gavia immer*	S5B, S5N				X					May 2, 2018	
Common Merganser	*Mergus merganser*	S5B, S5N		X	X	X	X	X			June 30, 2019	
Common Nighthawk	*Chordeiles minor*	S4B	SC		X	X					May 31, 2019	
Common Raven	*Corvus corax*	S5							X	X	November 29, 2018	
Common Redpoll	*Acanthis flammea*	S4B				X		X		X	April 6, 2015	May be observed in winter months during irruption years.
Common Tern	*Sterna hirundo*	S4B				X					June 19, 2019	
Common Yellowthroat	*Geothlypis trichas*	S5B			X		X				June 28, 2019	
Cooper's Hawk	*Accipiter cooperii*	S4							X		October 24, 2018	
Dark-eyed Junco	*Junco hyemalis*	S5B				X		X			April 18, 2019	
Double-crested Cormorant	*Phalacrocorax auritus*	S5B					X				June 21, 2019	
Downy Woodpecker	*Picoides pubescens*	S5			X		X	X			July 7, 2019	
Dunlin	*Calidris alpina*	S4B, S5N				X			X		October 30, 2018	
Eastern Bluebird	*Sialia sialis*	S5B				X		X			April 23, 2019	
Eastern Kingbird	*Tyrannus tyrannus*	S4B			X	X	X				July 7, 2019	
Eastern Meadowlark	*Sturnella magna*	S4B	THR			X			X		April 18, 2019	
Eastern Phoebe	*Sayornis phoebe*	S5B			X	X	X				June 28, 2019	
Eastern Screech-Owl	*Megascops asio*	S4				X					March 20, 2004	
Eastern Wood-Pewee	*Contopus virens*	S4B	SC		X	X					May 25, 2019	
European Starling	*Sturnus vulgaris*	SNA			X	X	X				July 7, 2019	

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Waterfowl Species	Breeding	Time of Year Observed - Spring	Time of Year Observed - Summer	Time of Year Observed - Winter	Time of Year Observed - Fall	Incidental	Last Observation Date	Comments
Field Sparrow	*Spizella pusilla*	S4B				X					May 14, 2016	
Fox Sparrow	*Passerella iliaca*	S4B				X					April 11, 2019	
Franklin's Gull	*Leucophaeus pipixcan*	SNA				X				X	May 21, 1988	
Gadwall	*Anas strepera*	S4		X		X		X		X	April 2, 2019	
Glaucous Gull	*Larus hyperboreus*	S4N						X		X	December 30, 2017	
Golden Eagle	*Aquila chrysaetos*	S2B	END						X		October 29, 2018	
Golden-crowned Kinglet	*Regulus satrapa*	S5B						X	X		October 18, 2018	
Gray Catbird	*Dumetella carolinensis*	S4B			X	X	X				July 8, 2019	
Great Black-backed Gull	*Larus marinus*	S2B						X		X	February 8, 2016	
Great Blue Heron	*Ardea herodias*	S4			X		X		X		July 8, 2019	
Great Crested Flycatcher	*Myiarchus crinitus*	S4B				X					May 14, 2016	
Great Egret	*Ardea alba*	S2B				X			X	X	May 25, 2019	
Great Horned Owl	*Bubo virginianus*	S4				X		X			May 16, 2017	
Greater Scaup	*Aythya marila*	S4		X				X		X	March 7, 2019	
Greater White-fronted Goose	*Anser albifrons*	SNA		X					X	X	October 23, 2017	
Greater Yellowlegs	*Tringa melanoleuca*	S4B, S4N					X		X		July 1, 2019	
Green Heron	*Butorides virescens*	S4B			X	X	X				June 18, 2019	
Green-winged Teal	*Anas crecca*	S4		X		X			X		March 28, 2019	
Hairy Woodpecker	*Picoides villosus*	S5			X	X		X			June 28, 2019	
Hermit Thrush	*Catharus guttatus*	S5B							X		October 16, 2015	
Herring Gull	*Larus argentatus*	S5B, S5N				X	X	X			July 4, 2019	
Hoary Redpoll	*Acanthis hornemanni*	SNA						X		X	March 8, 2013	May be observed in winter months during irruption years.
Hooded Merganser	*Lophodytes cucullatus*	S5B, S5N		X		X	X				May 4, 2019	

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Waterfowl Species	Breeding	Time of Year Observed - Spring	Time of Year Observed - Summer	Time of Year Observed - Winter	Time of Year Observed - Fall	Incidental	Last Observation Date	Comments
Horned Grebe	*Podiceps auritus*	S1B, S4N	SC			X		X		X	March 23, 2014	
Horned Lark	*Eremophila alpestris*	S5B			X	X		X			March 18, 2018	
House Finch	*Haemorhous mexicanus*	SNA			X		X	X			June 24, 2019	
House Sparrow	*Passer domesticus*	SNA			X		X	X			July 7, 2019	
House Wren	*Troglodytes aedon*	S5B			X	X	X				June 23, 2019	
Hudsonian Godwit	*Limosa haemastica*	S3B, S4N							X		October 18, 2018	
Iceland Gull	*Larus glaucoides*	S4N						X		X	March 11, 2015	
Indigo Bunting	*Passerina cyanea*	S4B			X	X	X				May 22, 2019	
Killdeer	*Charadrius vociferus*	S5B, S5N			X	X	X		X		July 8, 2019	
Laughing Gull	*Leucophaeus atricilla*	SNA					X			X	August 24, 2017	
Least Flycatcher	*Empidonax minimus*	S4B			X	X	X				May 14, 2016	
Least Sandpiper	*Calidris minutilla*	S4B, S5N				X	X				July 5, 2019	
Lesser Black-backed Gull	*Larus fuscus*	SNA					X			X	September 13, 2017	
Lesser Scaup	*Aythya affinis*	S4		X		X				X	April 28, 2019	
Lesser Yellowlegs	*Tringa flavipes*	S4B, S4N					X				July 7, 2019	
Lincoln's Sparrow	*Melospiza lincolnii*	S5B							X		October 24, 2015	
Little Blue Heron	*Egretta caerulea*	SNA					X			X	September 14, 2018	Rare for this region.
Long-tailed Duck	*Clangula hyemalis*	S3B		X		X				X	May 4, 2019	
Magnolia Warbler	*Setophaga magnolia*	S5B			X	X					May 22, 2019	
Mallard	*Anas platyrhynchos*	S5		X	X	X	X				July 8, 2019	
Merlin	*Falco columbarius*	S5B				X		X			April 5, 2019	
Mourning Dove	*Zenaida macroura*	S5			X	X	X	X			July 7, 2019	
Mourning Warbler	*Geothlypis philadelphia*	S4B			X	X					May 23, 2019	
Mute Swan	*Cygnus olor*	SNA		X				X			March 8, 2019	

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Waterfowl Species	Breeding	Time of Year Observed - Spring	Time of Year Observed - Summer	Time of Year Observed - Winter	Time of Year Observed - Fall	Incidental	Last Observation Date	Comments
Nashville Warbler	*Oreothlypis ruficapilla*	S5B				X					May 3, 2018	
Northern Cardinal	*Cardinalis cardinalis*	S5			X	X	X				July 8, 2019	
Northern Flicker	*Colaptes auratus*	S4B			X	X	X				July 7, 2019	
Northern Goshawk	*Accipiter gentilis*	S4				X			X	X	April 24, 2016	
Northern Harrier	*Circus hudsonius*	S4B				X					April 13, 2019	
Northern Parula	*Setophaga americana*	S4B				X					May 14, 2016	
Northern Pintail	*Anas acuta*	S5		X		X		X		X	April 6, 2019	
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	S4B			X	X	X				July 7, 2019	
Northern Shoveler	*Anas clypeata*	S4		X				X		X	March 15, 2019	
Northern Shrike	*Lanius borealis*	SNA						X			January 22, 2016	
Northern Waterthrush	*Parkesia noveboracensis*	S5B				X					April 30, 2016	
Orange-crowned Warbler	*Oreothlypis celata*	S4B				X					May 6, 2016	
Orchard Oriole	*Icterus spurius*	S4B			X	X	X				May 22, 2019	
Osprey	*Pandion haliaetus*	S5B			X	X	X				July 8, 2019	
Palm Warbler	*Setophaga palmarum palmarum*	S5B				X					May 15, 2019	
Pectoral Sandpiper	*Calidris melanotos*	SHB, S5N							X		October 30, 2018	
Peregrine Falcon	*Falco peregrinus*	S3B	SC						X		November 3, 2018	
Philadelphia Vireo	*Vireo philadelphicus*	S5B					X				September 17, 2016	
Pied-billed Grebe	*Podilymbus podiceps*	S4B, S4N				X			X		April 6, 2019	
Pileated Woodpecker	*Dryocopus pileatus*	S5				X			X		April 18, 2019	
Pine Siskin	*Spinus pinus*	S4B				X		X			March 20, 2019	
Pine Warbler	*Setophaga pinus*	S5B				X					April 21, 2016	
Purple Finch	*Haemorhous purpureus*	S4B						X	X		October 18, 2018	

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Waterfowl Species	Breeding	Time of Year Observed - Spring	Time of Year Observed - Summer	Time of Year Observed - Winter	Time of Year Observed - Fall	Incidental	Last Observation Date	Comments
Red Crossbill	*Loxia curvirostra*	S4B				X				X	April 11, 1985	Sometimes observed in winter months.
Red-bellied Woodpecker	*Melanerpes carolinus*	S4			X	X		X			May 22, 2019	
Red-breasted Merganser	*Mergus serrator*	S4B, S5N		X		X		X		X	May 4, 2019	Sometimes observed in winter months.
Red-breasted Nuthatch	*Sitta canadensis*	S5							X		November 2, 2014	
Red-eyed Vireo	*Vireo olivaceus*	S5B			X	X					June 22, 2019	
Redhead	*Aythya americana*	S2B, S4N		X		X					April 2, 2019	
Red-shouldered Hawk	*Buteo lineatus*	S4B							X		October 24, 2018	
Red-tailed Hawk	*Buteo jamaicensis*	S5			X	X	X	X			June 24, 2019	
Red-winged Blackbird	*Agelaius phoeniceus*	S4			X	X	X				July 8, 2019	
Ring-billed Gull	*Larus delawarensis*	S5B, S4N				X	X		X		July 8, 2019	
Ring-necked Duck	*Aythya collaris*	S5		X		X		X			April 5, 2019	
Rock Pigeon	*Columba livia*	SNA			X		X	X	X		July 7, 2019	
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	S4B			X	X	X				June 28, 2019	
Ross's Goose	*Chen rossii*	S1B						X		X	March 1, 2018	
Rough-legged Hawk	*Buteo lagopus*	S1B, S4N							X		October 30, 2018	
Ruby-crowned Kinglet	*Regulus calendula*	S4B				X			X		May 3, 2019	
Ruby-throated Hummingbird	*Archilochus colubris*	S5B			X	X	X				June 18, 2019	
Ruddy Duck	*Oxyura jamaicensis*	S4B, S4N		X		X					May 3, 2019	
Ruffed Grouse	*Bonasa umbellus*	S4						X			January 8, 1995	
Rusty Blackbird	*Euphagus carolinus*	S4B	SC						X	X	October 19, 2017	
Sandhill Crane	*Grus canadensis*	S5B				X		X			April 6, 2019	
Savannah Sparrow	*Passerculus sandwichensis*	S4B			X	X			X		May 21, 2019	
Scarlet Tanager	*Piranga olivacea*	S4B				X					May 14, 2016	-

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Waterfowl Species	Breeding	Time of Year Observed - Spring	Time of Year Observed - Summer	Time of Year Observed - Winter	Time of Year Observed - Fall	Incidental	Last Observation Date	Comments
Semipalmated Plover	*Charadrius semipalmatus*	S4B, S4N				X					May 15, 2018	
Semipalmated Sandpiper	*Calidris pusilla*	S3B, S4N							X		October 20, 2018	
Sharp-shinned Hawk	*Accipiter striatus*	S5				X		X			April 28, 2019	
Short-billed Dowitcher	*Limnodromus griseus*	S3B, S4N				X					May 22, 2016	
Snow Bunting	*Plectrophenax nivalis*	SNA							X		November 2, 2014	
Snow Goose	*Chen caerulescens*	S5B		X					X		October 18, 2018	
Solitary Sandpiper	*Tringa solitaria*	S4B				X					May 8, 2019	
Song Sparrow	*Melospiza melodia*	S5B			X	X	X				July 8, 2019	
Sora	*Porzana carolina*	S4B					X				September 7, 2017	
Spotted Sandpiper	*Actitis macularius*	S5			X	X	X				July 8, 2019	
Swainson's Thrush	*Catharus ustulatus*	S4B				X					May 25, 2019	
Swainson's Warbler	*Limnothlypis swainsonii*	SNA				X				X	May 14, 2016	Rare for this region.
Swamp Sparrow	*Melospiza georgiana*	S5B				X					April 29, 2018	
Tennessee Warbler	*Oreothlypis peregrina*	S5B				X					May 23, 2019	
Tree Swallow	*Tachycineta bicolor*	S4B			X	X	X				July 7, 2019	
Trumpeter Swan	*Cygnus buccinator*	S4		X		X		X			March 24, 2019	
Tundra Swan	*Cygnus columbianus*	S4		X		X		X			March 23, 2019	
Turkey Vulture	*Cathartes aura*	S5B			X	X	X				June 30, 2019	
Veery	*Catharus fuscescens*	S4B				X					May 22, 1994	
Warbling Vireo	*Vireo gilvus*	S5B			X	X	X				July 8, 2019	
White-breasted Nuthatch	*Sitta carolinensis*	S5			X	X	X	X			July 1, 2019	
White-crowned Sparrow	*Zonotrichia leucophrys*	S4B							X		October 18, 2018	
White-rumped Sandpiper	*Calidris fuscicollis*	S5N							X	X	October 20, 2015	
White-throated Sparrow	*Zonotrichia albicollis*	S5B				X			X		May 14, 2019	

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Waterfowl Species	Breeding	Time of Year Observed - Spring	Time of Year Observed - Summer	Time of Year Observed - Winter	Time of Year Observed - Fall	Incidental	Last Observation Date	Comments
Wild Turkey	*Meleagris gallopavo*	S5			X	X	X				June 14, 2019	
Willow Flycatcher	*Empidonax traillii*	S5B			X	X	X				June 28, 2019	
Wilson's Snipe	*Gallinago delicata*	S5B					X		X		August 30, 2018	
Wilson's Warbler	*Cardellina pusilla*	S4B				X					May 23, 2019	
Winter Wren	*Troglodytes hiemalis*	S5B							X		November 15, 2017	
Wood Duck	*Aix sponsa*	S5		X	X	X		X			June 18, 2019	
Yellow Warbler	*Setophaga petechia*	S5B			X	X	X				July 8, 2019	
Yellow-bellied Flycatcher	*Empidonax flaviventris*	S5B					X				September 14, 2015	
Yellow-bellied Sapsucker	*Sphyrapicus varius*	S5B				X					April 22, 2018	
Yellow-billed Cuckoo	*Coccyzus americanus*	S4B			X	X					June 1, 2017	
Yellow-rumped Warbler	*Setophaga coronata*	S5B				X			X		May 15, 2019	
TOTAL SPECIES	**195**	**--**	**13**	**29**	**69**	**131**	**73**	**55**	**43**	**29**	--	

[1]S-Ranks (provincial)
Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario (Please refer to: http://explorer.natureserve.org/nsranks.htm)

SX — Presumed Extirpated - Species or community is believed to be extirpated from the province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
SH — Possibly Extirpated (Historical) - Species or community occurred historically in the province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20–40 years. A species or community could become SH without such a 20-40 year delay if the only known occurrences in a province were destroyed or if it had been extensively and unsuccessfully looked for. The SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.
S1 — Critically Imperiled - Critically imperiled in the province or state because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the province.
S2 — Imperiled - Imperiled in the province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the province.
S3 — Vulnerable - Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 — Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 — Secure - Common, widespread, and abundant in the province.
SNR — Unranked - Province conservation status not yet assessed.
SU — Unrankable - Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA — Not Applicable - A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# — Range Rank - A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
S#? – Inexact or Uncertain - Denotes inexact or uncertain numeric rank.

Breeding Status Qualifiers
B – Breeding Conservation status refers to the breeding population of the species in the nation or state/province.
N – Nonbreeding Conservation status refers to the non-breeding population of the species in the province.
M – Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the province.

[2]SARO *Endangered Species Act, 2007*
(provincial status from http://www.ontario.ca/environment-and-energy/how-species-risk-are-listed#section-3)
The provincial review process is implemented by the MNRF's Committee on the Status of Species at Risk in Ontario (COSSARO).

Extinct - A species that no longer exists anywhere.
Extirpated (EXT) - Lives somewhere in the world, and at one time lived in the wild in Ontario, but no longer lives in the wild in Ontario.
Endangered (END) - Lives in the wild in Ontario but is facing imminent extinction or extirpation.
Threatened (THR) - Lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it.
Special concern (SC) - Lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats.
Not at Risk (NAR) - A species that has been evaluated and found to be not at risk.
Data Deficient (DD) - A species for which there is insufficient information for a provincial status recommendation

Appendix B: *rare* Records Summary Table

Analysis Conducted by: Nadine Price

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Waterfowl Species	Observed in *rare* Spring Migration Survey (2013-2017)	Observed in *rare* Fall Migration Survey (2013-2017)	Last Observation Date
American Black Duck	*Anas rubripes*	S4		X		X	October 23, 2016
American Crow	*Corvus brachyrhynchos*	S5B			X	X	May 27, 2017
American Goldfinch	*Spinus tristis*	S5B			X	X	May 27, 2017
American Pipit	*Anthus rubescens*	S4				X	October 8, 2014
American Redstart	*Setophaga ruticilla*	S5B			X	X	May 14, 2017
American Robin	*Turdus migratorius*	S5B			X	X	May 27, 2017
American Tree Sparrow	*Spizella arborea*	S4B			X	X	April 22, 2017
American Woodcock	*Scolopax minor*	S4B				X	October 24, 2014
Bald Eagle	*Haliaeetus leucocephalus*	S2N, S4B	SC		X	X	May 20, 2017
Baltimore Oriole	*Icterus galbula*	S4B			X	X	May 27, 2017
Bank Swallow	*Riparia riparia*	S4B	THR		X		May 5, 2017
Barn Swallow	*Hirundo rustica*	S4B	THR		X	X	May 16, 2017
Bay-breasted Warbler	Setophaga castanea	S5B			X		May 11, 2016
Belted Kingfisher	*Megaceryle alcyon*	S4B			X	X	May 27, 2017
Black-and-white Warbler	*Mniotilta varia*	S5B			X		May 13, 2017
Black-billed Cuckoo	*Coccyzus erythropthalmus*	S5B			X		May 17, 2017
Black-capped Chickadee	*Poecile atricapillus*	S5			X	X	May 27, 2017
Black-crowned Night-Heron	*Nycticorax nycticorax*	S3B, S3N				X	September 21, 2016
Blackpoll Warbler	*Setophaga striata*	S4B			X	X	October 23, 2016
Black-throated Blue Warbler	*Setophaga caerulescens*	S5B			X		May 15, 2014
Black-throated Green Warbler	*Setophaga virens*	S5B			X		May 4, 2016

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Waterfowl Species	Observed in *rare* Spring Migration Survey (2013-2017)	Observed in *rare* Fall Migration Survey (2013-2017)	Last Observation Date
Blue Jay	*Cyanocitta cristata*	S5			X	X	May 27, 2017
Blue-gray Gnatcatcher	*Polioptila caerulea*	S4B			X	X	May 27, 2017
Blue-headed Vireo	*Vireo solitarius*	S5B			X		May 14, 2017
Blue-winged Teal	*Anas discors*	S4		X	X	X	September 6, 2015
Broad-winged Hawk	*Buteo platypterus*	S5B			X		May 27, 2017
Brown-headed Cowbird	*Molothrus ater*	S4B			X	X	May 27, 2017
Bufflehead	*Bucephala albeola*	S4		X	X		April 26, 2015
Canada Goose	*Branta canadensis*	S5		X	X	X	May 27, 2017
Canada Warbler	*Cardellina canadensis*	S4B	SC		X		May 16, 2015
Carolina Wren	*Thryothorus ludovicianus*	S4			X	X	May 24, 2017
Caspian Tern	*Hydroprogne caspia*	S3B			X	X	May 27, 2017
Cedar Waxwing	*Bombycilla cedrorum*	S5B			X	X	May 27, 2017
Chestnut-sided Warbler	*Setophaga pensylvanica*	S5B			X	X	May 24, 2017
Chimney Swift	*Chaetura pelagica*	S4B, S4N	THR		X	X	May 27, 2017
Chipping Sparrow	*Spizella passerina*	S5B			X	X	May 28, 2017
Cliff Swallow	*Petrochelidon pyrrhonota*	S4B			X		May 5, 2017
Common Goldeneye	*Bucephala clangula*	S5		X	X		May 8, 2015
Common Grackle	*Quiscalus quiscula*	S5B			X	X	May 27, 2017
Common Merganser	*Mergus merganser*	S5B, S5N		X	X	X	April 16, 2017
Common Yellowthroat	*Geothlypis trichas*	S5B			X	X	May 27, 2017
Cooper's Hawk	*Accipiter cooperii*	S4			X	X	May 27, 2017
Dark-eyed Junco	*Junco hyemalis*	S5B			X	X	October 26, 2016
Double-crested Cormorant	*Phalacrocorax auritus*	S5B			X	X	October 23, 2016
Downy Woodpecker	*Picoides pubescens*	S5			X	X	May 27, 2017

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Waterfowl Species	Observed in *rare* Spring Migration Survey (2013-2017)	Observed in *rare* Fall Migration Survey (2013-2017)	Last Observation Date
Eastern Bluebird	*Sialia sialis*	S5B				X	August 20, 2016
Eastern Kingbird	*Tyrannus tyrannus*	S4B			X	X	May 27, 2017
Eastern Phoebe	*Sayornis phoebe*	S5B			X	X	May 10, 2017
Eastern Wood-Pewee	*Contopus virens*	S4B	SC		X		May 21, 2016
European Starling	*Sturnus vulgaris*	SNA			X	X	May 27, 2017
Field Sparrow	*Spizella pusilla*	S4B			X		April 29, 2017
Fox Sparrow	*Passerella iliaca*	S4B			X	X	October 30, 2016
Gadwall	*Anas strepera*	S4		X		X	October 23, 2016
Golden-crowned Kinglet	*Regulus satrapa*	S5B			X	X	October 23, 2016
Gray Catbird	*Dumetella carolinensis*	S4B			X	X	May 27, 2017
Great Blue Heron	*Ardea herodias*	S4			X	X	May 27, 2017
Great Crested Flycatcher	*Myiarchus crinitus*	S4B			X		May 27, 2017
Great Egret	*Ardea alba*	S2B				X	August 23, 2015
Great Horned Owl	*Bubo virginianus*	S4			X		April 20, 2013
Greater Yellowlegs	*Tringa melanoleuca*	S4B, S4N			X	X	September 25, 2016
Green Heron	*Butorides virescens*	S4B			X	X	May 13, 2017
Hairy Woodpecker	*Picoides villosus*	S5			X	X	May 24, 2017
Hermit Thrush	*Catharus guttatus*	S5B			X	X	April 16, 2017
Herring Gull	*Larus argentatus*	S5B, S5N			X	X	May 14, 2017
Horned Lark	*Eremophila alpestris*	S5B			X		May 20, 2017
House Finch	*Haemorhous mexicanus*	SNA			X	X	May 14, 2017
House Sparrow	*Passer domesticus*	SNA			X	X	May 27, 2017
House Wren	*Troglodytes aedon*	S5B			X	X	May 27, 2017
Indigo Bunting	*Passerina cyanea*	S4B			X		May 28, 2016

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Waterfowl Species	Observed in *rare* Spring Migration Survey (2013-2017)	Observed in *rare* Fall Migration Survey (2013-2017)	Last Observation Date
Killdeer	*Charadrius vociferus*	S5B, S5N			X	X	May 20, 2017
Least Flycatcher	*Empidonax minimus*	S4B			X	X	May 24, 2017
Lesser Yellowlegs	*Tringa flavipes*	S4B, S4N			X	X	October 19, 2016
Lincoln's Sparrow	*Melospiza lincolnii*	S5B			X		May 14, 2017
Magnolia Warbler	*Setophaga magnolia*	S5B			X	X	August 20, 2016
Mallard	*Anas platyrhynchos*	S5		X	X	X	May 27, 2017
Merlin	*Falco columbarius*	S5B				X	October 1, 2016
Mourning Dove	*Zenaida macroura*	S5			X	X	May 27, 2017
Mourning Warbler	*Geothlypis philadelphia*	S4B			X		May 16, 2017
Nashville Warbler	*Oreothlypis ruficapilla*	S5B			X	X	September 3, 2016
Northern Cardinal	*Cardinalis cardinalis*	S5			X	X	May 27, 2017
Northern Flicker	*Colaptes auratus*	S4B			X	X	May 27, 2017
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	S4B			X		May 20, 2017
Orchard Oriole	*Icterus spurius*	S4B			X		May 27, 2017
Osprey	*Pandion haliaetus*	S5B			X	X	May 27, 2017
Palm Warbler	*Setophaga palmarum palmarum*	S5B			X	X	May 16, 2017
Philadelphia Vireo	*Vireo philadelphicus*	S5B			X		May 17, 2017
Pileated Woodpecker	*Dryocopus pileatus*	S5			X	X	May 14, 2017
Pine Warbler	*Setophaga pinus*	S5B			X	X	May 20, 2017
Red-bellied Woodpecker	*Melanerpes carolinus*	S4			X	X	May 14, 2017
Red-breasted Nuthatch	*Sitta canadensis*	S5			X		May 25, 2016
Red-eyed Vireo	*Vireo olivaceus*	S5B			X	X	May 27, 2017
Red-tailed Hawk	*Buteo jamaicensis*	S5			X	X	May 14, 2017
Red-winged Blackbird	*Agelaius phoeniceus*	S4			X	X	May 27, 2017

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Waterfowl Species	Observed in *rare* Spring Migration Survey (2013-2017)	Observed in *rare* Fall Migration Survey (2013-2017)	Last Observation Date
Ring-billed Gull	*Larus delawarensis*	S5B, S4N			X	X	May 27, 2017
Rock Pigeon	*Columba livia*	SNA			X	X	May 28, 2016
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	S4B			X	X	May 24, 2017
Ruby-crowned Kinglet	*Regulus calendula*	S4B			X	X	May 14, 2017
Ruby-throated Hummingbird	*Archilochus colubris*	S5B			X	X	May 27, 2017
Sandhill Crane	*Grus canadensis*	S5B				X	October 19, 2014
Savannah Sparrow	*Passerculus sandwichensis*	S4B			X		May 27, 2017
Scarlet Tanager	*Piranga olivacea*	S4B			X		May 18, 2016
Semipalmated Sandpiper	*Calidris pusilla*	S3B, S4N			X		May 21, 2016
Sharp-shinned Hawk	*Accipiter striatus*	S5			X	X	May 3, 2017
Solitary Sandpiper	*Tringa solitaria*	S4B			X	X	September 20, 2015
Song Sparrow	*Melospiza melodia*	S5B			X	X	May 27, 2017
Spotted Sandpiper	*Actitis macularius*	S5			X	X	May 14, 2017
Swainson's Thrush	*Catharus ustulatus*	S4B			X	X	May 17, 2017
Swamp Sparrow	*Melospiza georgiana*	S5B				X	October 15, 2014
Tennessee Warbler	*Oreothlypis peregrina*	S5B			X	X	May 18, 2016
Tree Swallow	*Tachycineta bicolor*	S4B			X	X	May 27, 2017
Trumpeter Swan	*Cygnus buccinator*	S4		X		X	October 23, 2016
Turkey Vulture	*Cathartes aura*	S5B			X	X	May 20, 2017
Veery	*Catharus fuscescens*	S4B			X	X	September 3, 2016
Warbling Vireo	*Vireo gilvus*	S5B			X	X	May 24, 2017
White-breasted Nuthatch	*Sitta carolinensis*	S5			X	X	May 24, 2017
White-crowned Sparrow	*Zonotrichia leucophrys*	S4B			X	X	May 4, 2017
White-throated Sparrow	*Zonotrichia albicollis*	S5B			X	X	May 14, 2017

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Waterfowl Species	Observed in *rare* Spring Migration Survey (2013-2017)	Observed in *rare* Fall Migration Survey (2013-2017)	Last Observation Date
Willow Flycatcher	*Empidonax traillii*	S5B			X	X	May 27, 2017
Wilson's Warbler	*Cardellina pusilla*	S4B			X	X	May 7, 2016
Wood Duck	*Aix sponsa*	S5		X	X	X	October 23, 2016
Wood Thrush	*Hylocichla mustelina*	S4B	SC		X		May 10, 2015
Yellow Warbler	*Setophaga petechia*	S5B			X	X	May 27, 2017
Yellow-bellied Flycatcher	*Empidonax flaviventris*	S5B				X	August 20, 2016
Yellow-bellied Sapsucker	*Sphyrapicus varius*	S5B			X		May 10, 2017
Yellow-rumped Warbler	*Setophaga coronata*	S5B			X	X	May 16, 2017
Yellow-throated Vireo	*Vireo flavifrons*	S4B			X		May 11, 2016
TOTAL SPECIES:	**126**	--	**7**	**10**	**114**	**96**	--

[1]S-Ranks (provincial)
Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario (Please refer to: http://explorer.natureserve.org/nsranks.htm)

SX — Presumed Extirpated - Species or community is believed to be extirpated from the province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
SH — Possibly Extirpated (Historical) - Species or community occurred historically in the province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20–40 years. A species or community could become SH without such a 20-40 year delay if the only known occurrences in a province were destroyed or if it had been extensively and unsuccessfully looked for. The SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.
S1 — Critically Imperiled - Critically imperiled in the province or state because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the province.
S2 — Imperiled - Imperiled in the province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the province.
S3 — Vulnerable - Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 — Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 — Secure - Common, widespread, and abundant in the province.
SNR — Unranked - Province conservation status not yet assessed.
SU — Unrankable - Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA — Not Applicable - A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# — Range Rank - A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
S#? – Inexact or Uncertain - Denotes inexact or uncertain numeric rank.

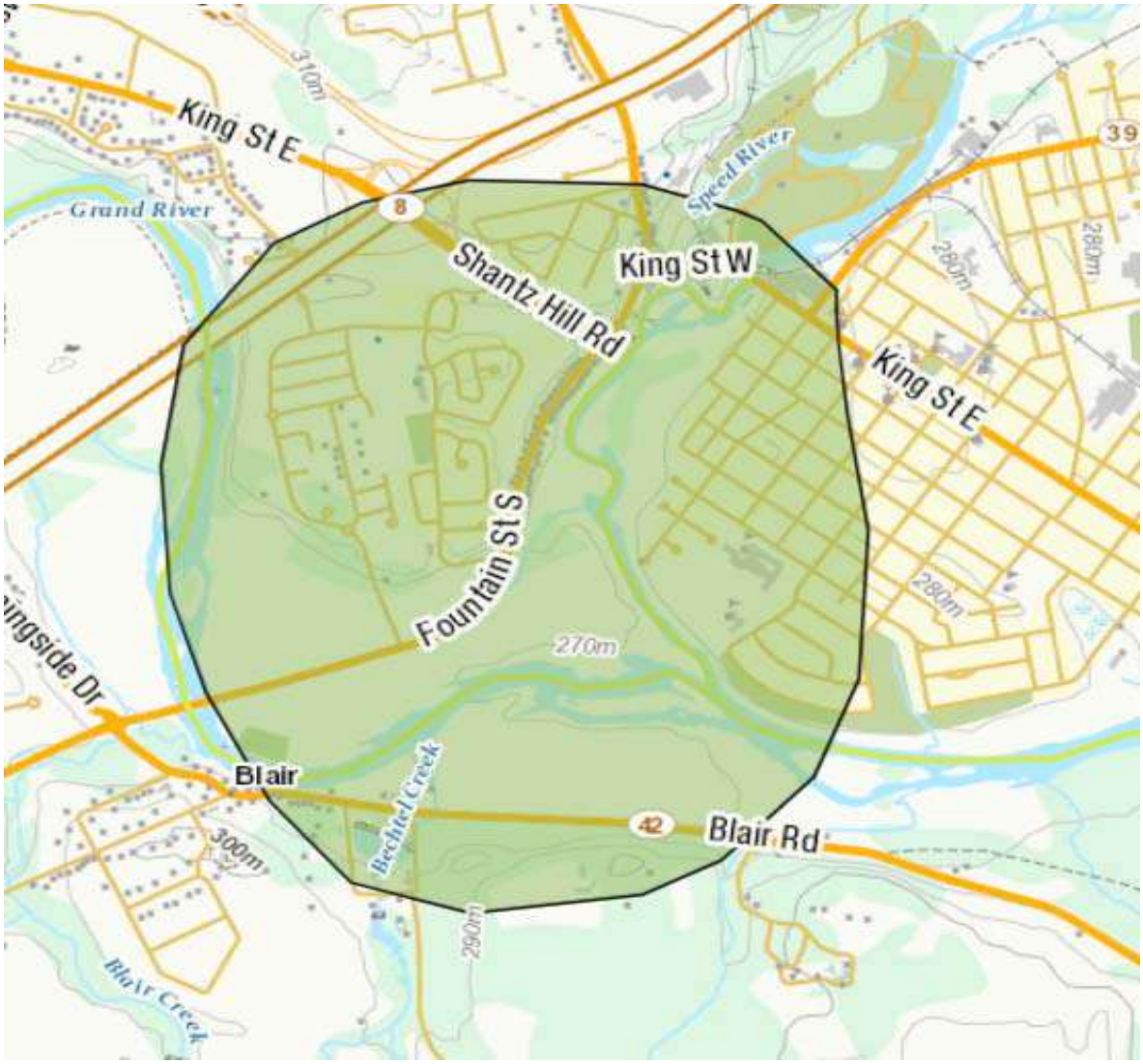
Breeding Status Qualifiers
B – Breeding Conservation status refers to the breeding population of the species in the nation or state/province.
N – Nonbreeding Conservation status refers to the non-breeding population of the species in the province.
M – Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the province.

[2]SARO *Endangered Species Act, 2007*
(provincial status from http://www.ontario.ca/environment-and-energy/how-species-risk-are-listed#section-3)
The provincial review process is implemented by the MNRF's Committee on the Status of Species at Risk in Ontario (COSSARO).

Extinct - A species that no longer exists anywhere.
Extirpated (EXT) - Lives somewhere in the world, and at one time lived in the wild in Ontario, but no longer lives in the wild in Ontario.
Endangered (END) - Lives in the wild in Ontario but is facing imminent extinction or extirpation.
Threatened (THR) - Lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it.
Special concern (SC) - Lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats.
Not at Risk (NAR) - A species that has been evaluated and found to be not at risk.
Data Deficient (DD) - A species for which there is insufficient information for a provincial status recommendation

17NJ50: 1187 Records		
Common Name	**Number of Individuals**	**Year of Observation**
American Bullfrog	1	2015
American Toad	29	2018
Blanding's Turtle	1	2009
Blue-spotted Salamander	6	2017
Dekay's Brownsnake	1	2018
Eastern Gartersnake	1	2018
Eastern Red-backed Salamander	1	2018
Eastern Ribbonsnake	1	1988
Four-toed Salamander	1	2011
Gray Treefrog	1	2018
Green Frog	4	2017
Jefferson Complex (Undetermined)	6	2013
Jefferson Salamander	1	2018
Jefferson/Blue-spotted Salamander Complex	1	2011
Jefferson/Blue-spotted Salamander Polyploid	1	2011
Midland Painted Turtle	8	2017
Milksnake	1	2018
Northern Leopard Frog	3	2017
Northern Watersnake	2	2017
Pickerel Frog	1	2011
Queensnake	1	1979
Red-bellied Snake	1	2012
Red-spotted Newt	1	2011
Smooth Greensnake	1	2017
Snapping Turtle	1	2018
Spotted Salamander	1	2011
Spring Peeper	1	2017
Western Chorus Frog	1	2011
Wood Frog	8	2017

17NJ5004							
Element Type	**Common Name**	**Scientific Name**	**SRank**	**SARO Status**	**COSEWIC Status**	**Last Obs Date**	**EO ID**
NATURAL AREA	Speed River Wetland Complex						8882
SPECIES	Silver Shiner	Notropis photogenis	S2S3	THR	THR	5/13/1981	15517
NATURAL AREA	Grand River						18525
SPECIES	Wavy-rayed Lampmussel	Lampsilis fasciola	S1	THR	SC	4/24/2016	115780
SPECIES	American Chestnut	Castanea dentata	S1S2	END	END	1988-00-00	115958
17NJ5104							
Element Type	**Common Name**	**Scientific Name**	**SRank**	**SARO Status**	**COSEWIC Status**	**Last Obs Date**	**EO ID**
NATURAL AREA	Speed River Wetland Complex						8882
SPECIES	Silver Shiner	Notropis photogenis	S2S3	THR	THR	5/13/1981	15517
NATURAL AREA	Grand River						18525
SPECIES	Wavy-rayed Lampmussel	Lampsilis fasciola	S1	THR	SC	4/24/2016	115780
SPECIES	American Chestnut	Castanea dentata	S1S2	END	END	1988-00-00	115958
17NJ5003							
lement Type	**Common Name**	**Scientific Name**	**SRank**	**SARO Status**	**COSEWIC Status**	**Last Obs Date**	**EO ID**
NATURAL AREA	Orrs Lake Bechtel Creek Wetland						8888
NATURAL AREA	Grand River						18525
SPECIES	Wavy-rayed Lampmussel	Lampsilis fasciola	S1	THR	SC	4/24/2016	115780
SPECIES	American Chestnut	Castanea dentata	S1S2	END	END	1988-00-00	115958
17NJ5103							
Element Type	**Common Name**	**Scientific Name**	**SRank**	**SARO Status**	**COSEWIC Status**	**Last Obs Date**	**EO ID**
SPECIES	Silver Shiner	Notropis photogenis	S2S3	THR	THR	5/13/1981	15517
NATURAL AREA	Grand River						18525
NATURAL AREA	Barries Lake Bauman Creek Wetland Complex						18546
RESTRICTED SPECIES	RESTRICTED SPECIES	RESTRICTED SPECIES				9/29/1972	93798
SPECIES	Barn Swallow	Hirundo rustica	S4B	THR	THR	5/25/2016	106272
SPECIES	Wavy-rayed Lampmussel	Lampsilis fasciola	S1	THR	SC	4/24/2016	115780
SPECIES	American Chestnut	Castanea dentata	S1S2	END	END	1988-00-00	115958
WILDLIFE CONCENTRATION AREA	Mixed Wader Nesting Colony					1986-00-00	977099
WILDLIFE CONCENTRATION AREA	Mixed Wader Nesting Colony					11/11/1991	977100



Critical habitat for these species is found within the outlined area:

No critical
habitat

Species at risk found (or potentially found) within the outlined area:

Wavy-rayed Lampmussel - Special Concern

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix C

Agency Correspondence

Nadine Price

From: Nadine Price
Sent: Friday, January 10, 2020 2:44 PM
To: graham.buck@ontario.ca
Cc: Tricia Radburn
Subject: Information request - Blair-Preston Trail EA, City of Cambridge (300043765.0000)
Attachments: 043765 Study Area.pdf

Good afternoon,

I am writing to request data for our Blair-Preston Trail EA project in Cambridge, the study area includes lands from the Linear Park near Preston High School to the west, the shoreline on the Speed River where the pedestrian bridge is proposed, and *rare*- owned lands east of Fountain Street. I have attached a map to this email.

In fulfillment of this work, current environmental background information (both aquatic and terrestrial) is required within the study area and adjacent lands. At this time, we are requesting any applicable/available data (preferably in GIS format) as listed below. We have also contacted the local Conservation Authority. Information we are seeking from MNRF includes:

Terrestrial

- Significant wildlife habitat (e.g., nesting/breeding/hibernation) that may not yet be available from LIO.
- Sensitive avian nesting sites (heronries, stick nest locations) that may not yet be available from LIO.
- Digital boundary information for updated designated natural features that may not yet be available from LIO (e.g., Areas of Natural and Scientific Interest (ANSI), Environmentally Significant Areas (ESA), Provincially Significant Wetlands (PSW) etc.).

Aquatics

- Fish/Freshwater Mussel sampling locations (e.g., fish dot mapping) along with sample dates and species occurrence records for water bodies that are located within the study area (i.e. Rouge River, Beaver Creek, Apple Creek).
- Confirmed and/or potential spawning/rearing/foraging habitat locations.
- Thermal regime classification(s).
- Recommended in-water works window(s).

If you are able to respond by January 24, 2020, it would be greatly appreciated. Please do not hesitate to contact me at 289-545-1070 or 647-461-4359 if you have any questions or concerns.

Sincerely,

Nadine

Nadine Price

From: Buck, Graham (MNRF) <Graham.Buck@ontario.ca>
Sent: Wednesday, February 05, 2020 10:24 AM
To: Nadine Price
Subject: MNRF Response to Information Request for Blair-Preston Trail EA, City of Cambridge (300043765.0000)

Hello Nadine,

The following information is available for your site:

AQUATIC INFORMATION

Fish community
- white sucker
- northern hog sucker
- common shiner
- striped shiner
- rock bass
- smallmouth bass
- greenside darter
- longnose dace
- bluntnose minnow
- rainbow darter
- pumpkinseed
- emerald shiner
- shiner (Luxilus sp.)

Thermal Regime and Recommended in-water works window
- Warm water
- July 1st to March 30th

Significant Wildlife Habitat
- Waterfowl Winter Concentration Area

TERRESTRIAL INFORMATION
- Speed River wetland Complex PSW
- No other terrestrial protected features have been identified

Graham

Graham Buck
Management Biologist
Ministry of Natural Resources and Forestry
Guelph District
1 Stone Road West Guelph ON
N1G 4Y2
519 826 4505
graham.buck@ontario.ca

From: Nadine Price <Nadine.Price@rjburnside.com>
Sent: January-10-20 2:44 PM
To: Buck, Graham (MNRF) <Graham.Buck@ontario.ca>
Cc: Tricia Radburn <Tricia.Radburn@rjburnside.com>
Subject: Information request - Blair-Preston Trail EA, City of Cambridge (300043765.0000)

Good afternoon,

I am writing to request data for our Blair-Preston Trail EA project in Cambridge, the study area includes lands from the Linear Park near Preston High School to the west, the shoreline on the Speed River where the pedestrian bridge is proposed, and *rare*- owned lands east of Fountain Street. I have attached a map to this email.

In fulfillment of this work, current environmental background information (both aquatic and terrestrial) is required within the study area and adjacent lands. At this time, we are requesting any applicable/available data (preferably in GIS format) as listed below. We have also contacted the local Conservation Authority. Information we are seeking from MNRF includes:

Terrestrial

- Significant wildlife habitat (e.g., nesting/breeding/hibernation) that may not yet be available from LIO.
- Sensitive avian nesting sites (heronries, stick nest locations) that may not yet be available from LIO.
- Digital boundary information for updated designated natural features that may not yet be available from LIO (e.g., Areas of Natural and Scientific Interest (ANSI), Environmentally Significant Areas (ESA), Provincially Significant Wetlands (PSW) etc.).

Aquatics

- Fish/Freshwater Mussel sampling locations (e.g., fish dot mapping) along with sample dates and species occurrence records for water bodies that are located within the study area (i.e. Rouge River, Beaver Creek, Apple Creek).
- Confirmed and/or potential spawning/rearing/foraging habitat locations.
- Thermal regime classification(s).
- Recommended in-water works window(s).

If you are able to respond by January 24, 2020, it would be greatly appreciated. Please do not hesitate to contact me at 289-545-1070 or 647-461-4359 if you have any questions or concerns.

Sincerely,

Nadine

BURNSIDE
Nadine Price, M.Sc.
Terrestrial Ecologist

R.J. Burnside & Associates Limited
1465 Pickering Parkway, Suite 200, Pickering, Ontario L1V 7G7
Office: +1 800-265-9662 Direct: +1 289-545-1070
www.rjburnside.com

Nadine Price

From: NHIC-Requests (MNRF) <nhicrequests@ontario.ca>
Sent: Tuesday, October 22, 2019 12:49 PM
To: Nadine Price
Cc: NRISC (MNRF)
Subject: RE: Bald Eagle nest sites in Cambridge
Attachments: NHIC_Data_Acces_Request_Form_External_2017-05-18.docx

Hello Nadine,

Sorry you are having trouble accessing the data you need. Thank you for contacting us.

The Natural Heritage Information Centre collects, compiles, manages, and shares data on species of conservation concern in Ontario, including the Bald Eagle. We manage observation and element occurrence data. An element occurrence is an area of land or water, on or in which, a species is or was present; element occurrences have practical conservation value for species. The Natural Heritage Information Centre creates element occurrences from observation records. For the Bald Eagle, an observation record may inform an element occurrence if includes evidence of historical breeding, or current and likely recurring breeding, at a given location, minimally a reliable observation of one or more breeding pairs in appropriate habitat.

The observation and element occurrence data that the Natural Heritage Information Centre manages is considered medium sensitive, as such we only share detailed location and attribute data with clients who have:

- Completed data sensitivity training, and
- Signed a Ministry of Natural Resources and Forestry sensitive data use license agreement.

A generalized version of our element occurrence dataset is available via our Get natural heritage information webpage. On this page you will find links to an online viewing option (the Make-a-Map: Natural Heritage Areas Application) and downloadable data. All location information in this dataset is generalized to 1 KM X 1 KM squares. Also, we have only included some general attribute data. The names of a small subset of species are not included in this dataset; these are species that are commercially exploited or are extremely vulnerable to disturbances.

Currently we don't have any element occurrence data for Bald Eagle in or adjacent to your project site, so you won't find any records on Make-a-Map or in the downloadable data. We do have a number of observation records from within and adjacent to your project site. We haven't yet reviewed these records, so I can't say which, if any, will inform element occurrences.

If you would like to apply for access to our detailed observation data for your project site, please complete the attached data access request form and return it to me. Also, anyone in your organization who will be working with the data should complete data sensitivity training.

Data sensitivity training is a 30-minute online module. You can access it via the links below:

- View the MP4 version
- Read the accessible transcript

Please follow the instructions at the end of the video so we know you've completed the training.

There is also a Nesting Site layer listed in the Ontario Geohub. The Natural Heritage Information Centre is not the custodian of this layer. However, I have access to this dataset so went ahead and queried it for you. I didn't find any records of Bald Eagle nests in or adjacent to your project site. If you have questions about this layer or wish to request access to it please contact the listed individual.

If you have any questions, or if there is anything else the Natural Heritage Information Centre can help you with, please contact us at NHICrequests@ontario.ca or 705-755-2159.

Best regards,
Martina

Martina Furrer
Biodiversity Information Biologist
Ontario Natural Heritage Information Centre
Ontario Ministry of Natural Resources and Forestry
300 Water St, Peterborough, ON, K9J 3C7
705.755.2192 | martina.furrer@ontario.ca

http://www.ontario.ca/environment-and-energy/natural-heritage-information-centre

Please note: As part of providing accessible customer service, please let me know if you have any accommodation needs or require communication supports or alternate formats.

From: NRISC (MNRF) <NRISC@ontario.ca>
Sent: October 22, 2019 10:42 AM
To: NHIC-Requests (MNRF) <nhicrequests@ontario.ca>
Subject: FW: Bald Eagle nest sites in Cambridge

Hello,

The following email was received at the Natural Resources Information and Support Centre. Please respond directly to the customer or have someone in your area respond, and cc the NRISC for our information; alternatively, you may provide us with a response to forward to the customer.

Regards,

NRISC web reader - IR
****
Ministry of Natural Resources and Forestry
Natural Resources Information and
Support Centre
300 Water Street
Peterborough, ON K9J 3C7
Tel: 1-800-667-1940 / 1-800-387-7011
TTY: 1-866-686-6072
NRISC@ontario.ca

Messages sent by email are not secure. If you choose to provide your personal information, it will not be encrypted, nor will our response be encrypted. Alternatively you can phone 1-800-387-7011 between 8:30AM and 5:00PM, Monday through Friday.

As part of providing accessible customer service, please let us know if you have any accommodation needs or require communication supports or alternate formats.

From: Nadine Price <Nadine.Price@rjburnside.com>
Sent: October-16-19 8:56 AM
To: NRISC (MNRF) <NRISC@ontario.ca>
Cc: Tricia Radburn <Tricia.Radburn@rjburnside.com>
Subject: Bald Eagle nest sites in Cambridge

Good morning,

I am wondering if it is possible to obtain information on the location of Bald Eagle nests and overwintering areas within the vicinity of our project site, Blair-Preston Trail, in the Cambridge area. This project is located by the confluence of the Grand and Speed Rivers in the Preston Flats, just off of Fountain Street South. I have attached a map of the study area to this email for your reference.

I have already tried contacting Graham Buck with the MNRF Guelph office with my request and he suggested that I send an email to the NRISC about my request to find out the way this type of request is handled. I have also contacted the MECP via their SAROntario email twice and have not had a response.

Thank you for your time,

Nadine

BURNSIDE
Nadine Price, M.Sc.
Terrestrial Ecologist

R.J. Burnside & Associates Limited
1465 Pickering Parkway, Suite 200, Pickering, Ontario L1V 7G7
Office: +1 800-265-9662 Direct: +1 289-545-1070
www.rjburnside.com

Nadine Price

From: Buck, Graham (MNRF) <Graham.Buck@ontario.ca>
Sent: Friday, February 28, 2020 12:27 PM
To: Nadine Price
Subject: RE: MNRF Response to Information Request for Blair-Preston Trail EA, City of Cambridge (300043765.0000)
Attachments: Speed River Wetland.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Here you go.

Graham

From: Nadine Price <Nadine.Price@rjburnside.com>
Sent: February-19-20 11:48 AM
To: Buck, Graham (MNRF) <Graham.Buck@ontario.ca>
Cc: Tricia Radburn <Tricia.Radburn@rjburnside.com>
Subject: RE: MNRF Response to Information Request for Blair-Preston Trail EA, City of Cambridge (300043765.0000)
Importance: High

Good morning Graham,

Thank you again for sending the information below earlier this month for our Blair-Preston Trail EA project site.

We are wondering if you can also send a copy of the Speed River Wetland Complex OWES evaluation. In addition, would it be possible for you to send more details on the Winter Waterfowl Concentration Area (where is it on the site, what species are present, etc.) as well as the Mixed Wader Nesting Colony (species and location, etc. - this was found when I did an NHIC search for the area) present on the site? I have attached a map of the study area for your reference.

If you are able to respond as soon as possible, that would be greatly appreciated.

Thank you for your time.

Nadine

Nadine Price, M.Sc.
Terrestrial Ecologist
R.J. Burnside & Associates Limited | www.rjburnside.com
Office: +1 800-265-9662 Direct: +1 289-545-1070

From: Buck, Graham (MNRF) <Graham.Buck@ontario.ca>
Sent: Wednesday, February 05, 2020 10:24 AM
To: Nadine Price <Nadine.Price@rjburnside.com>
Subject: MNRF Response to Information Request for Blair-Preston Trail EA, City of Cambridge (300043765.0000)

Hello Nadine,

The following information is available for your site:

AQUATIC INFORMATION

Fish community
- white sucker
- northern hog sucker
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- striped shiner
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- smallmouth bass
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- longnose dace
- bluntnose minnow
- rainbow darter
- pumpkinseed
- emerald shiner
- shiner (Luxilus sp.)

Thermal Regime and Recommended in-water works window
- Warm water
- July 1st to March 30th

Significant Wildlife Habitat
- Waterfowl Winter Concentration Area

TERRESTRIAL INFORMATION
- Speed River wetland Complex PSW
- No other terrestrial protected features have been identified

Graham

Graham Buck
Management Biologist
Ministry of Natural Resources and Forestry
Guelph District
1 Stone Road West Guelph ON
N1G 4Y2
519 826 4505
graham.buck@ontario.ca

From: Nadine Price <Nadine.Price@rjburnside.com>
Sent: January-10-20 2:44 PM
To: Buck, Graham (MNRF) <Graham.Buck@ontario.ca>
Cc: Tricia Radburn <Tricia.Radburn@rjburnside.com>
Subject: Information request - Blair-Preston Trail EA, City of Cambridge (300043765.0000)

Good afternoon,

I am writing to request data for our Blair-Preston Trail EA project in Cambridge, the study area includes lands from the Linear Park near Preston High School to the west, the shoreline on the Speed River where the

pedestrian bridge is proposed, and *rare*- owned lands east of Fountain Street. I have attached a map to this email.

In fulfillment of this work, current environmental background information (both aquatic and terrestrial) is required within the study area and adjacent lands. At this time, we are requesting any applicable/available data (preferably in GIS format) as listed below. We have also contacted the local Conservation Authority. Information we are seeking from MNRF includes:

Terrestrial

- Significant wildlife habitat (e.g., nesting/breeding/hibernation) that may not yet be available from LIO.
- Sensitive avian nesting sites (heronries, stick nest locations) that may not yet be available from LIO.
- Digital boundary information for updated designated natural features that may not yet be available from LIO (e.g., Areas of Natural and Scientific Interest (ANSI), Environmentally Significant Areas (ESA), Provincially Significant Wetlands (PSW) etc.).

Aquatics

- Fish/Freshwater Mussel sampling locations (e.g., fish dot mapping) along with sample dates and species occurrence records for water bodies that are located within the study area (i.e. Rouge River, Beaver Creek, Apple Creek).
- Confirmed and/or potential spawning/rearing/foraging habitat locations.
- Thermal regime classification(s).
- Recommended in-water works window(s).

If you are able to respond by January 24, 2020, it would be greatly appreciated. Please do not hesitate to contact me at 289-545-1070 or 647-461-4359 if you have any questions or concerns.

Sincerely,

Nadine

BURNSIDE

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www.rjburnside.com

Nadine Price

From: Nadine Price
Sent: Friday, January 10, 2020 3:02 PM
To: Species at Risk (MECP)
Cc: Tricia Radburn
Subject: 043765 Blair-Preston Trail EA MECP SAR Information Request
Attachments: 043765 Study Area.pdf

Good afternoon,

I am writing to request Species at Risk Information for our Blair-Preston Trail EA project in Cambridge; the study area includes lands from the Linear Park near Preston High School to the west, the shoreline on the Speed River where the pedestrian bridge is proposed, and *rare-* owned lands east of Fountain Street. I have attached a map to this email.

More specifically, we are requesting the following information:

- Locations, observation, dates and any other relevant information about terrestrial and aquatic SAR that is not included in the list below – if possible, please provide the UTM's/accuracy codes.
- Locally rare species lists or species records known from the study area and adjacent lands.

Our search of the NHIC, OBBA, eBird, DFO and ORAA databases on July 9, 2019 yielded the follow Species at Risk:

Birds
- Bald Eagle
- Bank Swallow
- Barn Swallow
- Bobolink
- Canada Warbler
- Chimney Swift
- Eastern Meadowlark
- Eastern Wood-pewee
- Golden Eagle
- Golden-winged Warbler
- Horned Grebe
- Peregrine Falcon
- Rusty Blackbird
- Wood Thrush

Fish
- Silver Shiner

Molluscs
- Wavy-rayed Lampmussel

Plants
- American Chestnut

Reptiles and Amphibians

- Blanding's Turtle
- Eastern Milksnake (SARA listed only)
- Eastern Ribbonsnake
- Jefferson Salamander
- Midland Painted Turtle (COSEWIC listed only)
- Queensnake
- Snapping Turtle
- Western Chorus Frog

If you are able to respond by January 24, 2020, it would be greatly appreciated. Please do not hesitate to contact me at 289-545-1070 or 647-461-4359 if you have any questions or concerns.

Sincerely,

Nadine

Nadine Price

From: Species at Risk (MECP) <SAROntario@ontario.ca>
Sent: Thursday, March 05, 2020 9:01 AM
To: Nadine Price
Subject: RE: 043765 Blair-Preston Trail EA MECP SAR Information Request

Hi Nadine,

I have nothing further to add, your list is complete.

Thank-you

Jody Scheifley
Management Biologist | Permissions and Compliance Section, Species at Risk Branch | Ministry of Environment, Conservation and Parks | 1450 7TH Avenue East Owen Sound, Ontario, N4K

From: Nadine Price <Nadine.Price@rjburnside.com>
Sent: January 10, 2020 3:02 PM
To: Species at Risk (MECP) <SAROntario@ontario.ca>
Cc: Tricia Radburn <Tricia.Radburn@rjburnside.com>
Subject: 043765 Blair-Preston Trail EA MECP SAR Information Request

Good afternoon,

I am writing to request Species at Risk Information for our Blair-Preston Trail EA project in Cambridge; the study area includes lands from the Linear Park near Preston High School to the west, the shoreline on the Speed River where the pedestrian bridge is proposed, and *rare-* owned lands east of Fountain Street. I have attached a map to this email.

More specifically, we are requesting the following information:

- Locations, observation, dates and any other relevant information about terrestrial and aquatic SAR that is not included in the list below – if possible, please provide the UTM's/accuracy codes.
- Locally rare species lists or species records known from the study area and adjacent lands.

Our search of the NHIC, OBBA, eBird, DFO and ORAA databases on July 9, 2019 yielded the follow Species at Risk:

Birds

- Bald Eagle
- Bank Swallow
- Barn Swallow
- Bobolink

- Canada Warbler
- Chimney Swift
- Eastern Meadowlark
- Eastern Wood-pewee
- Golden Eagle
- Golden-winged Warbler
- Horned Grebe
- Peregrine Falcon
- Rusty Blackbird
- Wood Thrush

Fish
- Silver Shiner

Molluscs
- Wavy-rayed Lampmussel

Plants
- American Chestnut

Reptiles and Amphibians
- Blanding's Turtle
- Eastern Milksnake (SARA listed only)
- Eastern Ribbonsnake
- Jefferson Salamander
- Midland Painted Turtle (COSEWIC listed only)
- Queensnake
- Snapping Turtle
- Western Chorus Frog

If you are able to respond by January 24, 2020, it would be greatly appreciated. Please do not hesitate to contact me at 289-545-1070 or 647-461-4359 if you have any questions or concerns.

Sincerely,

Nadine

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Nadine Price, M.Sc.
Terrestrial Ecologist

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[THE DIFFERENCE IS OUR PEOPLE]

Appendix D

Field Notes and Species Lists

Appendix D: Spring Migrant Survey Summary Table

Surveys Conducted by: Matthew Iles

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Federal COSEWIC[3]	Federal SARA (Species At Risk Act)[3]	Federal SARA Schedule[4]	Provincial MNRF Area Sensitive Species[5]	Highest Number Recorded (All Habitat Units Combined)	Comments
American Crow	*Corvus brachyrhynchos*	S5B						4	Local.
American Goldfinch	*Spinus tristis*	S5B						7	Local.
American Robin	*Turdus migratorius*	S5B						12	Local.
Baltimore Oriole	*Icterus galbula*	S4B						4	Local; some may have been migrants.
Bank Swallow	*Riparia riparia*	S4B	THR	THR	THR	1		Unknown	Observed over 250 swallows of different species aerial foraging just outside study area by confluence of Speed and Grand River.
Barn Swallow	*Hirundo rustica*	S4B	THR	THR	THR	1		Unknown	Observed over 250 swallows of different species aerial foraging just outside study area by confluence of Speed and Grand River.
Blue Jay	*Cyanocitta cristata*	S5						2	Local.
Blue-gray Gnatcatcher	*Polioptila caerulea*	S4B					Yes	1	Migrant. Not detected during breeding bird surveys, exhibiting migrant behaviour.
Bobolink	*Dolichonyx oryzivorus*	S4B	THR	THR	THR	1	Yes	**1**	Originally suspected to be migrant, later confirmed as breeding.
Canada Goose	*Branta canadensis*	S5						6	Local.
Cliff Swallow	*Petrochelidon pyrrhonota*	S4B						Unknown	Observed over 250 swallows of different species aerial foraging just outside study area by confluence of Speed and Grand River.
Common Grackle	*Quiscalus quiscula*	S5B						8	Local.
Common Merganser	*Mergus merganser*	S5B, S5N					Yes	2	Local.
Eastern Kingbird	*Tyrannus tyrannus*	S4B						1	Local.
Eastern Meadowlark	*Sturnella magna*	S4B	THR	THR	THR	1	Yes	**4**	Singing - suspected to be breeding, yet not detected during later breeding bird visits, observed in field west of Speed River.
European Starling	*Sturnus vulgaris*	SNA						14	Local.
Gray Catbird	*Dumetella carolinensis*	S4B						1	Local.
Great Blue Heron	*Ardea herodias*	S4						2	Local.
Hairy Woodpecker	*Picoides villosus*	S5						2	Local.
House Wren	*Troglodytes aedon*	S5B						6	Local.
Mallard	*Anas platyrhynchos*	S5						10	Local.
Mourning Dove	*Zenaida macroura*	S5						3	Local.
Northern Cardinal	*Cardinalis cardinalis*	S5						2	Local.

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Northern Flicker	*Colaptes auratus*	S4B						2	Local.
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	S4B						Unknown	Observed over 250 swallows of different species aerial foraging just outside study area by confluence of Speed and Grand River.
Osprey	*Pandion haliaetus*	S5B						1	Local.
Palm Warbler	*Setophaga palmarum palmarum*	S5B						2	Migrant; outside of breeding range.
Red-tailed Hawk	*Buteo jamaicensis*	S5						1	Local.
Red-winged Blackbird	*Agelaius phoeniceus*	S4						22	Local; some were part of a roving flock and may have been migrants.
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	S4B						2	Local.
Savannah Sparrow	*Passerculus sandwichensis*	S4B					Yes	8	Local.
Song Sparrow	*Melospiza melodia*	S5B						14	Local.
Tree Swallow	*Tachycineta bicolor*	S4B						Unknown	Observed over 250 swallows of different species aerial foraging just outside study area by confluence of Speed and Grand River.
Turkey Vulture	*Cathartes aura*	S5B						2	Migrant.
Warbling Vireo	*Vireo gilvus*	S5B						1	Local.
Yellow Warbler	*Setophaga petechia*	S5B						6	Local; some may have been migrants.
Yellow-rumped Warbler	*Setophaga coronata*	S5B						3	Migrant; suitable breeding habitat not present. Study area at southern edge of breeding range.
TOTAL SPECIES	**37**								

[1]S-Ranks (provincial)
Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario (Please refer to: http://explorer.natureserve.org/nsranks.htm)

SX — Presumed Extirpated - Species or community is believed to be extirpated from the province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
SH — Possibly Extirpated (Historical) - Species or community occurred historically in the province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20–40 years. A species or community could become SH without such a 20-40 year delay if the only known occurrences in a province were destroyed or if it had been extensively and unsuccessfully looked for. The SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.
S1 — Critically Imperiled - Critically imperiled in the province or state because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the province.
S2 — Imperiled - Imperiled in the province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the province.
S3 — Vulnerable - Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 — Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 — Secure - Common, widespread, and abundant in the province.
SNR — Unranked - Province conservation status not yet assessed.
SU — Unrankable - Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA — Not Applicable - A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# — Range Rank - A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
S#? – Inexact or Uncertain - Denotes inexact or uncertain numeric rank.

Breeding Status Qualifiers
B – Breeding Conservation status refers to the breeding population of the species in the nation or state/province.
N – Nonbreeding Conservation status refers to the non-breeding population of the species in the province.
M – Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the province.

[2]SARO *Endangered Species Act, 2007*
(provincial status from http://www.ontario.ca/environment-and-energy/how-species-risk-are-listed#section-3)
The provincial review process is implemented by the MNRF's Committee on the Status of Species at Risk in Ontario (COSSARO).

Extinct - A species that no longer exists anywhere.
Extirpated (EXT) - Lives somewhere in the world, and at one time lived in the wild in Ontario, but no longer lives in the wild in Ontario.
Endangered (END) - Lives in the wild in Ontario but is facing imminent extinction or extirpation.
Threatened (THR) - Lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it.
Special concern (SC) - Lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats.
Not at Risk (NAR) - A species that has been evaluated and found to be not at risk.
Data Deficient (DD) - A species for which there is insufficient information for a provincial status recommendation.

[3]SARA (Federal *Species at Risk Act*) Status and Schedule (includes COSEWIC Status)
The Act establishes Schedule 1, as the official list of wildlife species at risk. It classifies those species as being either Extirpated, Endangered, Threatened, or Special Concern. Once listed, the measures to protect and recover a listed wildlife species are implemented.

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Special Concern (SC) - A wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.
Data Deficient (DD) - A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.
Not At Risk (NAR) - A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

[4]SARA Schedule
Schedule 1: is the official list of species that are classified as extirpated, endangered, threatened, and of special concern.
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The Act establishes Schedule 1 as the official list of wildlife species at risk. However, please note that while Schedule 1 lists species that are extirpated, endangered, threatened and of special concern, the prohibitions do not apply to species of special concern.

Species that were designated at risk by COSEWIC prior to October 1999 (Schedule 2 & 3) must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been assessed, the Governor in Council may on the recommendation of the Minister, decide on whether or not they should be added to the List of Wildlife Species at Risk.

[5]Source: Ontario Ministry of Natural Resources. 2000. *Significant Wildlife Habitat Technical Guide* & Appendices.

Appendix D: Breeding Bird Survey Summary Table

Surveys Conducted by: Matthew Iles

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Federal COSEWIC[3]	Federal SARA (Species At Risk Act)[3]	Federal SARA Schedule[4]	Provincial MNRF Area Sensitive Species[5]	Highest Number Recorded (All Habitat Units Combined)	Highest Recorded Breeding Evidence[6]	Comments
American Goldfinch	*Spinus tristis*	S5B						7	P	
American Robin	*Turdus migratorius*	S5B						18	CF	
Baltimore Oriole	*Icterus galbula*	S4B						4	P	
Belted Kingfisher	*Megaceryle alcyon*	S4B						1	H	
Black-capped Chickadee	*Poecile atricapillus*	S5						4	S	
Blue Jay	*Cyanocitta cristata*	S5						1	H	
Bobolink	*Dolichonyx oryzivorus*	S4B	THR	THR	THR	1	Yes	2	CF	Observed pair carrying food to a nest.
Brown-headed Cowbird	*Molothrus ater*	S4B						5	P	
Canada Goose	*Branta canadensis*	S5						50	X	Flew over study area.
Cedar Waxwing	*Bombycilla cedrorum*	S5B						56	P	Observed a flock of approximately 50 Cedar Waxwings on first visit.
Chimney Swift	*Chaetura pelagica*	S4B, S4N	THR	THR	THR	1		1	X	Flew over study area.
Common Grackle	*Quiscalus quiscula*	S5B						8	FY	
Common Yellowthroat	*Geothlypis trichas*	S5B						1	S	Observed just south of study area.
Downy Woodpecker	*Picoides pubescens*	S5						3	H	
E+astern Kingbird	*Tyrannus tyrannus*	S4B						3	P	
European Starling	*Sturnus vulgaris*	SNA						66	FY	Some wandering flocks.
Gray Catbird	*Dumetella carolinensis*	S4B						3	S	
Great Blue Heron	*Ardea herodias*	S4						1	X	Flew over study area.
House Wren	*Troglodytes aedon*	S5B						9	S	
Least Flycatcher	*Empidonax minimus*	S4B					Yes	1	S	
Mallard	*Anas platyrhynchos*	S5						6	P	
Mourning Dove	*Zenaida macroura*	S5						3	H	
Northern Cardinal	*Cardinalis cardinalis*	S5						4	S	
Northern Flicker	*Colaptes auratus*	S4B						2	H	

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Orchard Oriole	*Icterus spurius*	S4B						1	S	
Osprey	*Pandion haliaetus*	S5B						1	X	Flew over study area. Most likely breeding elsewhere on the Grand River.
Red-eyed Vireo	*Vireo olivaceus*	S5B						1	H	
Red-winged Blackbird	*Agelaius phoeniceus*	S4						18	V	
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	S4B						1	S	
Savannah Sparrow	*Passerculus sandwichensis*	S4B					Yes	12	V	
Song Sparrow	*Melospiza melodia*	S5B						19	CF	
Tree Swallow	*Tachycineta bicolor*	S4B						4	X	Flew over study area.
Turkey Vulture	*Cathartes aura*	S5B						1	X	Flew over study area.
Warbling Vireo	*Vireo gilvus*	S5B						3	CF	
White-breasted Nuthatch	*Sitta carolinensis*	S5					Yes	1	S	
Willow Flycatcher	*Empidonax traillii*	S5B						1	S	
Yellow Warbler	*Setophaga petechia*	S5B						11	P	
TOTAL SPECIES	**37**									

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ELC Community Summary Sheet	Polygon #	

Project #:_____ Project Name: Blair Prestor Surveyor(s): PDE Date: June 10, 2014

Polygon Description

Community Series:	Ecosite:	Vegetation Type:
Marsh	MAS 2-1	Cattail

System:	Topographic Feature:	Dominant Plant Form:
Terrestrial Wetland Aquatic	Lacustrine / Riverine / Bottomland / Terrace / Valley Slope / Tableland Rolling Upland / Cliff / Talus / Crevice / Cave / Alvar / Rockland / Beach / Bar / Sand Dune / Bluff	Plankton / Submerged / Floating-leaved / Graminoid / Forb / Lichen / Bryophyte / Deciduous / Coniferous / Mixed

Cover:	History:	Community Class:
Open Shrub Treed	Natural Cultural	Beach-Bar / Sand Dune / Bluff / Cliff / Talus / Alvar / Rock Barren / Crevice-Cave / Sand Barren / Tallgrass Prairie – Savannah & Woodland / Forest / Cultural / Swamp / Bog / Marsh / Open Water / Shallow Water

Stand Description			Soil Analysis	
Community Age: Pioneer / Young / Mid-Aged / Mature / Old Growth		Basal Area (m2/ha):	Soil Drainage: V. Rapid / Rapid / Well / Moderately Well / Imperfect / Poor / V. Poor	
Standing Snags: Rare / Occasional / Abundant / Dominant			Soil Moisture Regime: Dry / Fresh / Moist / Wet	
Deadfall Logs: Rare / Occasional / Abundant / Dominant			Effective Soil Texture:	
Health L / M / H	Sensitivity L / M / H	Botanical Quality L / M / H	Depth to Mottles / Gley Sample 1 M - cm / G - cm, Sample 2 M - cm / G - cm	
Slope: None / Gentle / Moderate / Steep	Simple / Complex		Depth to G. Water: @ m At surface / <1m / >1m	Depth to Bedrock: @ m At surface / <1m / >1m

	Vegetation Layer	Height	Cover	Dominant Sp. Per Vegetation Layer
1	Canopy			
2	Subcanopy			
3	Understorey			
4	Groundlayer	1m	50%	NL: Cattail

Height Codes – **(1)** >20m, **(2)** 10-20m, **(3)** 2-10m, **(4)** 1-2m, **(5)** 0.5-1m, **(6)** 0.2-0.5m, **(7)** <0.2m

Cover Codes – **(0)** None, **(1)** 1-10%, **(2)** 10-25%, **(3)** 25-60%, **(4)** >60%

Size Class Analysis (Rare / Occasional / Abundant / Dominant)	< 10cm DBH	10 – 24cm DBH	25 – 50cm DBH	> 50cm DBH

Evidence of Disturbance:
Tree cutting, exotic species, trails, dumping, noise, predation

Wildlife / Habitat Observations:
Birds, mammals, calls, observed, dens, nests

Comments:

				Community Name	Code		% of Community
Inclusion		Complex					
Inclusion		Complex					
Inclusion		Complex					

ELC Community Summary Sheet

Polygon #

Plant List	Layer / Abundance			
Trees	1	2	3	4

Shrubs	1	2	3	4
E. Buckthorn Common(?)				
Salix SP.	O			

Plant List	Layer / Abundance			
Groundlayer	1	2	3	4
[illegible]				
NL cattail	C			
Blue flag	O			
Carex spp	C			

ELC Community Summary Sheet	Polygon #	

Project #: _____ Project Name: Blair Preston Surveyor(s): PDE Date: Jun 6, 2019

Polygon Description

Community Series:	Ecosite:	Vegetation Type:
Marsh	MAS 2-9	Forb

System:	Topographic Feature:	Dominant Plant Form:
Terrestrial / Wetland / Aquatic	Lacustrine / Riverine / Bottomland / Terrace / Valley Slope / Tableland / Rolling Upland / Cliff / Talus / Crevice / Cave / Alvar / Rockland / Beach / Bar / Sand Dune / Bluff	Plankton / Submerged / Floating-leaved / Graminoid / Forb / Lichen / Bryophyte / Deciduous / Coniferous / Mixed

Cover:	History:	Community Class:
Open / Shrub / Treed	Natural / Cultural	Beach-Bar / Sand Dune / Bluff / Cliff / Talus / Alvar / Rock Barren / Crevice-Cave / Sand Barren / Tallgrass Prairie – Savannah & Woodland / Forest / Cultural / Swamp / Bog / Marsh / Open Water / Shallow Water

Stand Description			Soil Analysis	
Community Age: Pioneer / Young / Mid-Aged / Mature / Old Growth	Basal Area (m2/ha):		Soil Drainage: V. Rapid / Rapid / Well / Moderately Well / Imperfect / Poor / V. Poor	
Standing Snags: Rare / Occasional / Abundant / Dominant			Soil Moisture Regime: Dry / Fresh / Moist / Wet	
Deadfall Logs: Rare / Occasional / Abundant / Dominant			Effective Soil Texture:	
Health: M / H	Sensitivity: L / M / H	Botanical Quality: L / M / H	Depth to Mottles / Gley: Sample 1 M - cm / G - cm, Sample 2 M - cm / G - cm	
Slope: None / Gentle / Moderate / Steep — Simple / Complex			Depth to G. Water: @ m: At surface / <1m / >1m	Depth to Bedrock: @ m: At surface / <1m / >1m

	Vegetation Layer	Height	Cover	Dominant Sp. Per Vegetation Layer
1	Canopy			
2	Subcanopy			
3	Understorey	1m	1-10	RO Dogwood
4	Groundlayer			Wax Smartweed / Cutgrass / Black Bulrush

Height Codes – **(1)** >20m, **(2)** 10-20m, **(3)** 2-10m, **(4)** 1-2m, **(5)** 0.5-1m, **(6)** 0.2-0.5m, **(7)** <0.2m
Cover Codes – **(0)** None, **(1)** 1-10%, **(2)** 10-25%, **(3)** 25-60%, **(4)** >60%

Size Class Analysis (Rare / Occasional / Abundant / Dominant)	0			
	< 10cm DBH	10 – 24cm DBH	25 – 50cm DBH	> 50cm DBH

Evidence of Disturbance:
Tree cutting, exotic species, trails, dumping, noise, predation

Evidence of P. loosestrife management (many standing dead plants

Wildlife / Habitat Observations:
Birds, mammals, calls, observed, dens, nests

Comments:

> Reed River PSW

			Community Name	Code		% of Community
Inclusion		Complex				
Inclusion		Complex				
Inclusion		Complex				

ELC Community Summary Sheet | **Polygon #**

Plant List	Layer / Abundance			
Trees	1	2	3	4

Shrubs	1	2	3	4
R.O. Dogwood	2			
G. Dog Wood	0			

Plant List	Layer / Abundance			
Groundlayer	1	2	3	4
Pale Smartweed				
R. Cutgrass				
Black Bulrush				
NL Cattail				
Stinging Nettle				

ELC Community Summary Sheet	Polygon #	

Project #: _____ Project Name: Blair-Preston Surveyor(s): PDE Date: Jun 10, 2019

Polygon Description

Community Series:	Ecosite:	Vegetation Type:
Cultural	Cum/CUT1	meadow / Thicket

System:	Topographic Feature:	Dominant Plant Form:
Terrestrial Wetland Aquatic	Lacustrine / Riverine / Bottomland / Terrace / Valley Slope / Tableland Rolling Upland / Cliff / Talus / Crevice / Cave / Alvar / Rockland / Beach / Bar / Sand Dune / Bluff	Plankton / Submerged / Floating-leaved / Graminoid / Forb / Lichen / Bryophyte / Deciduous / Coniferous / Mixed

Cover:	History:	Community Class:
Open Shrub Treed	Natural Cultural	Beach-Bar / Sand Dune / Bluff / Cliff / Talus / Alvar / Rock Barren / Crevice-Cave / Sand Barren / Tallgrass Prairie – Savannah & Woodland / Forest / Cultural / Swamp / Bog / Marsh / Open Water / Shallow Water

Stand Description			Soil Analysis	
Community Age: Pioneer / Young / Mid-Aged / Mature / Old Growth	**Basal Area (m2/ha):**		**Soil Drainage:** V. Rapid / Rapid / Well / Moderately Well / Imperfect / Poor / V. Poor	
Standing Snags: None / Occasional / Abundant / Dominant			**Soil Moisture Regime:** Dry / Fresh / Moist / Wet	
Deadfall Logs: None / Occasional / Abundant / Dominant			**Effective Soil Texture:**	
Health L / M / H	**Sensitivity** L / M / H	**Botanical Quality** L / M / H	**Depth to Mottles / Gley** Sample 1 M - cm / G - cm, Sample 2 M - cm / G - cm	
Slope: None / Gentle / Moderate / Steep Simple / Complex			**Depth to G. Water:** @ m At surface / <1m / >1m	**Depth to Bedrock:** @ m At surface / <1m / >1m

	Vegetation Layer	Height	Cover	Dominant Sp. Per Vegetation Layer
1	Canopy	20+	10+%	W Oak
2	Subcanopy	1-5m	25%	Gray Dogwood / E buckthorn
3	Understorey	1-2	25%	Andy Dogwood
4	Groundlayer			Poa s.t. plat, C/T Goldenrod

Height Codes – (1) >20m, **(2)** 10-20m, **(3)** 2-10m, **(4)** 1-2m, **(5)** 0.5-1m, **(6)** 0.2-0.5m, **(7)** <0.2m
Cover Codes – (0) None, **(1)** 1-10%, **(2)** 10-25%, **(3)** 25-60%, **(4)** >60%

Size Class Analysis (Rare / Occasional / Abundant / Dominant)				
	< 10cm DBH	10 – 24cm DBH	25 – 50cm DBH	> 50cm DBH
	O		R	

Evidence of Disturbance:
Tree cutting, exotic species, trails, dumping, noise, predation

Wildlife / Habitat Observations:
Birds, mammals, calls, observed, dens, nests

Comments:

				Community Name	Code		% of Community
Inclusion		Complex					
Inclusion		Complex					
Inclusion		Complex					

ELC Community Summary Sheet	Polygon #	

Plant List	Layer / Abundance			
Trees	1	2	3	4
[illegible]	[illegible]			
W. oak	R			

Shrubs	1	2	3	4
[illegible]				
[illegible]				
[illegible]				
Gray Dogwood	C			
T. Rose shrubs	O			
V. Opulus	O			
hawthorn sp.	O			
E. buckthorn	C			

Plant List	Layer / Abundance			
Groundlayer	1	2	3	4
[illegible]	C			
[illegible]				
[illegible]				
[illegible]				
Poa c.f. pratensis				
Smooth bedstraw				
S. brome				
(C) Goldenrod				
Teasel				
C. Thistle				
Cow vetch				
Dandelion				
Bull thistle				
orchard grass				
Dame's Rocket				
Cult. Rhubarb				
Timothy				

ELC Community Summary Sheet	Polygon #	

Project #: _____ Project Name: Blair Preston Surveyor(s): PDE Date: Jun 10, 2019

Polygon Description

Community Series:	Ecosite:	Vegetation Type:
Cultural	Cum/CUT2	meadow / Thicket

System:	Topographic Feature:	Dominant Plant Form:
Terrestrial / Wetland / Aquatic	Lacustrine / Riverine / Bottomland / Terrace / Valley Slope / Tableland / Rolling Upland / Cliff / Talus / Crevice / Cave / Alvar / Rockland / Beach / Bar / Sand Dune / Bluff	Plankton / Submerged / Floating-leaved / Graminoid / Forb / Lichen / Bryophyte / Deciduous / Coniferous / Mixed

Cover:	History:	Community Class:
Open / Shrub / Treed	Natural / Cultural	Beach-Bar / Sand Dune / Bluff / Cliff / Talus / Alvar / Rock Barren / Crevice-Cave / Sand Barren / Tallgrass Prairie – Savannah & Woodland / Forest / Cultural / Swamp / Bog / Marsh / Open Water / Shallow Water

Stand Description			Soil Analysis	
Community Age: Pioneer / Young / Mid-Aged / Mature / Old Growth	Basal Area (m2/ha):		Soil Drainage: V. Rapid / Rapid / Well / Moderately Well / Imperfect / Poor / V. Poor	
Standing Snags: None / Occasional / Abundant / Dominant			Soil Moisture Regime: Dry / Fresh / Moist / Wet	
Deadfall Logs: None / Occasional / Abundant / Dominant			Effective Soil Texture:	
Health: L / M / H	Sensitivity: L / M / H	Botanical Quality: L / M / H	Depth to Mottles / Gley: Sample 1 M - cm / G - cm, Sample 2 M - cm / G - cm	
Slope: None / Gentle / Moderate / Steep	Simple / Complex		Depth to Gr Water: @ m; At surface / <1m / >1m	Depth to Bedrock: @ m; At surface / <1m / >1m

	Vegetation Layer	Height	Cover	Dominant Sp. Per Vegetation Layer
1	Canopy	20m	1-10%	W. Oak
2	Subcanopy			
3	Understorey	1m	30%	Various Planted Trees
4	Groundlayer	20.5	60%	C/T graminoid

Height Codes – **(1)** >20m, **(2)** 10-20m, **(3)** 2-10m, **(4)** 1-2m, **(5)** 0.5-1m, **(6)** 0.2-0.5m, **(7)** <0.2m
Cover Codes – **(0)** None, **(1)** 1-10%, **(2)** 10-25%, **(3)** 25-60%, **(4)** >60%

Size Class Analysis (Rare / Occasional / Abundant / Dominant)	< 10cm DBH	10 – 24cm DBH	25 – 50cm DBH	> 50cm DBH

Evidence of Disturbance:
Tree cutting, exotic species, trails, dumping, noise, predation

Wildlife / Habitat Observations:
Birds, mammals, calls, observed, dens, nests

Comments:

Obvious signs of recent plantings (T. aspen, B/S maple, W. pine)

				Community Name	Code		% of Community
Inclusion		Complex					
Inclusion		Complex					
Inclusion		Complex					

ELC Community Summary Sheet	Polygon #	

Plant List	Layer / Abundance			
Trees	1	2	3	4
Lw. oak	R			
T. aspen	R			
Lw. pine	R			
R. maple	R			
Man maple	O			

Shrubs	1	2	3	4
T. buckthorn				
Lw. black raspberry				
V. creeper				
R. grape				
Sh. Sumac				
T. honeysuckle				
Multiflora Rose				

Plant List	Layer / Abundance			
Groundlayer	1	2	3	4
Teasel				
Black medic				
C/T Goldenrod				
Poa prat				
C. Thistle				
C. milkweed				
OE. Daisy				
Y. hawkweed				
Yarrow				
D. Fleabane				
Ragweed				
C. Dandelion				
R. clover				
Dames Rocket				
Burdock				
Cow vetch				

ELC Community Summary Sheet	Polygon #	

Project #: _____ Project Name: Blair Preston Surveyor(s): PDE Date: Jun 10, 2019

Polygon Description

Community Series:	Ecosite:	Vegetation Type:
Cultural / IAG	CUM / IAG	Graminoid (Hay Field)

System:	Topographic Feature:	Dominant Plant Form:
Terrestrial / Wetland / Aquatic	Lacustrine / Riverine / Bottomland / Terrace / Valley Slope / Tableland / Rolling Upland / Cliff / Talus / Crevice / Cave / Alvar / Rockland / Beach / Bar / Sand Dune / Bluff	Plankton / Submerged / Floating-leaved / Graminoid / Forb / Lichen / Bryophyte / Deciduous / Coniferous / Mixed

Cover:	History:	Community Class:
Open / Shrub / Treed	Natural / Cultural	Beach-Bar / Sand Dune / Bluff / Cliff / Talus / Alvar / Rock Barren / Crevice-Cave / Sand Barren / Tallgrass Prairie – Savannah & Woodland / Forest / Cultural / Swamp / Bog / Marsh / Open Water / Shallow Water

Stand Description		Soil Analysis	
Community Age: Pioneer / Young / Mid-Aged / Mature / Old Growth	**Basal Area (m2/ha):**	**Soil Drainage:** V. Rapid / Rapid / Well / Moderately Well / Imperfect / Poor / V. Poor	
Standing Snags: Rare / Occasional / Abundant / Dominant		**Soil Moisture Regime:** Dry / Fresh / Moist / Wet	
Deadfall Logs: Rare / Occasional / Abundant / Dominant		**Effective Soil Texture:**	
Health L / M / H	**Sensitivity** L / M / H	**Botanical Quality** L / M / H	**Depth to Mottles / Gley** Sample 1 M - cm / G - cm, Sample 2 M - cm / G - cm
Slope: None / Gentle / Moderate / Steep	Simple / Complex	**Depth to G. Water:** @ m At surface / <1m / >1m	**Depth to Bedrock:** @ m At surface / <1m / >1m

	Vegetation Layer	Height	Cover	Dominant Sp. Per Vegetation Layer
1	Canopy			
2	Subcanopy			
3	Understorey			
4	Groundlayer		60+	Alfalfa / Smooth Brome / Timothy

Height Codes – (1) >20m, **(2)** 10-20m, **(3)** 2-10m, **(4)** 1-2m, **(5)** 0.5-1m, **(6)** 0.2-0.5m, **(7)** <0.2m
Cover Codes – (0) None, **(1)** 1-10%, **(2)** 10-25%, **(3)** 25-60%, **(4)** >60%

Size Class Analysis (Rare / Occasional / Abundant / Dominant)	< 10cm DBH	10 – 24cm DBH	25 – 50cm DBH	> 50cm DBH

Evidence of Disturbance:
Tree cutting, exotic species, trails, dumping, noise, predation

Cut as of Aug 30

Wildlife / Habitat Observations:
Birds, mammals, calls, observed, dens, nests

Comments:

		Community Name	Code		% of Community
Inclusion / Complex					
Inclusion / Complex					
Inclusion / Complex					

ELC Community Summary Sheet

ELC Community Summary Sheet	Polygon #	

Plant List	Layer / Abundance			
Trees	1	2	3	4

Plant List	Layer / Abundance			
Shrubs	1	2	3	4

Plant List	Layer / Abundance			
Groundlayer	1	2	3	4
Alfalfa	C			
Timothy	C			
Orchard Grass	C			
Smooth Brome	C			

ELC Community Summary Sheet	Polygon #	

Project #: _____ Project Name: Blair Preston Surveyor(s): PDE Date: Jun 10 2019

Polygon Description

Community Series:	Ecosite: FOD7	Vegetation Type: Forest

System: Terrestrial / Wetland / Aquatic	Topographic Feature: Lacustrine / Riverine / Bottomland / Terrace / Valley Slope / Tableland / Rolling Upland / Cliff / Talus / Crevice / Cave / Alvar / Rockland / Beach / Bar / Sand Dune / Bluff	Dominant Plant Form: Plankton / Submerged / Floating-leaved / Graminoid / Forb / Lichen / Bryophyte / Deciduous / Coniferous / Mixed

Cover: Open / Shrub / Treed	History: Natural / Cultural	Community Class: Beach-Bar / Sand Dune / Bluff / Cliff / Talus / Alvar / Rock Barren / Crevice-Cave / Sand Barren / Tallgrass Prairie – Savannah & Woodland / Forest / Cultural / Swamp / Bog / Marsh / Open Water / Shallow Water

Stand Description		Soil Analysis
Community Age: Pioneer / Young / Mid-Aged / Mature / Old Growth	**Basal Area (m2/ha):**	**Soil Drainage:** V. Rapid / Rapid / Well / Moderately Well / Imperfect / Poor / V. Poor
Standing Snags: Rare / Occasional / Abundant / Dominant		**Soil Moisture Regime:** Dry / Fresh / Moist / Wet
Deadfall Logs: Rare / Occasional / Abundant / Dominant		**Effective Soil Texture:**
Health L / M / H	**Sensitivity** L / M / H	**Botanical Quality** L / M / H	**Depth to Mottles / Gley** Sample 1 M - cm / G - cm, Sample 2 M - cm / G - cm
Slope: None / Gentle / Moderate / Steep Simple / Complex		**Depth to G. Water:** @ m At surface / <1m / >1m	**Depth to Bedrock:** @ m At surface / <1m / >1m

	Vegetation Layer	Height	Cover	Dominant Sp. Per Vegetation Layer
1	Canopy	20	60	Sugar Maple / White Oak (Super-canopy)
2	Subcanopy	10	40	Sugar Maple
3	Understorey	5	40	Sugar maple / E. Buckthorn
4	Groundlayer	0.5	90	C/T Goldenrod / Dame's Rocket

Height Codes – (1) >20m, (2) 10-20m, (3) 2-10m, (4) 1-2m, (5) 0.5-1m, (6) 0.2-0.5m, (7) <0.2m
Cover Codes – (0) None, (1) 1-10%, (2) 10-25%, (3) 25-60%, (4) >60%

Size Class Analysis (Rare / Occasional / Abundant / Dominant)	O	A	O	R
	< 10cm DBH	10 – 24cm DBH	25 – 50cm DBH	> 50cm DBH

Evidence of Disturbance:
Tree cutting, exotic species, trails, dumping, noise, predation

Wildlife / Habitat Observations:
Birds, mammals, calls, observed, dens, nests

Comments:

				Community Name	Code		% of Community
Inclusion		Complex					
Inclusion		Complex					
Inclusion		Complex					

ELC Community Summary Sheet	Polygon #	

Plant List	Layer / Abundance			
Trees	1	2	3	4
White willow	O			
Mun. Maple	C			
Sugar Maple	O			
Black walnut	O			
Hack berry	R			
Malus	O			
American Beech				

Shrubs	1	2	3	4
Staghorn Sumac	O			
Wild grape	C			
Virginia Creeper	C			
Black Raspberry	C			
Choke Cherry	O			

Plant List	Layer / Abundance			
Groundlayer	1	2	3	4
Wild Cucumber				
Burdock				
C/T goldenrod				
Orchard grass				
Raywild				
S. brome				
S. Jewelweed				
Smooth bedstraw				

ELC Community Summary Sheet	Polygon #	

Project #:_____ Project Name: Blair - Prester Surveyor(s): PDE Date: Jun 10 2014

Polygon Description

Community Series:	Ecosite:	Vegetation Type:
	FOD 7-4	Forest

System:	Topographic Feature:	Dominant Plant Form:
Terrestrial Wetland Aquatic	Lacustrine / Riverine / Bottomland / Terrace / Valley Slope / Tableland Rolling Upland / Cliff / Talus / Crevice / Cave / Alvar / Rockland / Beach / Bar / Sand Dune / Bluff	Plankton / Submerged / Floating-leaved / Graminoid / Forb / Lichen / Bryophyte / Deciduous / Coniferous / Mixed

Cover:	History:	Community Class:
Open Shrub Treed	Natural Cultural	Beach-Bar / Sand Dune / Bluff / Cliff / Talus / Alvar / Rock Barren / Crevice-Cave / Sand Barren / Tallgrass Prairie – Savannah & Woodland / Forest / Cultural / Swamp / Bog / Marsh / Open Water / Shallow Water

Stand Description			Soil Analysis	
Community Age: Pioneer / Young / Mid-Aged / Mature / Old Growth		**Basal Area (m2/ha):**	**Soil Drainage:** V. Rapid / Rapid / Well / Moderately Well / Imperfect / Poor / V. Poor	
Standing Snags: Rare / Occasional / Abundant / Dominant			**Soil Moisture Regime:** Dry / Fresh / Moist / Wet	
Deadfall Logs: Rare / Occasional / Abundant / Dominant			**Effective Soil Texture:**	
Health L / M / H	**Sensitivity** L / M / H	**Botanical Quality** L / M / H	**Depth to Mottles / Gley** **Sample 1** M - cm / G - cm, **Sample 2** M - cm / G - cm	
Slope: None / Gentle / Moderate / Steep Simple / Complex			**Depth to G. Water:** @ m At surface / <1m / >1m	**Depth to Bedrock:** @ m At surface / <1m / >1m

Vegetation Layer		Height	Cover	Dominant Sp. Per Vegetation Layer
1	Canopy	20	60	B. Walnut / Man Maple W.Oak (Super-canopy)
2	Subcanopy	10	40	B walnut / man Maple
3	Understorey	5	40	Man Maple / E Buckthorn
4	Groundlayer	<0.5	40	C/T goldenrod, Black Raspberry, Downies Rocket

Height Codes – **(1)** >20m, **(2)** 10-20m, **(3)** 2-10m, **(4)** 1-2m, **(5)** 0.5-1m, **(6)** 0.2-0.5m, **(7)** <0.2m
Cover Codes – **(0)** None, **(1)** 1-10%, **(2)** 25-50%, **(3)** 25-60%, **(4)** >60%

Size Class Analysis (Rare / Occasional / Abundant / Dominant)	O	A	D	R
	< 10cm DBH	10 – 24cm DBH	25 – 50cm DBH	> 50cm DBH

Evidence of Disturbance:
Tree cutting, exotic species, trails, dumping, noise, predation

Wildlife / Habitat Observations:
Birds, mammals, calls, observed, dens, nests

Comments:

				Community Name	Code		% of Community
Inclusion		Complex					
Inclusion		Complex					
Inclusion		Complex					

ELC Community Summary Sheet	Polygon #	

Plant List	Layer / Abundance			
Trees	1	2	3	4
B. Walnut	D			
Sugar Maple	O			
Manitoba Maple	C			
Hackberry	O			
W. Oak	O-R			
A Beech	R			
White Willow	R			
Malus sp.				
White willow	R			
Malus sp.				

Shrubs	1	2	3	4
Staghorn Sumac				
Black Raspberry				
Hackberry				
R. Grape				
V. Creeper				
Multiflora Rose				
Choke Cherry				

Plant List	Layer / Abundance			
Groundlayer	1	2	3	4
T/C Goldenrod				
Burdock				
Orchard grass				
Ragweed				
Hawkweed				
Pan Plat				
Smooth brome				
S. Jewelweed				
Teasel				
Smooth Bedstraw				
Dandelion				
G. Mustard				

[6]Ontario Breeding Bird Atlas - Breeding Evidence Codes

Observed	
X	Species observed in its breeding season (no breeding evidence).

Possible	
H	Species observed in its breeding season in suitable nesting habitat.
S	Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season.

Probable	
P	Pair observed in suitable nesting habitat in nesting season.
T	Permanent territory presumed through registration of territorial behaviour (song, etc.) on at least two days, a week or more apart, at the same place.
D	Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation.
V	Visiting probable nest site
A	Agitated behaviour or anxiety calls of an adult.
B	Brood Patch on adult female or cloacal protuberance on adult male.
N	Nest-building or excavation of nest hole.

Confirmed	
DD	Distraction display or injury feigning.
NU	Used nest or egg shells found (occupied or laid within the period of the survey).
FY	Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight.
AE	Adult leaving or entering nest sites in circumstances indicating occupied nest.
FS	Adult carrying fecal sac.
CF	Adult carrying food for young.
NE	Nest containing eggs.
NY	Nest with young seen or heard.

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix E

Species At Risk Screening

300043765 Blair-Preston Trail Environmental Assessment
Appendix E: Background Review of Potential Species of Conservation Concern in the Study Area

COMMON NAME **(Source)	SCIENTIFIC NAME	Provincial S-RANK[1]	Provincial SARO Status[2]	COSEWIC[3]	Federal SARA Status[3]	Federal SARA Schedule[4]	Habitat Description[5]	Habitat Present in Study Area?
Birds								
Bald Eagle (Source: eBird)	*Haliaeetus leucocephalus*	S2N, S4B	SC	NAR	NAR	No schedule	Prefers deciduous and mixed deciduous forest and habitat close to water bodies such as lakes and rivers. They roost in "supercanopy" trees such as pine.[6]	Suitable habitat present. None observed during breeding bird surveys.
Canada Warbler (Source: OBBA, eBird)	*Cardellina canadensis*	S4B	SC	THR	THR	1	Generally, prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer. Nests on the ground, on logs or hummocks, and uses dense shrub layer to conceal the nest.[6]	Suitable habitat present. None observed during breeding bird surveys.
Common Nighthawk (Source: OBBA, eBird)	*Chordeiles minor*	S4B	SC	SC	THR	1	Nests in open habitats, in forests and in urban areas. It prefers rock outcrops, alvars, sand barrens, bogs, fens, and in forests, openings created by clearcuts and burns. In southern Ontario, grasslands, agricultural fields, gravel pits, prairies, and alvars and at airports. In cities, it nests mostly on flat, graveled roofs but occasionally on railways and footpaths.[6]	Possible breeding habitat present, however, breeding bird surveys did not detect this species. No targeted crepuscular surveys were conducted for this species.
Eastern Wood-Pewee (Source: OBBA, eBird)	*Contopus virens*	S4B	SC	SC	SC	1	Prefers open space near the nest in the form of forest edges, clearings, roadways, and water. Does not require large areas of woods but occurs less frequently in woodlots surrounded by development than in those without.[6]	Suitable habitat present. None observed during breeding bird surveys.
Golden-winged Warbler (Source: OBBA)	*Vermivora chrysoperta*	S4B	SC	THR	THR	1	Generally, prefer areas of early successional vegetation, found primarily on field edges, hydro or utility right-of-ways, or recently logged areas.[6]	Marginal breeding habitat present. None observed during breeding bird surveys.
Horned Grebe (Source: eBird)	*Podiceps auritus*	S1B, S4N	SC	SC	SC	1	Generally, prefers small (less than 10 ha), shallow freshwater ponds with areas of high interspersion of open water and emergent vegetation. Nests are attached to emergent vegetation and are typically within a few metres of open water.[6]	No suitable breeding habitat present. None observed during breeding bird surveys. This species has only been observed as an incidental on site in the past.
Peregrine Falcon (Source: eBird)	*Falco peregrinus*	S3B	SC	NAR	SC	1	Nests on cliffs near water bodies, or at urban sites such as tall buildings, bridges, and	No suitable breeding habitat present. None observed during breeding bird surveys.

COMMON NAME **(Source)	SCIENTIFIC NAME	Provincial S-RANK[1]	Provincial SARO Status[2]	COSEWIC[3]	Federal SARA Status[3]	Federal SARA Schedule[4]	Habitat Description[5]	Habitat Present in Study Area?
							smokestacks.[6]	
Rusty Blackbird (Source: eBird)	*Euphagus carolinus*	S4B	SC	SC	SC	1	Breeds in forested wetlands and swamps, including fens, bogs, muskeg, beaver ponds and other wet openings in forest. In the Hudson Bay Lowlands, it occurs in muskegs, mainly along creeks, where it is found near dense vegetation with or without trees, including shrub thickets. This species has also nested at the edges of disturbed areas including remnant riparian forest next to regenerating cutovers or large burns.[6]	No suitable breeding habitat present. None observed during breeding bird surveys. This species has only been observed as an incidental on site in the past.
Wood Thrush (Source: OBBA, *rare*)	*Hylocichla mustelina*	S4B	SC	THR	THR	1	Inhabits and breeds in woodlands ranging from small (3 ha) and isolated to large and contiguous. The presence of tall trees and a thick understorey are usually prerequisites for site occupancy.[6]	Possible breeding habitat present in woodlots on site; however, breeding bird surveys did not detect this species.
Insects								
Monarch (Source: Burnside)	*Danaus plexippus*	S2N, S4B	SC	END	SC	1	Throughout their life cycle, Monarchs use three different types of habitat. Only the caterpillars (larvae) feed on milkweed plants and are confined to meadows and open areas where milkweed grows. Adult butterflies can be found in more diverse habitats where they feed on nectar from a variety of wildflowers. Monarchs spend the winter in Oyamel Fir forests found in central Mexico. The largest threat to Ontario Monarchs is habitat loss and fragmentation at overwintering sites in central Mexico where forests are being logged and converted into agricultural fields and pastures. Widespread pesticide and herbicide use throughout the Monarch's range may also limit recovery.[9]	Confirmed. Observed a few individuals during field surveys in open CUM/CUT2 habitat (see Figure 5-1). Milkweed also observed in this habitat on site (host plant for Monarch larvae).
Reptiles and Amphibians								
Eastern Milksnake (Source: ORAA)	*Lampropeltis triangulum*	S4	No status	SC	SC	1	Habitat generalist. Found in wide variety of habitats, from open woodlands, bogs, swamps, woodland edges, marshes, lakeshores, old fields, pastures, farmyards, parks, gardens. Often in or near farm outbuildings, barns, and sheds, and are	Suitable habitat present. Species not observed; however, targeted surveys not completed.

COMMON NAME **(Source)	SCIENTIFIC NAME	Provincial S-RANK[1]	Provincial SARO Status[2]	COSEWIC[3]	Federal SARA Status[3]	Federal SARA Schedule[4]	Habitat Description[5]	Habitat Present in Study Area?
							attracted to piles of rocks, logs, firewood, or building materials, or any place that offers shelter to snakes and their prey (rodents).[10]	
Eastern Ribbonsnake (Source: ORAA)	*Thamnophis sauritus*	S4	SC	SC	SC	1	Generally, occur along the edges of shallow ponds, streams, marshes, swamps, or bogs bordered by dense vegetation that provides cover. Abundant exposure to sunlight is also required, and adjacent upland areas may be used for nesting.[13]	Suitable habitat present. Species not observed; however, targeted surveys not completed.
Midland Painted Turtle (Source: ORAA)	*Chrysemys picta marginata*	S4	NAR	SC	NAR	No schedule	Generally, prefers waterbodies such as ponds, marshes, lakes and slow-moving creeks that have a soft bottom and provide abundant basking sites and aquatic vegetation.[10]	Suitable habitat present in the MAS2-9 ecosite. Species not observed; however, targeted surveys not completed.
Snapping Turtle (Source: ORAA)	*Chelydra serpentina*	S3	SC	SC	SC	1	Generally, inhabit shallow waters where they can hide under the soft mud and leaf litter. Nesting sites usually occur on gravely or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dams and aggregate pits.[9]	Suitable habitat present. Tracks for this species were observed near the Speed River PSW.
Western Chorus Frog (Source: ORAA)	*Pseudacris triseriata*	S3	No status	THR	THR	1	Inhabits forest openings around woodland ponds but can also be found in or near damp meadows, marshes, bottomland swamps, and temporary ponds in open country, or even urban areas. Breeds in almost any fishless pond with at least 10 cm of water, including quiet, shallow, temporary waterbodies with vegetation that is submerged or protrudes from the water, especially in rain-flooded meadows and ditches, and in temporary ponds on floodplains.[10]	Suitable habitat present. Species not observed; however, targeted surveys not completed.

** Sources: eBird species data accessed on July 9, 2019; Fisheries and Oceans Canada (DFO) Aquatic Species at Risk Map searched on July 9, 2019; Natural Heritage Information Centre (NHIC) database of records searched on July 9, 2019 (4- 1x1 km^2 Squares: 17NJ5004, 17NJ5104, 17NJ5003 and 17NJ5103); Ontario Breeding Bird Atlas (2001-2005) searched on July 9, 2019 (Square 17NJ50); Ontario Reptile and Amphibian Atlas (ORAA) searched on July 9, 2019 (Square 17NJ50); *rare* Migrating Bird Monitoring Data list obtained on May 22, 2019 from Tom Woodcock, Planning Ecologist, *rare* Charitable Research Reserve; R.J. Burnside & Associates (Burnside) observations in 2019.

[1]**S-Ranks (provincial)**
Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario (Please refer to: http://explorer.natureserve.org/nsranks.htm)

SX — Presumed Extirpated - Species or community is believed to be extirpated from the province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
SH — Possibly Extirpated (Historical) - Species or community occurred historically in the province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20–40 years. A species or community could become SH without such a 20-40 year delay if the only known occurrences in a province were destroyed or if it had been extensively and unsuccessfully looked for. The SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.
S1 — Critically Imperiled - Critically imperiled in the province or state because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the province.
S2 — Imperiled - Imperiled in the province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the province.
S3 — Vulnerable - Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 — Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 — Secure - Common, widespread, and abundant in the province.
SNR — Unranked - Province conservation status not yet assessed.
SU — Unrankable - Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA — Not Applicable - A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# — Range Rank - A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
S#? – Inexact or Uncertain - Denotes inexact or uncertain numeric rank.

Breeding Status Qualifiers
B – Breeding Conservation status refers to the breeding population of the species in the nation or state/province.
N – Nonbreeding Conservation status refers to the non-breeding population of the species in the province.
M – Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the province.

[2]SARO *Endangered Species Act, 2007*
(provincial status from http://www.ontario.ca/environment-and-energy/how-species-risk-are-listed#section-3)
The provincial review process is implemented by the MNRF's Committee on the Status of Species at Risk in Ontario (COSSARO).

Extinct - A species that no longer exists anywhere.
Extirpated (EXT) - Lives somewhere in the world, and at one time lived in the wild in Ontario, but no longer lives in the wild in Ontario.
Endangered (END) - Lives in the wild in Ontario but is facing imminent extinction or extirpation.
Threatened (THR) - Lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it.
Special concern (SC) - Lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats.
Not at Risk (NAR) - A species that has been evaluated and found to be not at risk.
Data Deficient (DD) - A species for which there is insufficient information for a provincial status recommendation.

[3]SARA (Federal *Species at Risk Act*) Status and Schedule (includes COSEWIC Status)
The Act establishes Schedule 1, as the official list of wildlife species at risk. It classifies those species as being either Extirpated, Endangered, Threatened, or Special Concern. Once listed, the measures to protect and recover a listed wildlife species are implemented.

Extinct - A wildlife species that no longer exists.
Extirpated (EXT) - A wildlife species that no longer exists in the wild in Canada, but exists elsewhere.
Endangered (END) - A wildlife species facing imminent extirpation or extinction.
Threatened (THR) - A wildlife species that is likely to become an endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
Special Concern (SC) - A wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.
Data Deficient (DD) - A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.
Not At Risk (NAR) - A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

[4]SARA Schedule
Schedule 1: is the official list of species that are classified as extirpated, endangered, threatened, and of special concern.
Schedule 2: species listed in Schedule 2 are species that had been designated as endangered or threatened and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Schedule 3: species listed in Schedule 3 are species that had been designated as special concern and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

The Act establishes Schedule 1 as the official list of wildlife species at risk. However, please note that while Schedule 1 lists species that are extirpated, endangered, threatened and of special concern, the prohibitions do not apply to species of special concern.

Species that were designated at risk by COSEWIC prior to October 1999 (Schedule 2 & 3) must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been assessed, the Governor in Council may on the recommendation of the Minister, decide on whether or not they should be added to the List of Wildlife Species at Risk.

[5]Sources:

[6]Cadman, M.D., et al. (eds). 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto, xxii + 706 pp
[7]Species at Risk Public Registry http://www.sararegistry.gc.ca
[8]McCracken, J.D. et al. 2013. Recovery Strategy for the Bobolink (*Dolichonyx oryzivorus*) and Eastern Meadowlark (*Sturnella magna*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario, viii + 88 pp.
[9]MNRF SARO List Species Descriptions (http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/MNR_SAR_CSSR_SARO_LST_EN.html)
[10]Ontario Nature Reptile and Amphibian Atlas (https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas/species/)
[11]Environment Canada. 2015. Recovery Strategy for Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and Tri-colored Bat (*Perimyotis subflavus*) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. Ix + 110 pp.
[12]Humphrey, C. 2017. Recovery Strategy for the Eastern Small-footed Myotis (*Myotis leibii*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 76 pp.
[13]MNRF. 2018. City of Niagara Falls Species at Risk Table. Guelph District.
[14]Department of Fisheries and Oceans (DFO) Aquatic Species at Risk found online at: http://www.dfo-mpo.gc.ca/species-especes/sara-lep/identify-eng.html.

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Appendix F

Significant Wildlife Habitat Screening

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
Table 1.1: Seasonal Concentration Areas of Animals						
Waterfowl Stopover & Staging Areas (Terrestrial) **<u>Rationale</u>**: Habitat important to migrating waterfowl.	CUM1 CUT1 - Plus evidence of annual spring flooding from melt water or run-off within these ecosites.	Fields with sheet water during Spring (mid-March to May). • Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. • Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available.	Potentially present. CUM and CUT ecosites are present in the Study Area. It is possible that flooding occurs in the spring due to the proximity to the Grand and Speed Rivers. Waste grains are generally not present and the field is typically planted in hay rather than corn, wheat or soybeans.	American Black Duck Wood Duck Green-winged Teal Blue-winged Teal Mallard Northern Pintail Northern Shoveler American Wigeon Gadwall	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects. • Any mixed species aggregations of 100 or more individuals required. • The flooded field ecosite habitat plus a 100300 m radius area, dependent on local site conditions and adjacent land use is the SWH. • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). • **SWHMiST Index #7** provides development effects and mitigation measures.	Not present. Although the Study Area has CUM and CUT ecosites, available data indicates that waterfowl use the open water areas of the Speed and Grand Rivers rather than the open fields.
Waterfowl Stopover & Staging Areas (Aquatic) **<u>Rationale:</u>**	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	• Ponds, marshes, lakes, bays, coastal inlets, and watercourses. Sewage treatment ponds and SWM ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify.	Present. Documented as a winter waterfowl concentration area by MNRF.	Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup	**Studies carried out & verified presence of:** • Aggregations of 100 or more of listed species for 7 days, results in >700 waterfowl use days. • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH. • The combined area of the Ecological Land Classification	Present. Documented as a winter waterfowl concentration area by MNRF. Mapping of boundaries available through LIO. Primary use areas are along the Grand River just upstream of the confluence.

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Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.		• These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water).		Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback Ruddy Duck	(ELC) ecosites and a 100 m radius area is the SWH. • Wetland area and shorelines associated with sites identified within the SWHTG Appendix K are SWH. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). • **SWHMiST Index #7** provides development effects and mitigation measures.	
Shorebird Migratory Stopover Area **<u>Rationale</u>**: High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	• Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and unvegetated shoreline habitats. • Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. • Sewage treatment ponds and storm water ponds do not qualify as a SWH.	Potentially present. Although the ecosites listed are not found in the Study Area, it is possible that one or more of these ecosites are present at the confluence of the Grand and Speed River. In addition, river shoreline habitat is present along the Grand and Speed River within and outside the developable limits.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin	**Studies confirming:** • Presence of 3 or more of listed species and >1000 shorebird use days during spring or fall migration period (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period). • Whimbrel stop briefly (<24 hrs.) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100 m radius area. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects".	Not present. While shorebirds do use the area, the defining criteria for Significant Wildlife Habitat is not satisfied with the data from *rare*, eBird or the data from the spring migrant survey for the Study Area.

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					• **SWHMiST Index #8** provides development effects and mitigation measures.	
Raptor Wintering Area **<u>Rationale</u>**: Sites used by multiple species, a high number of individuals and used annually are most significant.	<u>Hawks/Owls:</u> Combination of ELC Community Series; need to have present one Community Series from each land class; <u>Forest:</u> FOD, FOM, FOC. <u>Upland</u>: CUM; CUT; CUS; CUW. <u>Bald Eagle:</u> Forest community Series: FOD, FOM, FOC, SWD, SWM or SWC on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area).	• The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. • Raptor wintering sites (hawk/owl) need to be **>** 20 ha, with a combination of forest and upland. • Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands. • Field area of the habitat is to be wind swept with limited snow depth or accumulation. • Eagle sites have open water, large trees and snags available for roosting.	Not present. Documented wintering areas are present along the Grand River between Hwy 401 and Fountain St. (approx. 730 m away) and along the cliffs on rare property to the south of the Study Area (approx. 1.7km away)	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl **<u>Special Concern:</u>** Short-eared Owl Bald Eagle	**Studies confirm the use of these habitats by:** • One or more Short-eared Owls or; One or more Bald Eagle or; At least 10 individuals and two of the listed hawk/owl species. • To be significant a site must be used regularly (3 in 5 years) for a minimum of 20 days by the above number of birds. • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects." • **SWHMiST Index #10 and #11** provides development effects and mitigation measures.	Not present. Documented wintering areas are present along the Grand River between Hwy 401 and Fountain St. (approx. 730 m away) and along the cliffs on rare property to the south of the Study Area (approx. 1.7km away).
Bat Hibernacula **<u>Rationale</u>**;	**Bat Hibernacula may be found in these ecosites:**	• Hibernacula may be found in caves, mine shafts, underground	Not present. The ecosites listed are not found in the Study Area and the	Big Brown Bat Tri-coloured Bat	• All sites with confirmed hibernating bats are SWH. • The habitat area includes a 200 m radius around the	Not present.

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Bat hibernacula are rare habitats in all Ontario landscapes.	CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	foundations and Karsts. • Active mine sites should not be considered as SWH. • The locations of bat hibernacula are relatively poorly known.	hibernacula habitat listed is not present within the Study Area.		entrance of the hibernaculum for most development types and 1000 m for wind farms. • Studies are to be conducted during the peak swarming period (August to September). Surveys should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects". • **SWHMiST Index #1** provides development effects and mitigation measures.	
Bat Maternity Colonies **<u>Rationale:</u>** Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes.	Maternity colonies considered SWH are found in forested ecosites. **All ELC ecosites in ELC Community Series:** FOD FOM SWD SWM	• Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). • Maternity roosts are not found in caves and mines in Ontario. • Maternity colonies located in Mature deciduous or mixed forest stands with >10 ha large diameter (>25 cm dbh) wildlife trees. • Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2. • Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest	Present. There are no forested ecosites greater than 10 ha present. However, treed habitats are present using the criteria developed through Endangered Species Act regulations.	Big Brown Bat Silver-haired Bat	• Maternity Colonies with confirmed use by: – >10 Big Brown Bats – >5 Adult Female Silver-haired Bats • The area of the habitat includes the entire woodland, or a forest stand ELC ecosite or an ecoelement containing the maternity colonies. • Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects". • **SWHMiST Index #12** provides development effects and mitigation measures.	Present. Seven trees with defining maternity roosting characteristics were identified in the vicinity of the project.

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	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
		areas with at least 21 snags/ha are preferred.				
Turtle Wintering Areas **<u>Rationale:</u>** Generally, sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	Snapping and Midland Painted Turtles. **ELC Community Classes:** SW, MA, OA and SA **ELC Community Series:** FEO and BOO For Northern Map Turtle: Open water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	• For most turtles, wintering areas are in the same general area as their core habitat. Water must be deep enough not to freeze and have soft mud substrates. • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen. • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH.	Present. The small marsh to the north of the trail route is not deep enough to provide permanent open water with sufficient dissolved oxygen throughout the winter. However, there is a deep pool in a bend in the Speed River to the north of the project that provides suitable conditions.	Midland Painted Turtle **<u>Special Concern:</u>** Northern Map Turtle Snapping Turtle	• Presence of 5 over-wintering Midland Painted Turtles is significant. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. • The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. • Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (September–October) or spring (March–May). • Congregation of turtles is more common where wintering areas are limited and therefore significant. • **SWHMiST Index #28** provides development effects and mitigation measures for turtle wintering habitat.	Assumed present. Targeted surveys were not carried out but the habitat is assumed to be present and mitigation to protect the area will be provided.
Reptile Hibernaculum **<u>Rationale</u>:** Generally, sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats.	• For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock	Not present. No suitable features were identified during site investigations. Queensnake surveys were carried out by *rare* in recent years and none were observed.	**<u>Snakes</u>**: Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake **<u>Special Concern</u>**: Milksnake Eastern Ribbonsnake	**Studies confirming:** • Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. near potential hibernacula (e.g., foundation or rocky slope)	Not present.

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	Observations or congregations of snakes on sunny warm days in the spring or fall is a good indicator. For Five-lined Skink, ELC Community Series of FOD and FOM and ecosites: FOC1 and FOC3.	piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. • Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line. • Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock groundcover. • Five-lined Skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures.		**<u>Lizard: Special Concern:</u>** (Southern Shield population): Five-lined Skink	on sunny warm days in Spring (April/May) and Fall (September/October). • **Note**: If there are Special Concern Species present, then site is SWH. • **Note:** Sites for hibernation possess specific habitat parameters (e.g., temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population (i.e., strong hibernation site fidelity). Other critical life processes (e.g., mating) often take place near hibernacula. The feature in which the hibernacula is located plus a 30 m radius area is the SWH. • **SWHMiST Index #13** provides development effects and mitigation measures for snake hibernacula. • Presence of any active hibernaculum for Skink is significant. • SWHMiST Index #37 provides development effects and mitigation measures for five-lined Skink wintering habitat.	
Colonially - Nesting Bird Breeding Habitat (Bank & Cliff) **<u>Rationale</u>:** Historical use and number of	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles. Cliff faces, bridge abutments, silos, barns.	• Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed permitted aggregate area. • Does not include man-made	Not present. Although CUM1 and CUT1 habitat are present in the Study Area, natural features providing exposed bank or cliff habitat are not present in the Study Area.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	**Studies confirming:** • Presence of 1 or more nesting sites with 8 or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season.	Not present. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area. Breeding bird surveys were conducted in the Study Area, and neither of these species exhibited breeding evidence.

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	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario.	**Habitat found in the following ecosites:** CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. • Does not include a licensed/permitted Mineral Aggregate Operation.			• A colony identified as SWH will include a 50 m radius habitat area from the peripheral nests. • Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". • **SWHMiST Index #4** provides development effects and mitigation measures.	
Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs) **<u>Rationale:</u>** Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	• Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. • Most nests in trees are 11 to 15 m from ground, near the top of the tree.	Not present. Natural features providing standing trees in wetlands, lakes, islands and peninsulas are not present in the Study Area.	Great Blue Heron Black-crowned Night-Heron Great Egret Green Heron	**Studies confirming:** • Presence of 2 or more active nests of Great Blue Heron or other listed species. • The habitat extends from the edge of the colony and a minimum 300 m radius or extent of the Forest ecosite containing the colony or any island <15.0 ha with a colony is the SWH. • Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells. • **SWHMiST Index #5** provides development effects and mitigation measures.	Not present. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area. Breeding bird surveys were conducted in the Study Area, and only one Great Blue Heron was recorded with no breeding evidence.
Colonially - Nesting Bird Breeding Habitat (Ground) **<u>Rationale:</u>** Colonies are important to	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1;50,000 NTS map).	• Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. • Brewers Blackbird colonies are found	Not present. No islands or peninsulas associated with open water or marshy areas is present in the Study Area. Breeding records for Brewer's Blackbird are mainly restricted	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird	**Studies confirming:** • Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern. • Presence of 5 or more pairs for Brewer's Blackbird.	Not present. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
local bird population, typically sites are only known colony in area and are used annually.	Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird). MAM1 – 6 MAS1 – 3 CUM CUT CUS	loosely on the ground in low bushes in close proximity to streams and irrigation ditches within farmlands.	to the north shore of Lake Huron and Georgian Bay, as well as Sudbury/Manitoulin Island and NW Ontario; no breeding records currently exist for Southern and Eastern Ontario.		• Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. • The edge of the colony and a minimum 150 m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0 ha with a colony is the SWH. • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". • **SWHMiST Index #6** provides development effects and mitigation measures.	
Migratory Butterfly Stopover Areas **<u>Rationale:</u>** Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	Combination of ELC Community Series; need to have present one Community Series from each land class. <u>Field</u>: CUM CUT CUS <u>Forest</u>: FOC FOD FOM CUP Anecdotally, a candidate site for butterfly stopover will have a history of butterflies being observed.	• A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present and will be located within 5 km of Lake Erie or Ontario. • The habitat is typically a combination of field and forest and provides the butterflies with a location to rest prior to their long migration south. • The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing	Not present. The Study Area is greater than 5 km from Lake Ontario and the required field size is smaller than 10 ha in size.	Painted Lady Red Admiral <u>Special Concern</u> Monarch	**Studies confirm:** • The presence of Monarch Use Days (MUD) during fall migration (August/October). MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day, significant variation can occur between years and multiple years of sampling should occur. • Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD. • MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant. • **SWHMiST Index #16** provides development effects and mitigation measures.	Not present. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
		shelter are requirements for this habitat. • Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes.				
Landbird Migratory Stopover Areas **<u>Rationale:</u>** Sites with a high diversity of species as well as high numbers are most significant.	**All ecosites associated with these ELC Community Series:** FOC FOM FOD SWC SWM SWD	• Woodlots >10 ha in size and within 5 km of Lake Ontario. • If woodlands are rare in an area of shoreline, woodland fragments 2-5 ha can be considered for this habitat. • If multiple woodlands are located along the shoreline those Woodlands <2 km from Lake Ontario are more significant. • Sites have a variety of habitats; forest, grassland and wetland complexes. • The largest sites are more significant. • Woodlots and forest fragments are important habitats to migrating birds, these features located along the shore and located within 5 km of Lake Ontario are Candidate SWH.	Not present. The Study Area is greater than 5 km from Lake Ontario.	All migratory songbirds. Canadian Wildlife Service Ontario website: http://www.ec.gc.ca/nature/default.asp?lang=En&n=421B7A9D-1 All migrant raptors species: *Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997.* Schedule 7: Specially Protected Birds (Raptors)	**Studies confirm:** • Use of the habitat by >200 birds/day and with >35 spp with at least 10 bird spp. recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (April/May) and fall (August/October) migration using standardized assessment techniques. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. • **SWHMiST Index #9** provides development effects and mitigation measures.	Not present. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
Deer Yarding Areas **<u>Rationale:</u>** Winter habitat for deer is considered to be the main limiting factor for northern deer populations. In winter, deer congregate in "yards" to survive severe winter conditions. Deer yards typically have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range.	**Note:** MNRF to determine this habitat. **ELC Community Series** providing a thermal cover component for a deer yard would include: FOM FOC SWM SWC **Or these ELC ecosites:** CUP2 CUP3 FOD3 CUT	• Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. • The Core of a deer yard (Stratum I) is	Not present. No deer yarding areas identified by the MNRF.	White-tailed Deer	**No Studies Required:** • Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40 cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH. • Deer Yards are mapped by MNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by MNRF will be available at local MNRF offices or via Land Information Ontario (LIO). • Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations. • If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area, then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST Index #2 provides development effects and mitigation measures.	Not present. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
		located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%. • MNRF determines deer yards following methods outlined in "Selected Wildlife and Habitat Features: Inventory Manual". • Woodlots with high densities of deer due to artificial feeding are not significant.				
Deer Winter Congregation Areas **<u>Rationale:</u>** Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid	**All Forested ecosites with these ELC Community Series:** FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50 ha may also be used.	• Woodlots will typically be >100 ha in size. Woodlots <100 ha may be considered as significant based on MNRF studies or assessment. • Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands. • If deer are constrained by snow	Not present. No deer winter congregation areas identified by the MNRF.	White-tailed Deer	**Studies confirm:** • Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF. • Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF. • Studies should be completed during winter (January/February) when >20 cm of snow is on the ground using aerial survey techniques, ground or road surveys. or a pellet count deer density survey.	Not present. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
the impacts of winter conditions.		depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule. • Large woodlots > 100 ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha. • Woodlots with high densities of deer due to artificial feeding are not significant.			• If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area, then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • **SWHMiST Index #2** provides development effects and mitigation measures.	
Table 1.2.1: Rare Vegetation Communities						
Cliffs and Talus Slopes **Rationale:** Cliffs and Talus Slopes are extremely rare habitats in Ontario.	**Any ELC ecosite within Community Series:** TAO CLO TAS CLS TAT CLT	• A Cliff is vertical to near vertical bedrock >3 m in height. • A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris.	Not present. A cliff is present on rare property approx.. 1.7 km to the south.		• Most cliff and talus slopes occur along the Niagara Escarpment. • Confirm any ELC Vegetation Type for Cliffs or Talus Slopes. • **SWHMiST Index #21** provides development effects and mitigation measures.	Not present. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.
Sand Barren **Rationale;** Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry.	**ELC ecosites:** SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed	• Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and	Not present.		• A sand barren area >0.5 ha in size. • Confirm any ELC Vegetation Type for Sand Barrens. • Site must not be dominated by exotic or introduced species (<50% vegetative cover is exotic sp.). • **SWHMiST Index #20** provides development effects and mitigation measures.	Not present. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
	(SBT1). Tree cover always ≤ 60%.	barren to tree covered, but less than 60%.				
Alvar **<u>Rationale;</u>** Alvars are extremely rare habitats in Ecoregion 6E.	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 **Five Alvar Indicator Species:** *Carex crawei* *Panicum philadelphicum* *Eleocharis compressa* *Scutellaria parvula* *Trichostema brachiatum* These indicator species are very specific to Alvars within Ecoregion 6E.	• An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plants. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animal species. Vegetation cover varies from patchy to barren with a less than 60% tree cover. • Alvar is particularly rare in Ecoregion 6E where the only known sites are found in the western islands of Lake Erie.	Not present.		**Field studies that identify:** • An Alvar site > 0.5 ha in size. • Four of the five Alvar Indicator Species at a Candidate Alvar site is Significant. • Site must not be dominated by exotic or introduced species (<50% vegetative cover is exotic sp.). • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses. • **SWHMiST Index #17** provides development effects and mitigation measures.	Not present. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
Old Growth Forest **<u>Rationale;</u>** Due to historic logging practices and land clearance for agriculture, old growth forest is rare in the Ecoregion 6E.	**Forest Community Series:** FOD FOC FOM SWD SWC SWM	• Old Growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Not present. Although the FOD ecosite is present within the Study Area, there is no Old Growth forest present.		**Field Studies will determine:** • If dominant trees species are >140 years old, then the area containing these trees is SWH. • The forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut stumps will not be present). • The area of forest ecosites combined or an eco-element within an ecosite that contains the old growth characteristics is the SWH. • Determine ELC vegetation types for the forest area containing the old growth characteristics. • **SWHMiST Index #23** provides development effects and mitigation measures.	Not present. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.
Savannah **<u>Rationale:</u>** Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	• A Savannah is a tallgrass prairie habitat that has tree cover between 25–60%.	Not present.		**Field studies confirm:** • No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. • One or more of the Savannah indicator species listed in Appendix N should be present. **Note**: Savannah plant spp. list from Ecoregion 6E should be used. • Area of the ELC ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover is exotic sp.). • **SWHMiST Index #18** provides development effects and mitigation measures.	Not present. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
Tallgrass Prairie **<u>Rationale:</u>** Tallgrass Prairies are extremely rare habitats in Ontario.	TPO1 TPO2	• No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway Right of Ways (ROW) are not considered to be SWH. • A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover.	Not present.		**Field studies confirm:** • One or more of the Prairie indicator species listed in Appendix N should be present. **Note:** Prairie plant spp. list from Ecoregion 6E should be used. • Area of the ELC ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover is exotic sp.). • **SWHMiST Index #19** provides development effects and mitigation measures.	Not present. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.
Other Rare Vegetation Communities **<u>Rationale:</u>** Plant communities that often contain rare species which depend on the habitat for survival.	• Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG. • Any ELC ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	• Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	Not present. Provincially rare vegetation communities were not identified during desktop assessment and background review.		• ELC ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in Appendix M. • The MNRF/Natural Heritage Information Centre (NHIC) will have up to date listing for rare vegetation communities. **Field studies should confirm:** • If an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG. • Area of the ELC Vegetation Type polygon is the SWH. • **SWHMiST Index #37** provides development effects and mitigation measures.	Not present. No rare vegetation communities were identified during ELC field surveys.
Table 1.2.2: Specialized Habitats for Wildlife considered Significant Wildlife Habitat						
Waterfowl Nesting Area **<u>Rationale;</u>**	**All upland habitats located adjacent to these wetland**	• A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a	Present. The MAS2 ecosite is present in the Study Area, and the	American Black Duck Northern Pintail Northern Shoveler Gadwall	**Studies confirmed:**	Not present.

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	**ELC ecosites are Candidate SWH:** MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 Note: includes adjacency to Provincially Significant Wetlands (PSW).	wetland (>0.5ha) and any small wetlands (0.5ha) within 120 m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur. • Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40 cm dbh) in woodlands for cavity nest sites.	northernmost MAS2 ecosite connects with the Speed River Wetland Complex PSW.	Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	• Presence of 3 or more nesting pairs for listed species excluding Mallards, or; • Presence of 10 or more nesting pairs for listed species including Mallards. • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest. • **SWHMiST Index #25** provides development effects and mitigation measures.	Breeding bird surveys were conducted in the Study Area, and none of these duck species were recorded.
Bald Eagle & Osprey Nesting, Foraging & Perching Habitat **<u>Rationale;</u>** Nest sites are fairly uncommon in Eco-region 6E and are used annually by these species. Many suitable nesting locations	**ELC Forest Community Series:** FOD FOM FOC SWD SWM and SWC (directly adjacent to riparian areas – rivers, lakes, ponds and wetlands.	• Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. • Osprey nests are usually at the top of a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy.	Not present. Although the FOD ecosite is present in the Study Area and adjacent to the Speed River, there are no recent records of Bald Eagle or Osprey nests in the Study Area.	Osprey **Special Concern** Bald Eagle	**Studies confirm the use of these nests by**: • One or more active Osprey or Bald Eagle nests in an area. • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH, maintaining undisturbed shorelines with	Not present. Although the FOD ecosite is present in the Study Area and adjacent to the Speed River, no active Osprey or Bald Eagle nests were observed during breeding bird surveys.

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
may be lost due to increasing shoreline development pressures and scarcity of habitat.		• Nests located on man-made objects are not to be included as SWH (e.g., telephone poles and constructed nesting platforms).			large trees within this area is important. • For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. Area of the habitat from 400800 m is dependent on-site lines from the nest to the development and inclusion of perching and foraging habitat. • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for >3 years or suspected of not being used for >5 years before being considered not significant. • Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid-March to mid-August. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". • **SWHMiST Index #26** provides development effects and mitigation measures.	
Woodland Raptor Nesting Habitat **<u>Rationale:</u>** Nests sites for these species are rarely identified; these are area sensitive habitats and are often used annually by these species.	May be found in all forested ELC ecosites. **May also be found in:** SWC SWM SWD and CUP3	• All natural or conifer plantation woodland/forest stands >30 ha with >10ha of interior habitat. Interior habitat determined with a 200 m buffer. • Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees.	Not present. While the forested ecosites present within the Study Area may be suitable nesting sites for raptors, the habitat size criteria for candidate Significant Wildlife Habitat is not present in the Study Area.	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	**Studies confirm:** • Presence of 1 or more active nests from species list is considered significant. • Red-shouldered Hawk and Northern Goshawk – A 400 m radius around the nest or 28 ha area of habitat is the SWH (the 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest). • Barred Owl – A 200 m radius around the nest is the SWH.	Not present.

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
		Species such as Coopers Hawk nest along forest edges sometimes on peninsulas or small off-shore islands. • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest.			• Broad-winged Hawk and Coopers Hawk– A 100 m radius around the nest is the SWH. • Sharp-Shinned Hawk – A 50 m radius around the nest is the SWH. • Conduct field investigations from mid-March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. • **SWHMiST Index #27** provides development effects and mitigation measures.	
Turtle Nesting Areas **<u>Rationale;</u>** These habitats are rare and when identified will often be the only breeding site for local populations of turtles.	**Exposed mineral soil (sand or gravel) areas adjacent (<100 m) or within the following ELC ecosites:** MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	• Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of	Not present. An area of exposed soil was present along the east bank of the Speed River but this area would be inundated frequently during spring floods and is not a suitable nesting location. Some exposed soil is present along the bank of the old rail bed that runs through the site. The slope of the bank and the shade provided by the surrounding forest make the area poor for nesting. No evidence of nesting was identified during spring field inventories.	Midland Painted Turtle <u>Special Concern Species:</u> Northern Map Turtle Snapping Turtle	**Studies confirm:** • Presence of 5 or more nesting Midland Painted Turtles. • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH. • The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100 m around the nesting area dependent on slope, riparian vegetation and adjacent land use is the SWH. • Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100 m area of habitat. • Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method.	Not present.

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
		marshes, lakes, and rivers are most frequently used.			• **SWHMiST Index #28** provides development effects and mitigation measures for turtle nesting habitat.	
Seeps and Springs **<u>Rationale</u>:** Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Seeps/Springs are areas where ground water comes to the surface. Often, they are found within headwater areas within forested habitats. Any forested ecosite within the headwater areas of a stream could have seeps/springs.	• Any forested area (with <25% meadow/field/ pasture) within the headwaters of a stream or river system. • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species.	Not present. The Study Area is not located within the headwaters of a stream or river system.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	**Field Studies confirm:** • Presence of a site with 2 or more seeps/springs should be considered SWH. • The area of a ELC forest ecosite or an ecoelement within ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat. • **SWHMiST Index #30** provides development effects and mitigation measures.	Not present. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.
Amphibian Breeding Habitat (Woodland) **<u>Rationale:</u>** These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations.	All ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to	• Presence of a wetland, pond or woodland pool (including vernal pools) >500 m^2 (about 25 m diameter) within or adjacent (within 120 m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be	Present. There are two wetlands present in the Study Area that are >500 m^2 and found adjacent to a FOD ecosite.	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	**Studies confirm:** • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog species with Call Level Codes of 3. • A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • The habitat is the wetland area plus a 230 m radius of woodland area. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland	Assumed present. The small cattail marsh and more northerly PSW are assumed to provide breeding habitat.

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
	reduced risk to migrating amphibians.	used as breeding habitat.			to the woodland is to be included in the habitat. • **SWHMiST Index #14** provides development effects and mitigation measures.	
Amphibian Breeding Habitat (Wetlands) **<u>Rationale;</u>** Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes.	**ELC Community Classes:** SW MA FE BO OA and SA. Typically, these wetland ecosites will be isolated (>120 m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g., Bull Frog) may be adjacent to woodlands.	• Wetlands >500 m^2 (about 25 m diameter), supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats. • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation.	Not present. Although MA wetlands are present in the Study Area, they are either adjacent to or within <120 m from a woodland ecosite and are therefore considered to be woodland breeding habitats.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	**Studies confirm:** • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3 or; Wetland with confirmed breeding Bullfrogs are significant. • The ELC ecosite wetland area and the shoreline are the SWH. • A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. • If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • **SWHMiST Index #15** provides development effects and mitigation measures.	Not present.
Woodland Area-Sensitive Bird Breeding Habitat **<u>Rationale</u>:** Large, natural blocks of mature	**All ecosites associated with these ELC Community Series:** FOC FOM	• Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs. old) forest stands or woodlots >30 ha.	Not present. No forests present in the Study Area meet the age and size criteria for significant.	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler	**Studies confirm:** • Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. • **Note**: any site with breeding Cerulean Warblers or Canada	Not present. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	FOD SWC SWM SWD	• Interior forest habitat is at least 200 m from forest edge habitat.		Ovenbird Scarlet Tanager Winter Wren **Special Concern:** Cerulean Warbler Canada Warbler	Warblers is to be considered SWH. • Conduct field investigations in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". • **SWHMiST Index #34** provides development effects and mitigation measures.	
Table 1.3: Habitat for Species of Conservation Concern considered Significant Wildlife Habitat						
Marsh Breeding Bird Habitat **<u>Rationale;</u>** Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 **For Green Heron:** All SW, MA and CUM1 sites	• Nesting occurs in wetlands. • All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present. • For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water.	Present. Wetland habitat with shallow water and emergent aquatic vegetation is present in the Study Area. In addition, both wetlands are MA ELC community classes and the CUM1 ecosite is present for Green Heron habitat.	American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan **Special Concern:** Black Tern Yellow Rail	**Studies confirm:** • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes breeding by any combination of 5 or more of the listed species. • **Note**: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH. • Area of the ELC ecosite is the SWH. • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". • **SWHMiST Index #35** provides development effects and mitigation measures.	Not present. While targeted marsh breeding bird surveys were not carried out to verify the defining criteria, standard breeding bird surveys were conducted in the Study Area and none of these species were recorded. The data from *rare*'s fall and spring bird monitoring notes Green Heron, Sandhill Crane and Trumpeter Swan being observed outside of the breeding season.
Open Country Bird Breeding Habitat	CUM1 CUM2	• Large grassland areas (includes natural and cultural	Not present.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow	**Field Studies confirm:**	Not present.

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
<u>Rationale;</u> This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.		fields and meadows) >30 ha. • Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e., no row cropping or intensive hay or livestock pasturing in the last 5 years). • Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. • The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species.	While CUM1 and CUM2 ecosites are present within the Study Area, they are smaller than 30 ha.	Northern Harrier Savannah Sparrow **Special Concern** Short-eared Owl	• Presence of nesting or breeding of 2 or more of the listed species. • A field with 1 or more breeding Short-eared Owls is to be considered SWH. • The area of SWH is the contiguous ELC ecosite field areas. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". • **SWHMiST Index #32** provides development effects and mitigation measures.	
Shrub/Early Successional Bird Breeding Habitat **<u>Rationale;</u>** This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat for some bird species.	• Large field areas succeeding to shrub and thicket habitats >10 ha in size. • Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e., no row-cropping, haying or live-stock pasturing in the last 5 years).	Not present. Although the CUT1 and CUT2 ecosites are present in the Study Area, they are less than 10 ha in size.	**Indicator Spp:** Brown Thrasher Clay-coloured Sparrow **Common Spp.** Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher **Special Concern:** Yellow-breasted Chat Golden-winged Warbler	**Field Studies confirm:** • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species. • A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as SWH. • The area of the SWH is the contiguous ELC ecosite field/thicket area. • Conduct field investigations of the most likely areas in spring	Not present.

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
significantly over the past 40 years based on CWS (2004) trend records.		• Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species. • Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands.			and early summer when birds are singing and defending their territories. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". • **SWHMiST cxlix Index #33** provides development effects and mitigation measures.	
Terrestrial Crayfish **<u>Rationale:</u>** Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1 with inclusions of above meadow marsh or swamp ecosites can be used by terrestrial crayfish.	• Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for Terrestrial Crayfish. • Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water. • Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed.	Not present. While the CUM1 and MAS2 ecosites are present in the Study Area, no crayfish burrows were observed during field investigations. However, the height and density of grasses made it difficult to confirm absence with full certainty.	Chimney or Digger Crayfish (*Fallicambarus fodiens*) Devil Crayfish or Meadow Crayfish (*Cambarus diogenes*)	**Studies Confirm:** • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites. • Area of ELC ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH. • Surveys should be done April to August in temporary or permanent water. **Note** the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult. • **SWHMiST Index #36** provides development effects and mitigation measures.	Assumed present. It is assumed habitat is present within the CUM/CUT2 field adjacent to the MAS2-1 wetland.
Special Concern and Rare Wildlife Species	All plant and animal Element Occurrences (EO) within a 1 or 10 km grid.	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or	Potentially present. The Special Concern species Bald Eagle, Monarch, Eastern Wood-pewee, Wood Thrush,	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the NHIC.	**Studies Confirm:** • Assessment/inventory of the site for the identified Special Concern or rare species needs	Confirmed present. Monarch, a Special Concern species, was observed in the Study Area during field investigations in 2019. The CUM

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
<u>Rationale:</u> These species are quite rare or have experienced significant population declines in Ontario.	Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy.	provincially Rare species; linking candidate habitat on the site needs to be completed to ELC ecosites.	and Canada Warbler have been observed in the Study Area in the past through previous field investigations.		to be completed during the time of year when the species is present or easily identifiable. • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species e.g., specific nesting habitat or foraging habitat. • **SWHMiST Index #37** provides development effects and mitigation measures.	areas adjacent to the hayfield are considered habitat for this species. The CUM/CUT2 field adjacent to the river is not considered to provide habitat as it has been planted with trees and is expected to succeed to a forest community.
Table 1.4.1: Animal Movement Corridors						
Amphibian Movement Corridors **<u>Rationale;</u>** Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Corridors may be found in all ecosites associated with water. Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1.	• Movement corridors between breeding habitat and summer habitat. • Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (Amphibian Breeding Habitat–Wetland) of this Schedule.	Not present. Since Amphibian Breeding Habitat (Wetlands) are not confirmed in the Study Area, there are no Amphibian Movement Corridors in the Study Area.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	• Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. • Corridors should consist of native vegetation, with several layers of vegetation. • Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant. • Corridors should have at least 15 m of vegetation on both sides of waterway or be up to 200 m wide of woodland habitat and with gaps <20 m. • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat. • **SWHMiST Index #40** provides development effects and mitigation measures.	Not present.

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
Deer Movement Corridors **<u>Rationale:</u>** Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.	Corridors may be found in all forested ecosites. A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.	Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH from Table 1.1 of this schedule. • A deer wintering habitat identified by the MNRF as SWH in Table 1.1 of this Schedule will have corridors that the deer use during fall migration and spring dispersion. • Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges).	Not present. Since deer wintering habitat was not identified by the MNRF, there are no deer movement corridors within the Study Area.	White-tailed Deer	• Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas. • Corridors that lead to a deer wintering habitat should be unbroken by roads and residential areas. • Corridors should be at least 200 m wide with gaps <20 m and if following riparian area with at least 15 m of vegetation on both sides of waterway. • Shorter corridors are more significant than longer corridors, SWHMiST Index #39 provides development effects and mitigation measures.	Not present.
Table 1.5.1: Significant Wildlife Habitat Exceptions for Ecodistricts within EcoRegion 6E						
6E-14 Mast Producing Areas **<u>Rationale</u>:** The Bruce Peninsula has an isolated and distinct population of black bears. Maintenance of large woodland tracts with mast-producing tree species is	**All Forested habitat represented by ELC Community Series**: FOM FOD	• Woodland ecosites >30 ha with mast-producing tree species, either soft (cherry) or hard (oak and beech). • Black bears require forested habitat that provides cover, winter hibernation sites, and mast-producing tree species. • Forested habitats need to be large enough to provide cover and protection for black bears.	Not present. The project is not located within ecoregion 6E-14. Black bears are not present within the Study Area.	Black Bear	**All woodlands >30 ha with a 50% composition of these ELC Vegetation Types are considered significant:** FOM1-1 FOM2-1 FOM3-1 FOD1-1 FOD1-2 FOD2-1 FOD2-2 FOD2-3 FOD2-4 FOD4-1 FOD5-2 FOD5-3 FOD5-7	Not present.

Appendix F: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
important for bear.					FOD6-5 SWHMiST Index #3 provides development effects and mitigation measures.	
6E- 17 **Lek** **<u>Rationale</u>:** Sharp-tailed grouse only occur on Manitoulin Island in Ecoregion 6E, Leks are an important habitat to maintain their population.	CUM CUS CUT	• The Lek or dancing ground consists of bare, grassy or sparse shrubland. There is often a hill or rise in topography. • Leks are typically a grassy field/meadow >15 ha with adjacent shrublands and >30 ha with adjacent deciduous woodland. Conifer trees within 500 m are not tolerated. • Grasslands (field/meadow) are to be >15 ha when adjacent to shrubland and >30 ha when adjacent to deciduous woodland. • Grasslands are to be undisturbed with low intensities of agriculture (light grazing or late haying). • Leks will be used annually if not destroyed by cultivation or invasion by woody plants or tree planting.	Not present. The Study Area is not within Ecoregion 6E-17. Sharp-tailed Grouse are not present within the Study Area.	Sharp-tailed Grouse	• Studies confirming Lek habitat are to be completed from late March to June. • Any site confirmed with sharp-tailed grouse courtship activities is considered significant. • The field/meadow ELC ecosites plus a 200 m radius area with shrub or deciduous woodland is the Lek habitat. • SWHMiST cxlix Index #32 provides development effects and mitigation measures.	Not present.

BURNSIDE

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Appendix B
Stage 1 Archaeological Assessment

STAGE 1 ARCHAEOLOGICAL ASSESSMENT
BLAIR-PRESTON PEDESTRIAN BRIDGE AND TRAIL CONSTRUCTION
PART OF LOTS 5-6, BROKEN FRONT BEASLEY'S LOWER BLOCK
(FORMER WATERLOO TOWNSHIP, COUNTY OF WATERLOO)
CITY OF CAMBRIDGE
REGIONAL MUNICIPALITY OF WATERLOO, ONTARIO

ORIGINAL REPORT

Prepared for:

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Archaeological Licence #P1066 (Lytle)
Ministry of Tourism, Culture and Sport PIF# P1066-0097-2019
ASI File: 18EA-202

7 June 2019

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Stage 1 Archaeological Assessment
Blair-Preston Pedestrian Bridge and Trail Construction
Part of Lots 5-6, Broken Front Beasley's Lower Block
(Former Waterloo Township, County of Waterloo)
City of Cambridge
Regional Municipality of Waterloo, Ontario

EXECUTIVE SUMMARY

ASI was contracted by R.J. Burnside & Associates Ltd. to conduct a Stage 1 Archaeological Assessment (Background Research and Property Inspection) as part of the Blair-Preston Pedestrian Bridge and Trail Construction Municipal Class Environmental Assessment. This project involves the construction of a trail from Fountain Street to the B. McMullen Linear Trail, across ***rare*** Charitable Reserve lands, as well as construction of a pedestrian bridge over the Speed River, linking the Blair and Preston areas of the City of Cambridge.

The Stage 1 background study determined that 43 previously registered archaeological sites are located within one kilometre of the Study Area, one of which is within 100 m and three of which are within the Study Area. The property inspection determined that balance of the Study Area exhibits archaeological potential.

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

1. The Study Area exhibits archaeological potential. If impacted, these lands require Stage 2 archaeological assessment by test pit/pedestrian survey at five metre intervals, where appropriate, prior to any proposed impacts to the property;

2. Four registered precontact Indigenous archaeological sites with further cultural heritage value or interest are located within the Study Area (AiHc-4, AiHc-416, AiHc-417, AiHc-325). All four sites require Stage 2 pedestrian and test pit survey, as appropriate, in order to accurately relocate them.

3. The remainder of the Study Area does not retain archaeological potential on account of deep and extensive land disturbance, low and wet conditions, slopes in excess of 20 degrees, or having been previously assessed with no further work required. These lands do not require further archaeological assessment; and,

4. Should the proposed work extend beyond the current Study Area, further Stage 1 archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.

PROJECT PERSONNEL

Senior Project Manager:	Lisa Merritt, MSc. (P094) *Partner / Director* *Environmental Assessment Division*
Project Coordinator:	Sarah Jagelewski, Hon. BA (R405) *Lead Archaeologist / Manager* *Environmental Assessment Division*
Project Director (Licensee):	Jessica Lytle, MSc (P1066) *Associate Archaeologist / Project Manager* *Environmental Assessment Division*
Project Manager:	Eliza Brandy, MA (R1109) *Associate Archaeologist / Project Manager* *Environmental Assessment Division*
Field Director:	Peter Carruthers, MA (P163) *Senior Associate*
Report Preparation:	Eliza Brandy
Graphics:	Jonas Fernandez, MSc (R281) *Archaeologist / Assistant Manager - Fleet & Geomatics Specialist* *Operations Division* Robin Latour, MPhil, PDip *Associate Archaeologist / Geomatics Specialist* *Operations Division* Adam Burwell, MSc *Archaeologist / Geomatics Specialist* *Operations Division*
Report Reviewer:	Lisa Merritt

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1.0 PROJECT CONTEXT

Archaeological Services Inc. (ASI) was contracted by R.J. Burnside & Associates Ltd. to conduct a Stage 1 Archaeological Assessment (Background Research and Property Inspection) as part of the Blair-Preston Pedestrian Bridge and Trail Construction Municipal Class Environmental Assessment. This project involves the construction of a trail from Fountain Street to the B. McMullen Linear Trail, across ***rare*** Charitable Reserve lands, as well as construction of a pedestrian bridge over the Speed River, linking the Blair and Preston areas of the City of Cambridge (Figure 1).

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

1.1 Development Context

All work has been undertaken as required by the *Environmental Assessment Act*, RSO (Ministry of the Environment 1990 as amended 2010) and regulations made under the Act, and are therefore subject to all associated legislation. This project is being conducted in accordance with the Municipal Engineers' Association document *Municipal Class Environmental Assessment* (2000 as amended in 2007, 2011 and 2015).

Authorization to carry out the activities necessary for the completion of the Stage 1 archaeological assessment was granted by R.J. Burnside & Associates Ltd. on March 21, 2019.

1.2 Historical Context

The purpose of this section, according to the S & G, Section 7.5.7, Standard 1, is to describe the past and present land use and the settlement history and any other relevant historical information pertaining to the Study Area. A summary is first presented of the current understanding of the Indigenous land use of the Study Area. This is then followed by a review of the historical Euro-Canadian settlement history.

1.2.1 Indigenous Land Use and Settlement

Southern Ontario has been occupied by human populations since the retreat of the Laurentide glacier approximately 13,000 years before present (BP) (Ferris 2013). Populations at this time would have been highly mobile, inhabiting a boreal-parkland similar to the modern sub-arctic. By approximately 10,000 BP, the environment had progressively warmed (Edwards and Fritz 1988) and populations now occupied less extensive territories (Ellis and Deller 1990).

Between approximately 10,000-5,500 BP, the Great Lakes basins experienced low-water levels, and many sites which would have been located on those former shorelines are now submerged. This period produces the earliest evidence of heavy wood working tools, an indication of greater investment of labour in felling trees for fuel, to build shelter, and watercraft production. These activities suggest prolonged seasonal residency at occupation sites. Polished stone and native copper implements were being produced by approximately 8,000 BP; the latter was acquired from the north shore of Lake Superior, evidence of extensive exchange networks throughout the Great Lakes region. The earliest evidence for cemeteries

dates to approximately 4,500-3,000 BP and is indicative of increased social organization, investment of labour into social infrastructure, and the establishment of socially prescribed territories (Ellis et al. 1990; Ellis et al. 2009; Brown 1995:13).

Between 3,000-2,500 BP, populations continued to practice residential mobility and to harvest seasonally available resources, including spawning fish. The Woodland period begins around 2,500 BP and exchange and interaction networks broaden at this time (Spence et al. 1990:136, 138) and by approximately 2,000 BP, evidence exists for macro-band camps, focusing on the seasonal harvesting of resources (Spence et al. 1990:155, 164). By 1,500 BP there is macro botanical evidence for maize in southern Ontario, and it is thought that maize only supplemented people's diet. There is earlier phytolithic evidence for maize in central New York State by 2,300 BP - it is likely that once similar analyses are conducted on Ontario ceramic vessels of the same period, the same evidence will be found (Birch and Williamson 2013:13–15). Bands likely retreated to interior camps during the winter. It is generally understood that these populations were Algonquian-speakers during these millennia of settlement and land use.

From the beginning of the Late Woodland period at approximately 1,000 BP, lifeways became more similar to that described in early historical documents. Between approximately 1000-1300 Common Era (CE), the communal site is replaced by the village focused on horticulture. Seasonal disintegration of the community for the exploitation of a wider territory and more varied resource base was still practised (Williamson 1990:317). By 1300-1450 CE, this episodic community disintegration was no longer practised and populations now communally occupied sites throughout the year (Dodd et al. 1990:343). From 1450-1649 CE this process continued with the coalescence of these small villages into larger communities (Birch and Williamson 2013). Through this process, the socio-political organization of the First Nations, as described historically by the French and English explorers who first visited southern Ontario, was developed. By 1600 CE, the communities within Simcoe County had formed the Confederation of Nations encountered by the first European explorers and missionaries. In the 1640s, the traditional enmity between the Haudenosaunee[1] and the Huron-Wendat (and their Algonquian allies such as the Nippissing and Odawa) led to the dispersal of the Huron-Wendat.

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

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

documented wintering with the Huron-Wendat, some who abandoned their country on the shores of the St. Lawrence because of attacks from the Haudenosaunee (Thwaites 1896-1901, 27:37).

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

After the Huron had been dispersed, the Haudenosaunee began to exert pressure on Ojibwa within their homeland to the north. While their numbers had been reduced through warfare, starvation, and European diseases, the coalescence of various Anishinaabek groups led to enhanced social and political strength (Thwaites 1896-1901, 52:133) and Sault Sainte Marie was a focal point for people who inhabited adjacent areas both to the east and to the northwest as well as for the Saulteaux, who considered it their home (Thwaites 1896-1901, 54:129-131). The Haudenosaunee established a series of settlements at strategic locations along the trade routes inland from the north shore of Lake Ontario. From east to west, these villages consisted of Ganneious, on Napanee Bay, an arm of the Bay of Quinte; Quinte, near the isthmus of the Quinte Peninsula; Ganaraske, at the mouth of the Ganaraska River; Quintio, at the mouth of the Trent River on the north shore of Rice Lake; Ganatsekwyagon (or Ganestiquiagon), near the mouth of the Rouge River; Teyaiagon, near the mouth of the Humber River; and Quinaouatoua, on the portage between the western end of Lake Ontario and the Grand River (Konrad 1981:135). Their locations near the mouths of the Humber and Rouge Rivers, two branches of the Toronto Carrying Place, strategically linked these settlements with the upper Great Lakes through Lake Simcoe. The inhabitants of these villages were agriculturalists, growing maize, pumpkins and squash, but their central roles were that of portage starting points and trading centres for Iroquois travel to the upper Great Lakes for the annual beaver hunt (Konrad 1974; Williamson et al. 2008:50–52). Ganatsekwyagon, Teyaiagon, and Quinaouatoua were primarily Seneca; Ganaraske, Quinte and Quintio were likely Cayuga, and Ganneious was Oneida, but judging from accounts of Teyaiagon, all of the villages might have contained peoples from a number of the Iroquois constituencies (ASI 2013).

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

Robert Paudash's 1904 account of Mississauga origins also relies on oral history, in this case from his father, who died at the age of 75 in 1893 and was the last hereditary chief of the Mississauga at Rice Lake. His account in turn came from his father Cheneebeesh, who died in 1869 at the age of 104 and was the last sachem or Head Chief of all the Mississaugas. He also relates a story of origin on the north shore of Lake Huron (Paudash 1905:7–8) and later, after the dispersal of the Huron-Wendat, carrying out coordinated attacks against the Haudenosaunee. Francis Assikinack, an Ojibwa of Manitoulin Island born in 1824, provides similar details on battles with the Haudenosaunee (Assikinack 1858:308–309).

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

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

In 1763, following the fall of Quebec, New France was transferred to British control at the Treaty of Paris. The British government began to pursue major land purchases throughout Ontario in the early nineteenth century, and entered into negotiations with various Nations for additional tracts of land as the need arose to facilitate European settlement.

During the American Revolution, Mississauga warriors supported the English military. Rebel forces destroyed the villages of the Six Nations Iroquois in New York and many people were forced to move to the Niagara area. When Six Nations Iroquois leaders learned that the English planned to make a peace treaty with the Americans and establish a boundary line that would give away their homelands they were angry. The English government offered to protect Six Nations Iroquois peoples and give them land within their boundaries. On August 8, 1783, Lord North instructed Governor Haldimand to set apart land for the Six Nations Iroquois and ensure that they carried on their hunting and fur trading with the British. On May 22, 1784, a tract of land along the Grand River was purchased by the British government from the Mississaugas who lived in the vicinity (Johnston 1964; Lytwyn 2005). The land set apart is called the Haldimand Tract. Joseph Brant led Haudenosaunee loyalists (1600 people) to the Haldimand tract in 1784 and in the fall of 1784, Sir Frederick Haldimand formally awarded the tract to the Mohawks "and others of the Six Nations [Iroquois]." They were authorized to "Settle upon the Banks of the River" and were allotted "for that Purpose six miles [10 km] deep from each Side of [it] beginning at Lake Erie, & extending in the Proportion to [its] Head." The precise boundaries of the grant were unclear as there was no survey; for example, the northern boundary of the original deed from the Mississaugas to the Crown

stated that the line extended "from the creek that falls from a small lake into…the bay known by the name of Waghquata [Burlington Bay]…until it strikes the river La Tranche [Thames]." The 1790 survey by Augustus Jones intentionally failed to include the headwaters of the Grand, an action made all the more difficult to address given the unclear description of the extent in the original deeds (Johnston 1964; Lytwyn 2005).

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

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

The subsequent Peter Russel administration (1797-1798), however, recognized the leases and the sales that Brant arranged with white settlers along the Grand River Valley. Trustees were appointed to act on the behalf of the Six Nations Iroquois with the authority to receive payment of purchases. On the other hand, some Six Nations Iroquois thought that the land sale practices violated the ancient principle that land was not a "commodity which could be conveyed." Two Mohawk sachems even tried to take up arms to depose Brant because they did not agree with his ways. Their efforts were for naught and they returned to the Bay of Quinte where other Six Nation Iroquois peoples, led by Sachem John Deseronto, had settled after the American Revolution (Johnston 1964; Lytwyn 2005).

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

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

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

The eighteenth century saw the ethnogenesis in Ontario of the Métis, when Métis people began to identify as a separate group, rather than as extensions of their typically maternal First Nations and paternal European ancestry (Métis National Council n.d.). Métis populations were predominantly located north and west of Lake Superior, however, communities were located throughout Ontario (MNC n.d.; Stone and Chaput 1978:607,608). During the early nineteenth century, many Métis families moved towards locales around southern Lake Huron and Georgian Bay, including Kincardine, Owen Sound, Penetanguishene, and Parry Sound (MNC n.d.). Recent decisions by the Supreme Court of Canada (Supreme Court of Canada 2003; Supreme Court of Canada 2016) have reaffirmed that Métis people have full rights as one of the Indigenous people of Canada under subsection 91(24) of the Constitution Act, 1867.

1.2.2 Euro-Canadian Land Use: Township Survey and Settlement

Historically, the Study Area is located in the Former Waterloo Township, County of Waterloo, in part of Lot 6, Broken Front Beasley's Lower Block (BF BLB).

The S & G stipulates that areas of early Euro-Canadian settlement (pioneer homesteads, isolated cabins, farmstead complexes), early wharf or dock complexes, pioneer churches, and early cemeteries are considered to have archaeological potential. Early historical transportation routes (trails, passes, roads, railways, portage routes), properties listed on a municipal register or designated under the *Ontario Heritage Act* or a federal, provincial, or municipal historic landmark or site are also considered to have archaeological potential.

For the Euro-Canadian period, the majority of early nineteenth century farmsteads (i.e., those that are arguably the most potentially significant resources and whose locations are rarely recorded on nineteenth century maps) are likely to be located in proximity to water. The development of the network of concession roads and railroads through the course of the nineteenth century frequently influenced the siting of farmsteads and businesses. Accordingly, undisturbed lands within 100 m of an early settlement road are also considered to have potential for the presence of Euro-Canadian archaeological sites.

The first Europeans to arrive in the area were transient merchants and traders from France and England, who followed Indigenous pathways and set up trading posts at strategic locations along the well-traveled river routes. All of these occupations occurred at sites that afforded both natural landfalls and convenient access, by means of the various waterways and overland trails, into the hinterlands. Early transportation routes followed existing Indigenous trails, both along the lakeshore and adjacent to various creeks and rivers (ASI 2006).

Township of Waterloo

The historic Township of Waterloo was originally known as Block Two of the Grand River land grant which was deeded to the Six Nations Iroquois by the British in 1784 for their loyalty to the Crown in the American War of Independence. In 1796, Block Two, a 38,045 ha tract, was acquired by Richard Beasley from Joseph Brant on behalf of the Six Nations. He subdivided and sold the land, with an approximately 24,281 ha tract of land going to the German Company of Pennsylvania, in November 1803 (Janusas 1988:2). Company members included Samuel and John Bricker; and Daniel, Jacob, and John Erb. The German Company of Pennsylvania had the lands surveyed by Augustus Jones to subdivide the land into 128 farm lots of approximately 181 ha each and 32 farm lots of approximately 34 ha each (Janusas 1988:96).

When Block Two was incorporated into the District of Gore (County of Halton) in 1816, it was named Waterloo Township, in honour of the battle that ended the Napoleonic Wars in Europe. It remained part of Halton County in the District of Gore until 1842 and then part of the District of Wellington. The County of Waterloo did not come into being until 1852 (Janusas 1988: 2).

The first immigrants to settle in Waterloo Township were almost exclusively German Mennonites from Pennsylvania, who had originally emigrated from Switzerland, Germany and France. Most of these settlers were farmers but many were tradesmen and millers. Later settlers were generally of Scottish, English, Irish, and continental German heritage, many of them farmers, but a majority of them were artisans and tradesmen. When the railway was laid through Waterloo Township in the mid-nineteenth century, it became the leading industrial center of Waterloo County (Janusas 1988: 10-12).

Abraham Erb purchased approximately 181 ha of land in 1805 and became the first settler in the City of Waterloo. He transferred a portion of his land and ownership of two mills to Jacob Snider in 1829. Snider's son inherited approximately 129 ha which he sold to John Hoffman and Isaac Weber, who sectioned and sold the lands in 1854, at which point the population of Waterloo began to expand (Janusas 1988: 102).

In the mid-1850s, the defining development of Waterloo Township and Waterloo County was the construction of the railway. The first railway line built into the township was a main line of the Grand Trunk Railway from Toronto, laid through in 1856. A number of other railway lines were soon laid across the township including: a Grand Trunk branch between Preston and Berlin in 1857; a Great Western line from Galt, Preston, and Guelph in 1857; a Grand Trunk branch between Berlin (Kitchener) and Galt in 1882; and a Grand Trunk Branch between Waterloo and Elmira in 1891.

Village of Blair

The flatlands of Blair is understood to have been established on an Indigenous settlement site (date unknown) and was first settled by and laid out by Benjamin B. Bowman and Henry Bechtel. The County's first school and first cemetery were located here. A post office was built in 1858 along the railway and the village was renamed to Blair after a prominent Canadian politician, as it was previously known as Covered Bridge, Durhamville, New Carlisle and Carlisle. Sawmills and flour mills were built by Mennonite settlers, and later generated electric power for local use and in Preston. By 1864, it had a saw mill, grist mill, nursery, distillery, hotel and various merchants and tradespeople (Sutherland 1864:108). In 1873, a branch line of the Grand Trunk Railway was built, connecting Blair to Galt and Berlin (Waterloo Region Museum 2017).

Village of Preston

The village of Preston is located on the Speed River near its confluence with the Grand River. The village was founded in the early 1800's when John Erb built a saw and grist mill on the Speed River, as part of a migration of a group of German speaking Mennonites from Pennsylvania who settled in the area. Erb's extant grist mill is recognised as the oldest continuously operated industrial site in the region (City of Cambridge 2019). The settlement was originally named Cambridge Mills and was changed to Preston in 1830. Preston was home to the first "free school" in the province of Ontario. In the 1830s warm mineral springs were discovered and Preston became a famous health spa town, with hotels like the Del Monte Hotel (later Preston Springs), the Kress Hotel, and the Mineral Springs Bath House. The town survey was completed in 1834, which laid out streets and lots at right angles to the Great Road (Highway 8) with almost all of the buildings in the settlement stretched out along the road. The Preston post office was

established in 1837. By the 1850s Preston had two grist mills, two sawmills, two vinegar factories, a woollen factory, a foundry, a chair factory, two tanneries, a pottery, a starch factory and three breweries. The town was a popular stop for travellers along the Great Road, running from Dundas north through Berlin. The town retained its German character, and its location on the Great Road and early railway connections ensured continued growth, with a number of factories and foundries manufacturing goods including flour, agricultural implements, furniture, stoves, shoes and textiles. By 1852 the population of Preston was approximately 1,400 people. By 1899, the population of Preston was 2,000 people and was incorporated as a town. In 1899 the Galt, Preston & Hespeler (GP&H) Street Railway opened Idylwild Park along the Speed River. Through the first half of the twentieth century the population grew to 14,000 people and incorporated as a city in 1915. In 1973, Preston was amalgamated with Galt, Hespeler and the hamlet of Blair into the City of Cambridge (Mika and Mika 1977:329–330).

The Preston & Berlin Street Railway (P&BR) Company Limited was formed in 1894, with construction beginning the same year, and service commenced between the two towns in 1904. In 1908, the P&BR and GP&HSR merged as the Berlin, Waterloo, Wellesley & Lake Huron Railway Company and was leased to the Canadian Pacific Railway for 99 years. Freight service began in 1905, and by 1911, service terminated in Waterloo. A postcard from the circa 1900 show that the railway ran down the unpaved road, and another postcard from the mid-1930s shows that the railway had been double tracked through the centre of King Street in Preston and the road was paved (Images 3-4). Image 5 illustrates the process of double tracking of the railway through the section in Waterloo. In 1914, the name was changed to the Grand River Railway Company Limited (City of Cambridge 2018; Miller 2004).

1.2.3 Historical Map Review

The 1861 *Map of the County of Waterloo* and the 1881 *Illustrated Atlas of the County of Waterloo*, Township of Waterloo Page (Tremaine 1861; Parsell & Co. 1881) were examined to determine the presence of historic features within the Study Area during the nineteenth century (Table 1; Figures 2-3).

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

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

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

		1861		*1881*	
Con #	**Lot #**	**Property Owner(s)**	**Historical Feature(s)**	**Property Owner(s)**	**Historical Feature(s)**
BF BLB	6	Jos. Erb	P&BR	None	None

The 1861 map shows the former alignment of the P&BR through the Study Area, crossing the Speed River near the northern end of the Study Area. A tributary of the Speed River is also illustrated along the top end of the Study Area. Both maps show the villages of Preston and Blair, as well as the historically surveyed Fountain Street connecting the two settlements.

1.2.4 Twentieth-Century Mapping Review

The 1916 National Topographic System (NTS) Galt Sheet (Department of Militia and Defence 1916), the 1945 and 1963 aerial photographs of Cambridge (University of Waterloo 2016), and the 1975 NTS Preston-Hespeler Sheet (Energy, Mines and Resources Canada 1975) were examined to determine the extent and nature of development and land uses within the Study Area (Figures 4-7).

In 1916, the Study Area is shown to be within an undeveloped area on the topographically flat lands between the Speed and Grand Rivers, southwest of Preston. No structures are shown within the Study Area. In 1945 the former alignment of the P&BR railway can be seen as a treed over corridor and the bridge over the Speed River had been removed. The Study Area is shown to contain agricultural fields on both sides of the river. By 1963, the school and track field can be seen just east of the Study Area in Preston. Houses lined residential streets where Preston had expanded southwest towards the Speed River. The 1975 map illustrates a small waterbody within the western end of the Study Area and a dotted line representing a trail along the eastern bank of the Speed River within the Study Area. Dover Street is shown to have been extended to it's present terminus.

1.3 Archaeological Context

This section provides background research pertaining to previous archaeological fieldwork conducted within and in the vicinity of the Study Area, its environmental characteristics (including drainage, soils or surficial geology and topography, etc.), and current land use and field conditions. Three sources of information were consulted to provide information about previous archaeological research: the site record forms for registered sites available online from the MTCS through "Ontario's Past Portal"; published and unpublished documentary sources; and the files of ASI.

1.3.1 Current Land Use and Field Conditions

A review of available Google satellite imagery shows that the Study Area has remained relatively unchanged since 2005.

A Stage 1 property inspection was conducted on May 2, 2019 that noted the Study Area is located within an area known locally as the Junction (or Confluence) of the Speed and Grand Rivers, which is recognized as being locally significant by the Region of Waterloo, between the villages of Preston and

Blair in the City of Cambridge. The Study Area is within a topographically flat active agricultural field east of Fountain Street at Preston Parkway on ***rare*** Charitable Research Reserve lands. The west side of Fountain Street is within agricultural lands. Fountain Street appears to have been subject to recent construction disturbance for road improvements to widen and install buried utilities on both sides of the road. The east side of the right-of-way (ROW) includes a steeply constructed bank and culvert for the watercourse flowing into the Speed River through a vast wetland. The east side of the Speed River is within the village of Preston and contains a school soccer field, the terminus of Dover Street surrounded by mid-twentieth century residential development and an electric transformer station and the Dover Street sanitary pumping station.

1.3.2 Geography

In addition to the known archaeological sites, the state of the natural environment is a helpful indicator of archaeological potential. Accordingly, a description of the physiography and soils are briefly discussed for the Study Area.

The S & G stipulates that primary water sources (lakes, rivers, streams, creeks, etc.), secondary water sources (intermittent streams and creeks, springs, marshes, swamps, etc.), ancient water sources (glacial lake shorelines indicated by the presence of raised sand or gravel beach ridges, relic river or stream channels indicated by clear dip or swale in the topography, shorelines of drained lakes or marshes, cobble beaches, etc.), as well as accessible or inaccessible shorelines (high bluffs, swamp or marsh fields by the edge of a lake, sandbars stretching into marsh, etc.) are characteristics that indicate archaeological potential.

Water has been identified as the major determinant of site selection and the presence of potable water is the single most important resource necessary for any extended human occupation or settlement. Since water sources have remained relatively stable in Ontario since 5,000 BP (Karrow and Warner 1990:Figure 2.16), proximity to water can be regarded as a useful index for the evaluation of archaeological site potential. Indeed, distance from water has been one of the most commonly used variables for predictive modeling of site location.

Other geographic characteristics that can indicate archaeological potential include: elevated topography (eskers, drumlins, large knolls, and plateaux), pockets of well-drained sandy soil, especially near areas of heavy soil or rocky ground, distinctive land formations that might have been special or spiritual places, such as waterfalls, rock outcrops, caverns, mounds, and promontories and their bases. There may be physical indicators of their use, such as burials, structures, offerings, rock paintings or carvings. Resource areas, including; food or medicinal plants (migratory routes, spawning areas) are also considered characteristics that indicate archaeological potential (S & G, Section 1.3.1).

A review of the physiography of the Study Area is situated within a spillway of the Guelph Drumlin Field physiographic region of southern Ontario (Chapman and Putnam 1984:137–139) The Guelph Drumlin Field centres upon the City of Guelph and Guelph Township and occupies roughly 830 km^2. Within the Guelph Drumlin Field, there are approximately 300 drumlins of varying sizes. For the most part these hills are of the broad oval type with slopes less steep than those of the Peterborough drumlins and are not as closely grouped as those in some other areas. The till in these drumlins is loamy and calcareous, and was derived mostly from dolostone of the Amabel Formation that can be found exposed below the Niagara Escarpment. 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 (Chapman and Putnam 1984:15).

Figure 8 depicts surficial geology for the Study Area. The surficial geology mapping demonstrates that the Study Area is underlain by modern alluvial deposits of clay, silt, sand, gravel, may contain organic remains (Ontario Geological Survey 2010). Soils in the Study Area consist of Burford gravelly and cobbley loams, well drained soils on outwash sand and gravel deposits; and Martin sand and gravel, a variably drained soil developed on recent alluvial deposits (Figure 9).

The Study Area is located at the confluence of the Speed River and the Grand River, known locally as "the Junction". Several cold water tributaries are also present near the confluence of the Speed and Grand, one of which is located within the Study Area. The Speed River flows through old spillway over its entire length and as a watercourse is representative of the late Pleistocene/early Holocene geography of southern Ontario (City of Cambridge 2016). The Speed River is unexpectedly shallow as it is partly floored by bedrock (Chapman and Putnam 1984: 98). It is a major tributary of the Grand River. The Grand River watershed drains an area of approximately 673,397 ha. Its main stream begins northeast of Dundalk at 526 m above sea level and flows for approximately 290 km to Lake Erie at Port Maitland (Chapman and Putnam 1984:95). The Grand River was an important transportation route and a critical resource extraction area for generations of Indigenous people. Historically, the Grand River has been utilized as a navigable waterway, as a power source (such power sites served as settlement nuclei), and above Brantford as a course for driving logs (Chapman and Putnam 1984:98). It is also the focus of the Haldimand Tract; Joseph Brant was awarded six miles (10 km) on either side of the river (Johnston 1964:35–38; Lytwyn 2005). The Grand River (and its tributaries the Nith, Conestogo, Speed and Eramosa Rivers) was designated as a Canadian Heritage River in 1994 for its cultural history and recreation (Canadian Heritage Rivers System 2016).

Locally significant wetlands have been identified and mapped by the Grand River Conservation Authority (GRCA) and Ministry of Natural Resources and Forestry (MNRF) within this area (Grand River Conservation Authority 2018).

1.3.3 Previous Archaeological Research

In Ontario, information concerning archaeological sites is stored in the Ontario Archaeological Sites Database (OASD) maintained by the MTCS. This database contains archaeological sites registered within the Borden system. Under the Borden system, Canada has been divided into grid blocks based on latitude and longitude. A Borden block is approximately 13 km east to west, and approximately 18.5 km north to south. Each Borden block is referenced by a four-letter designator, and sites within a block are numbered sequentially as they are found. The Study Area under review is located in Borden block *AiHc*.

According to the OASD, 43 previously registered archaeological sites are located within one kilometre of the Study Area, four of which are within 50m of the Study Area, and four of which are within the Study Area (Ministry of Tourism, Culture and Sport 2018). A summary of the sites is provided below.

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

Borden #	Site Name	Cultural Affiliation	Site Type	Researcher
AiHc-4	**Collector**	**Archaic**	Camp	ARA 1991

Borden #	Site Name	Cultural Affiliation	Site Type	Researcher
AiHc-9	Blair Flats 2	Archaic; Woodland, Middle	Camp	Unknown 1974
AiHc-10	Blair Flats 3	Archaic, Late	Camp	Unknown 1974
AiHc-15	Cambridge Bypass	Pre-Contact Indigenous	Scatter	ARA 1991
AiHc-25	McNeal	Pre-Contact Indigenous	Findspot	Lennox 1983 Knight 1991
AiHc-26	Blair Flats North East	Pre-Contact Indigenous	Unknown	Redmon, Stothers 1982
AiHc-27	n/a	Euro-Canadian	Homestead	Lennox 1983
AiHc-29	Beasely	Euro-Canadian	Homestead	Janusas 1986
AiHc-139	Cruickston 1	Pre-Contact Indigenous		ARA 1991
AiHc-140	Nathaniel Dodge	Pre-Contact Indigenous; Woodland, Early; Euro-Canadian	Camp Homestead	ARA 1991
AiHc-141	Cruickston 2	Archaic, Late; Woodland, Middle	Camp	ARA 1991
AiHc-142	Cruickston 3	Pre-Contact Indigenous	Camp	ARA 1991
AiHc-143	Cruickston 4	Archaic, Late	Camp	ARA 1991
AiHc-144	Cruickston 5	Pre-Contact Indigenous	Camp	ARA 1991
AiHc-145	Cruickston 6	Archaic, Middle; Woodland, Middle; Woodland, Late	Camp	ARA 1991; Dalton 2004
AiHc-146	**Cruickston 7**	**Pre-Contact Indigenous**	**Camp**	**ARA 1991**
AiHc-147	**Cruickston 8**	**Woodland, Middle**	**Camp**	**ARA 1991**
AiHc-148	Cruickston 9 Scatter M	Unknown	Camp	ARA 1991
AiHc-150	Ashton Brewery	Euro-Canadian	Brewery	ARA 1991
AiHc-151	Cruickston 10	Archaic, Late	Camp	ARA 1991
AiHc-153	Cruickston 12	Archaic, Early	Camp	ARA 1991
AiHc-155	Cruickston 14	Woodland, Early	Findspot	ARA 1991
AiHc-158	Cruickston 17	Archaic, Middle	Findspot	ARA 1991
AiHc-159	Cruickston 18	Woodland, Early	Findspot	ARA 1991
AiHc-162	Cruickston 21	Pre-Contact Indigenous	Killspot	ARA 1991
AiHc-167	Cruickston 22	Archaic, Early	Findspot	ARA 1991
AiHc-173	n/a	Woodland, Late	Unknown	Janusas 1993
AiHc-174	Shaniawski	Euro-Canadian	Homestead	ARA 1993
AiHc-208	Blair McDonald	Euro-Canadian	Homestead	Parker 1997
AiHc-321	*Deep*	*Pre-Contact Indigenous*	*Unknown*	*Dalton 2004*
AiHc-322	*Hackberry*	*Archaic, Middle*	*Midden*	*Dalton 2004*

Borden #	Site Name	Cultural Affiliation	Site Type	Researcher
AiHc-323	*Elm*	*Pre-Contact Indigenous*	*Unknown*	*Dalton 2004*
AiHc-324	*Goose Run*	*Woodland, Late*	*Midden*	*Dalton 2004*
AiHc-325	**Falcon**	**Pre-Contact Indigenous**	**Unknown**	**Dalton 2004**
AiHc-339	Gun Flint	Euro-Canadian	Unknown	Dalton 2005
AiHc-351	n/a	Euro-Canadian	Unknown	TMHC 2006
AiHc-352	n/a	Euro-Canadian	Midden	TMHC 2006
AiHc-353	Hilburn	Euro-Canadian	Homestead	ASI 2006
AiHc-354	McNally Dump	Euro-Canadian	Dump; Homestead	ASI 2006
AiHc-355	Jacob Echtel/ Limerick Road	Euro-Canadian	Homestead	ASI 2007
AiHc-357	n/a	Archaic, Middle	Findspot	ASI 2006
AiHc-458	n/a	Pre-Contact Indigenous	Scatter	TMHC 2009
AiHc-459	n/a	Euro-Canadian	Homestead	Stantec 2012

Sites in **bold** are within the Study Area
Sites in *italics* are within 50m
ARA – Archaeological Research Associates Ltd.
TMHC – Timmins Martelle Heritage Consultants

According to the background research, three previous reports detail fieldwork within 50 m of the Study Area.

ARA (1995) conducted an archaeological assessment of the Cruickston Park Farm, approximately 397 ha in North Dumfries Township and the City of Cambridge, including parts of the current Study Area which fall within the northernmost part of the subject property surveyed. The property was generally situated around and to the south of the confluence of the Speed and Grand Rivers. The field survey consisted of pedestrian survey and test pit survey at five metre intervals. A total of 53 archaeological finds were discovered or revisited from known locations, including what were called Scatter I (AiHc-146) and Scatter J (AiHc-147) identified within the current Study Area. AiHc-4 was previously registered at the time and was reidentified during the survey. All three sites are significant precontact Indigenous, including two Woodland period sites, and were recommended for further assessment (see *Supplementary Documentation*).

Christopher Dalton (2006) conducted an archaeological assessment over 2004 and 2005 on the ***rare*** Environmental Preserve lands, formerly known as the Cruickston Charitable Research Reserve. One of the objectives during the conversion of the property to an educational preserve was to conduct an archaeological assessment as an inventory of archaeological material on the entire 370 ha property. The report noted that people have been finding artifacts on the property for hundreds of years. At the time, the property included lands on both sides of the Grand River, consisting mainly of agricultural fields. The upper fields, within the current Study Area were described as being located on rolling hills with some areas of forest and swamp. The assessments in 2004 and 2005 consisted of pedestrian survey in the ploughed fields and test pitting the edges of the rivers at five metre intervals. The work identified 29 sites in the areas of test pit survey, including AiHc-321 through -325 within and adjacent to the current Study

Area (see *Supplementary Documentation*). Additional assessment was recommended on these sites, and further test pitting was recommended in areas "slightly beyond the rivers edge" (Dalton 2006: 7).

Golder (2018) conducted a Stage 1 archaeological assessment of the Dover Street Pumping Station within the current Study Area. The property inspection in 2017 identified the entire 0.5 ha area as having been disturbed due to development of the adjacent subdivision, hydro station, pumping station, and sewer infrastructure and culvert which empties into the Speed River.

2.0 FIELD METHODS: PROPERTY INSPECTION

A Stage 1 property inspection must adhere to the S & G, Section 1.2, Standards 1-6, which are discussed below. The entire property and its periphery must be inspected. The inspection may be either systematic or random. Coverage must be sufficient to identify the presence or absence of any features of archaeological potential. The inspection must be conducted when weather conditions permit good visibility of land features. Natural landforms and watercourses are to be confirmed if previously identified. Additional features such as elevated topography, relic water channels, glacial shorelines, well-drained soils within heavy soils and slightly elevated areas within low and wet areas should be identified and documented, if present. Features affecting assessment strategies should be identified and documented such as woodlots, bogs or other permanently wet areas, areas of steeper grade than indicated on topographic mapping, areas of overgrown vegetation, areas of heavy soil, and recent land disturbance such as grading, fill deposits and vegetation clearing. The inspection should also identify and document structures and built features that will affect assessment strategies, such as heritage structures or landscapes, cairns, monuments or plaques, and cemeteries.

The Stage 1 archaeological assessment property inspection was conducted under the field direction of Eliza Brandy (R1109) of ASI, on May 2, 2019, in order to gain first-hand knowledge of the geography, topography, and current conditions and to evaluate and map archaeological potential of the Study Area. It was a visual inspection only and did not include excavation or collection of archaeological resources. Fieldwork was only conducted when weather conditions were deemed suitable and seasonally appropriate, per S & G Section 1.2., Standard 2. Previously identified features of archaeological potential were examined; additional features of archaeological potential not visible on mapping were identified and documented as well as any features that will affect assessment strategies. Field observations are compiled onto the existing conditions of the Study Area in Section 7.0 (Figure 10) and associated photographic plates are presented in Section 8.0 (Plates 1-20).

3.0 ANALYSIS AND CONCLUSIONS

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

3.1 Analysis of Archaeological Potential

The S & G, Section 1.3.1, lists criteria that are indicative of archaeological potential. The Study Area meets the following criteria indicative of archaeological potential:

- Previously identified archaeological sites (Table 2);
- Water sources: primary, secondary, or past water source (Speed River, Grand River);
- Early historic transportation routes (Fountain St., P&BR);
- Proximity to early settlements (Blair, Preston); and
- Well-drained soils (Burford gravelly and cobbley loams)

According to the S & G, Section 1.4 Standard 1e, no areas within a property containing locations listed or designated by a municipality can be recommended for exemption from further assessment unless the area can be documented as disturbed. The Municipal Heritage Register was consulted and no properties within the Study Area are Listed or Designated under the Ontario Heritage Act.

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

3.2 Analysis of Property Inspection Results

The property inspection determined that the Study Area exhibits archaeological potential (Figure 10: areas highlighted in green and orange). These areas will require Stage 2 archaeological assessment prior to any development. According the S & G Section 2.1.1, pedestrian survey is required in actively or recently cultivated fields (eg. Plates 17-20). According to the S & G Section 2.1.2, test pit survey is required on terrain where ploughing is not viable, such as wooded areas, properties where existing landscaping or infrastructure would be damaged, overgrown farmland with heavy brush or rocky pasture, and narrow linear corridors up to 10 metres wide (eg. Plates 3-13, 17, 19).

Parts of the Study Area have been previously assessed but still exhibit archaeological potential (Figure 10: areas hatched in red), due to the passage of time since these assessments (ARA 1995, Dalton 2006) and the high archaeological potential of the Preston Flats area (see *Supplementary Documentation*). Four archaeological sites are located in the Study Area: AiHc-4, AiHc-416, AiHc-417, AiHc-325 (ARA 1991, Dalton 2006). These sites have further cultural heritage value or interest and will require further assessment if impacted. Given the passage of time since they were first identified, ASI recommends that these four sites must be subject to a Stage 2 pedestrian and/or test pit survey in order to re-locate them and determine the appropriate strategy for Stage 3 assessment (if required).

Parts of the Study Area have been previously assessed and found to be disturbed due to the construction of the existing pumping station and associated buried utilities (Golder 2018) These areas do not require further archaeological survey (Figure 10: areas highlighted in red).

The property inspection determined that some of lands within the Study Area are sloped in excess of 20 degrees, and according to the S & G Section 2.1 do not retain potential (Plates 13; Figure 10: areas highlighted in pink). A part of the study area is located in low and wet conditions, and according to the S & G Section 2.1 does not retain potential (Plate 5, 8, 10, 11, 15-16; Figure 10: areas highlighted in blue). The remainder of the Study Area has been subjected to deep soil disturbance events associated with the construction of the Dover Street Pumping Station and the Fountain Street ROW, and according to the S & G Section 1.3.2 do not retain archaeological potential (Plates 1-3, 14, 16-18; Figure 10: areas highlighted in yellow). These areas do not require further survey.

3.3 Conclusions

The Stage 1 background study determined that 43 previously registered archaeological sites are located within one kilometre of the Study Area. The property inspection determined that the Study Area exhibits archaeological potential.

4.0 RECOMMENDATIONS

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

1. The Study Area exhibits archaeological potential. If impacted, these lands require Stage 2 archaeological assessment by test pit/pedestrian survey at five metre intervals, where appropriate, prior to any proposed impacts to the property;

2. Four registered precontact Indigenous archaeological sites with further cultural heritage value or interest are located within the Study Area (AiHc-4, AiHc-416, AiHc-417, AiHc-325). All four sites require Stage 2 pedestrian and test pit survey, as appropriate, in order to accurately relocate them.

3. The remainder of the Study Area does not retain archaeological potential on account of deep and extensive land disturbance, low and wet conditions, slopes in excess of 20 degrees, or having been previously assessed with no further work required. These lands do not require further archaeological assessment; and,

4. Should the proposed work extend beyond the current Study Area, further Stage 1 archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.

NOTWITHSTANDING the results and recommendations presented in this study, ASI notes that no archaeological assessment, no matter how thorough or carefully completed, can necessarily predict, account for, or identify every form of isolated or deeply buried archaeological deposit. In the event that archaeological remains are found during subsequent construction activities, the consultant archaeologist, approval authority, and the Cultural Programs Unit of the MTCS should be immediately notified.

5.0 ADVICE ON COMPLIANCE WITH LEGISLATION

ASI also advises compliance with the following legislation:

- This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, RSO 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological field work and report recommendations ensure the conservation, preservation and protection of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism, Culture and Sport, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

- It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological field work on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act.*

- Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the *Ontario Heritage Act*.

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

- Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48(1) of the Ontario Heritage Act and may not be altered, nor may artifacts be removed from them, except by a person holding an archaeological license.

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7.0 MAPS

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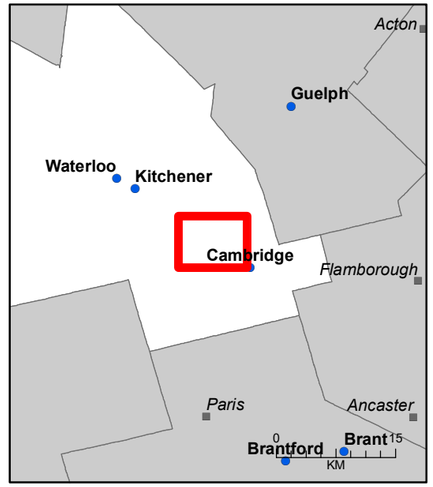

STUDY AREA

Sources:
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Projection: NAD 1983 UTM Zone 17N

Scale: 1:25,000

Page Size: 11 x 17

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ASI PROJECT NO.:18EA-202
DATE: 2019-04-18

DRAWN BY:AB
FILE: 18EA-202_Fig1

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T 416-966-1069 F 416-966-9723 asiheritage.ca

Figure 1: Blair-Preston Trail and Pedestrian Bridge Study Area

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Figure 2: Study Area (Approximate Location) Overlaid on the 1861 Map of the County of Waterloo

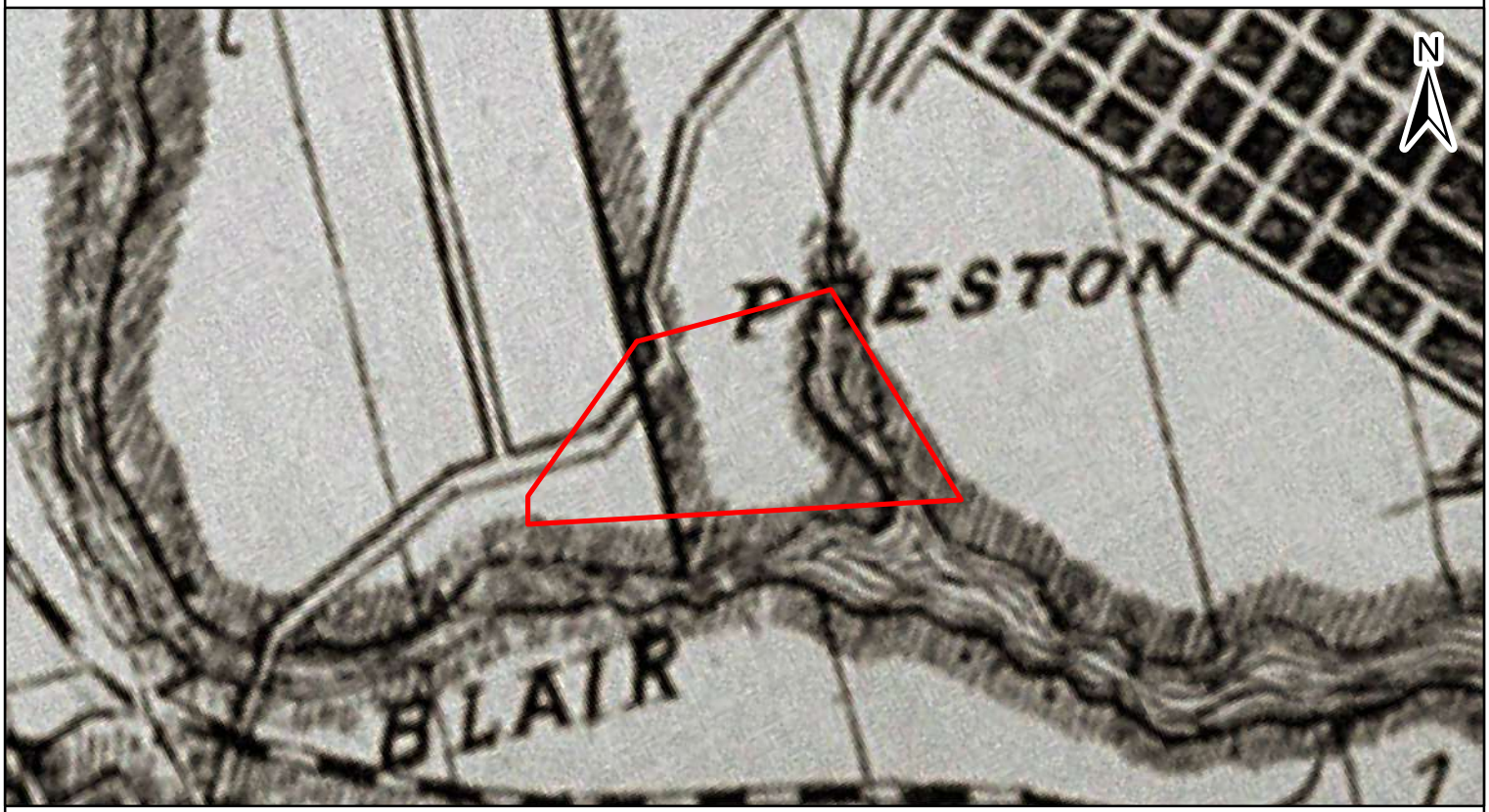

Figure 3: Study Area (Approximate Location) Overlaid on the 1881 Illustrated Historical Atlas of the County of Waterloo, Waterloo Township Page

ASI

STUDY AREA

Sources:
1861 Tremaine Map
Waterloo County
1881 Illustrated Historical Atlas
Waterloo County
Projection: NAD 1983 UTM Zone 17N
Scale: 1:15,000
Page Size: 8.5 x 11

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Metres

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DATE: 2019-04-18 FILE: 18EA-202_Fig2-3_Hist

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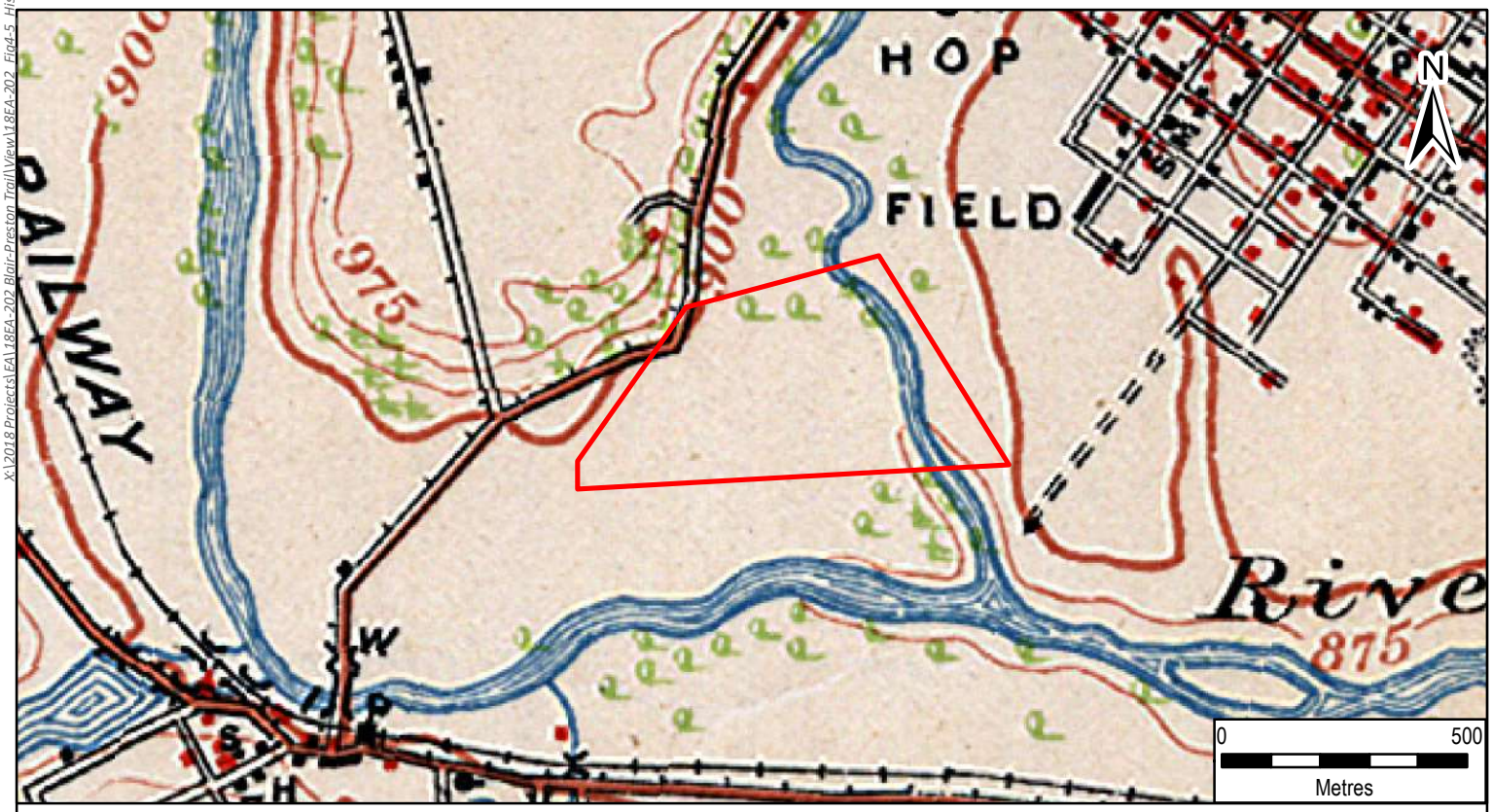

Figure 4: Study Area (Approximate Location) Overlaid on the 1916 NTS Galt Sheet

Figure 5: Study Area (Approximate Location) Overlaid on the 1945 Aerial Photograph of Preston

ASI

STUDY AREA

Sources:
1916 NTS Map
Galt Sheet
1945 Aerial Photography

Projection: NAD 1983 UTM Zone 17N
Scale: 1:15,000
Page Size: 8.5 x 11

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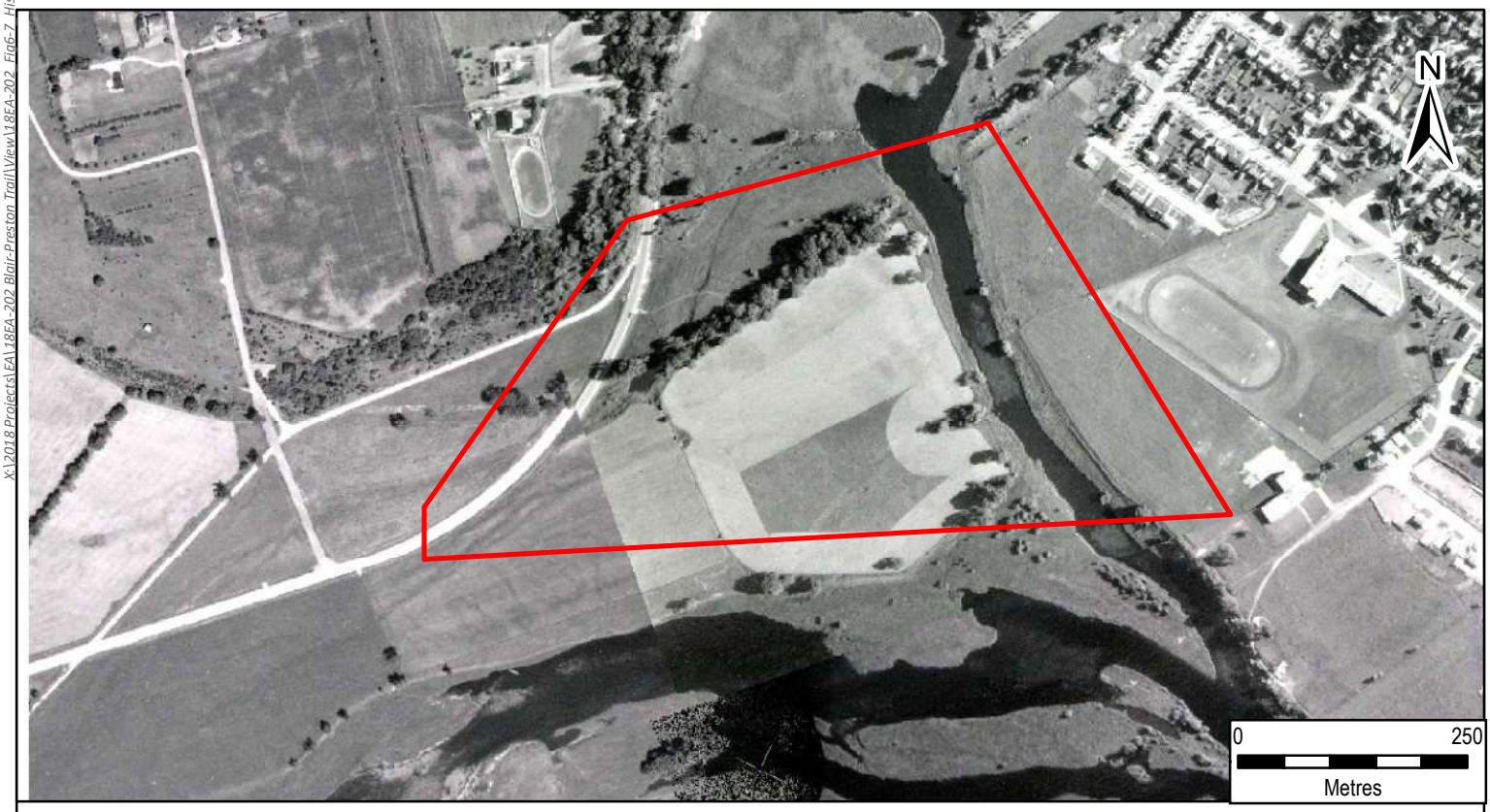

Figure 6: Study Area (Approximate Location) Overlaid on the 1963 Aerial Photograph of Preston

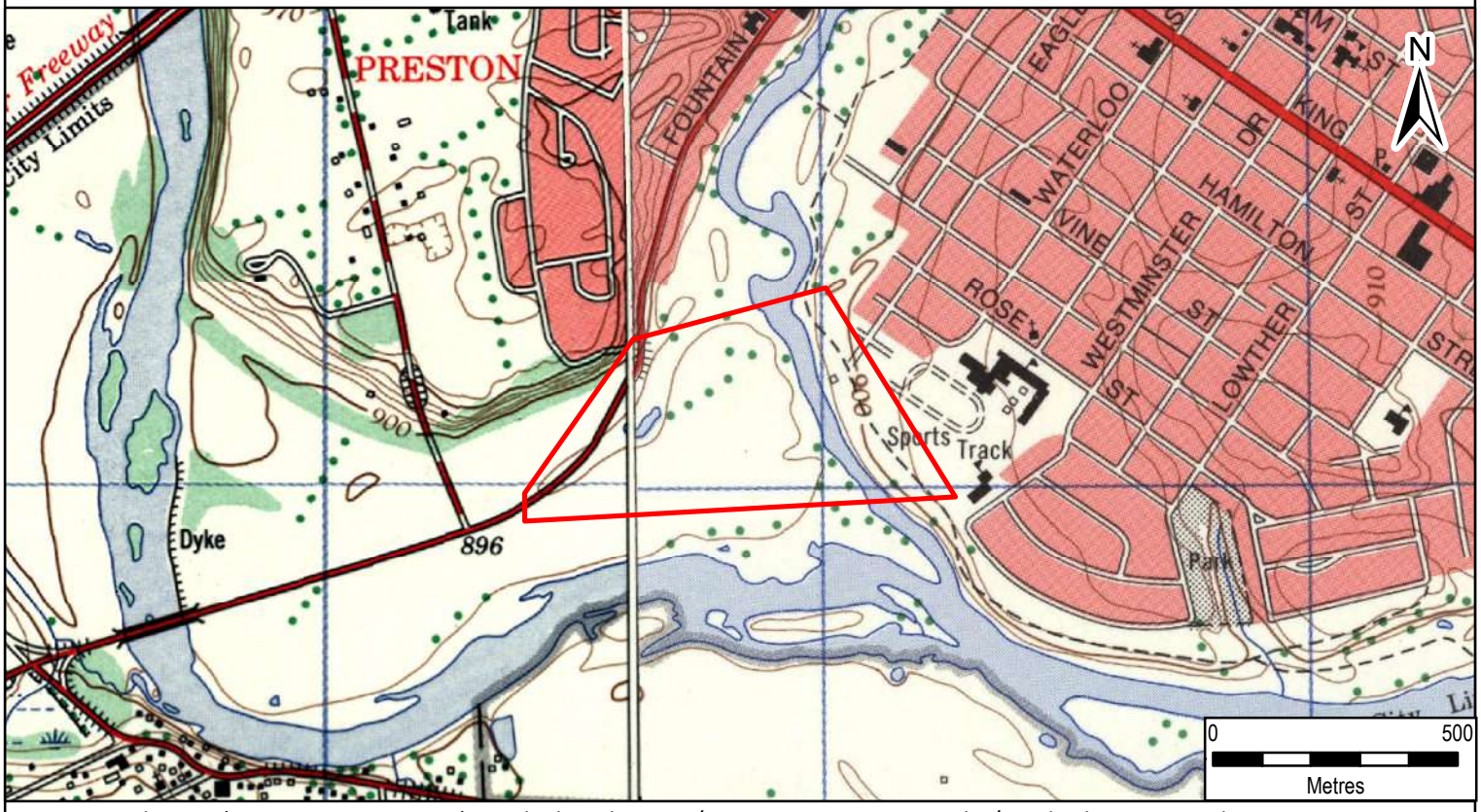

Figure 7: Study Area (Approximate Location) Overlaid on the 1975/1976 NTS Preston-Hespeler/Cambridge-Preston Sheet

ASI

STUDY AREA

Sources:t
1963 Aerial Photography
1975 & 1976 NTS Maps
Kitchener & Preston Sheets

Projection: NAD 1983 UTM Zone 17N
Scale: 1:8,000
Page Size: 8.5 x 11

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DATE: 2019-04-18 FILE: 18EA-202_Fig6-7_Hist

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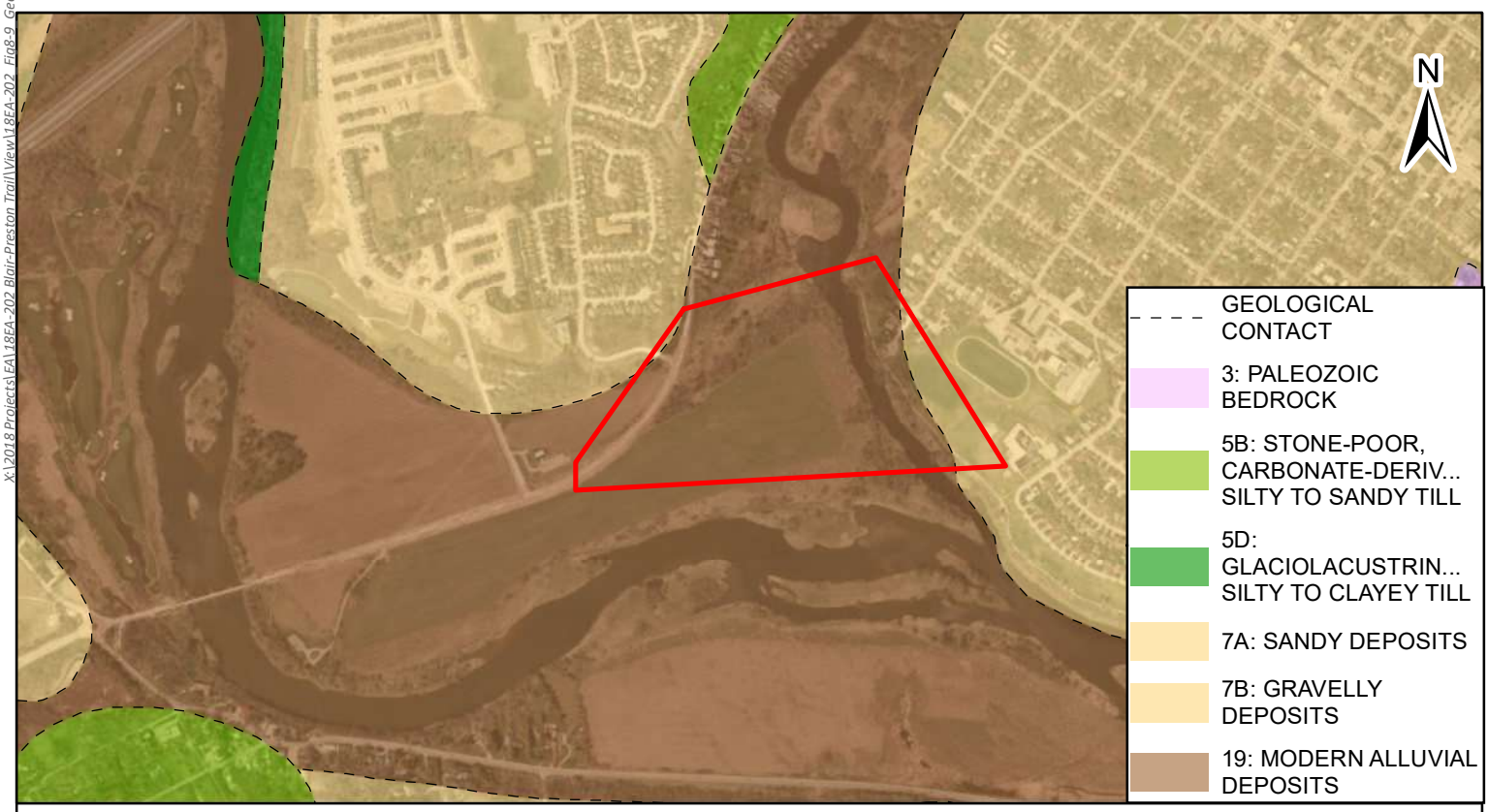

Figure 8: Study Area - Surficial Geology

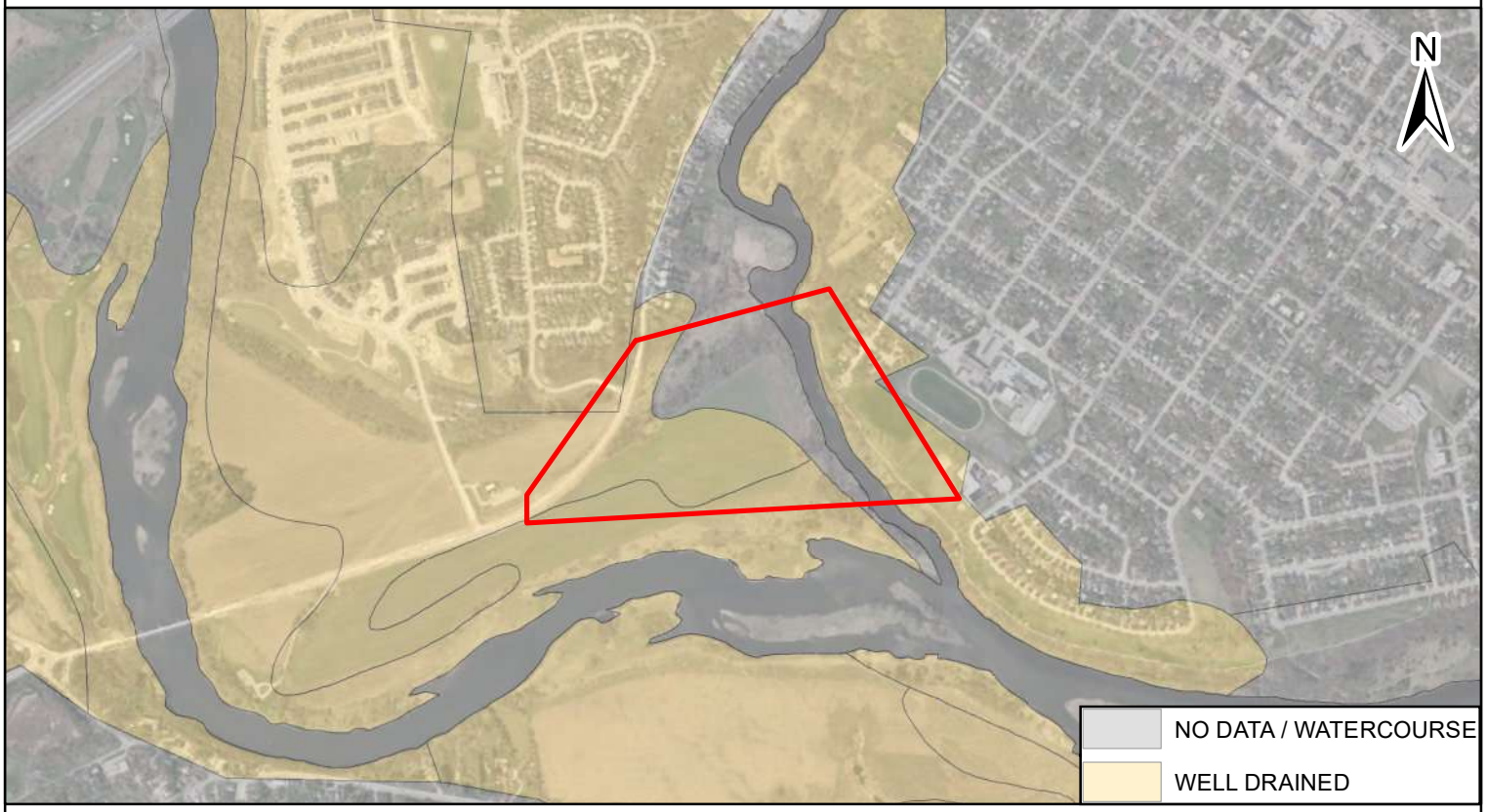

Figure 9: Study Area - Soil Drainage

ASI

STUDY AREA

Sources:t
1963 Aerial Photography
1975 & 1976 NTS Maps
Kitchener & Preston Sheets

Projection: NAD 1983 UTM Zone 17N
Scale: 1:15,000
Page Size: 8.5 x 11

0 500
Metres

ASI PROJECT NO.:18EA-202 DRAWN BY:AB
DATE: 2019-04-18 FILE: 18EA-202_Fig8-9_Geo

ASI

STUDY AREA
DISTURBED - NO POTENTIAL
PREVIOUSLY ASSESSED - (ARA 1995)
PREVIOUSLY ASSESSED - NO POTENTIAL (GOLDER 2018)
REQUIRES STAGE 2 PEDESTRIAN SURVEY
SLOPE - NO POTENTIAL
REQUIRES STAGE 2 TEST PIT SURVEY
LOW/WET - NO POTENTIAL
BRIDGE ALTERNATIVE 2
BRIDGE ALTERNATIVE 3
BRIDGE ALTERNATIVE 4
TRAIL ALTERNATIVE 2
TRAIL ALTERNATIVE 3
TRAIL ALTERNATIVE 4
CONTOURS
PHOTO LOCATIONS

Sources:
World Imagery: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS,

Projection: WGS 1984 Web Mercator Auxiliary Sphere
Scale: 1:3,211
Page Size: 11 x 17

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Metres

ASI PROJECT NO.: 18EA-202
DATE: 2019-06-07
DRAWN BY:AB
FILE: 18EA-202

Figure 10: Blair-Preston Trail and Pedestrian Bridge Study Area - Results of the Property Inspection

8.0 IMAGES

Plate 1: Southwest view of pumping station and waterfront path; area beyond previous assessment requires Stage 2 survey

Plate 2: West view of pumping station and waterfront path; area beyond previous assessment requires Stage 2 survey

Plate 3: South view of pumping station and waterfront trail; area beyond previous assessment requires Stage 2 survey

Plate 4: Southwest view of Speed River; area requires Stage 2 survey

Plate 5: South view of Speed River at Bridge Alternative 3; west riverbank requires Stage 2 survey

Plate 6: Southeast view of waterfront trail; area requires Stage 2 survey

Plate 7: Northwest view of waterfront trail; area requires Stage 2 survey

Plate 8: Southwest view of Speed River at Bridge Alternative 4; area requires Stage 2 survey

Plate 9: Southeast view of waterfront trail; area requires Stage 2 survey

Plate 10: Southwest view of Speed River at Bridge Alternative 2; area requires Stage 2 survey

Plate 11: West view of Speed River; area requires Stage 2 survey

Plate 12: Northwest view of Speed River at Bridge Alternative 4; area requires Stage 2 survey


Plate 13: East view of Fountain St. S.; area at bottom of slope requires Stage 2 survey

Plate 14: Northeast view of Fountain St. S.; area beyond disturbed ROW is low and wet, no potential

Plate 15: East view of Fountain St. S.; area beyond disturbed ROW is low and wet, no potential


Plate 16: Southeast view of Fountain St. S.; area beyond disturbed ROW is low and wet, no potential


Plate 17: Southwest view of Fountain St. S.; area is disturbed ROW, no potential


Plate 18: Northeast view of Fountain St. S.; area is disturbed ROW, no potential


Plate 19: Northeast view of Study Area; area requires Stage 2 survey


Plate 20: Southeast view of Study Area; area requires Stage 2 survey

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix C
Cultural Heritage Resources Assessment

CULTURAL HERITAGE RESOURCE ASSESSMENT:
BUILT HERITAGE RESOURCES AND CULTURAL HERITAGE LANDSCAPES

EXISTING CONDITIONS AND PRELIMINARY IMPACT ASSESSMENT REPORT

BLAIR-PRESTON PEDESTRIAN BRIDGE AND TRAIL
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

CITY OF CAMBRIDGE
REGION OF WATERLOO, ONTARIO

DRAFT REPORT

Prepared for:

R.J. Burnside & Associates Limited
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ASI File: 20CH-143

November 2020

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CULTURAL HERITAGE RESOURCE ASSESSMENT:
BUILT HERITAGE RESOURCES AND CULTURAL HERITAGE LANDSCAPES

EXISTING CONDITIONS AND PRELIMINARY IMPACT ASSESSMENT REPORT

BLAIR-PRESTON PEDESTRIAN BRIDGE AND TRAIL
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

CITY OF CAMBRIDGE
REGION OF WATERLOO, ONTARIO

EXECUTIVE SUMMARY

ASI was contracted by R.J. Burnside & Associates Limited, on behalf of the City of Cambridge, to conduct a Cultural Heritage Resource Assessment as part of the Blair-Preston Pedestrian Bridge and Trail Municipal Class Environmental Assessment. The project involves the development of a trail and pedestrian bridge spanning the Speed River to connect the communities of Blair and Preston. The Blair-Preston Pedestrian Bridge and Trail study area consists of lands owned by the rare Charitable Research Reserve generally known as the Preston Flats and is bounded by Fountain Street North and the Speed and Grand Rivers.

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 as well as residential subdivision including school properties dating to the mid-twentieth century. A review of federal, provincial, and municipal registers, inventories, and databases revealed that there is one previously identified feature of cultural heritage value within the Blair-Preston Pedestrian Bridge and Trail study area. No additional features were identified during the fieldwork.

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 impacts to identified cultural heritage resources.

2. A cultural heritage impact assessment (HIA) should be carried out for the Grand River Watershed Canadian Heritage River. The HIA should include consultation with Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI), the Region of Waterloo, and the City of Cambridge to help form appropriate mitigation measure in order to minimize impacts to the resource.

   The design and material of the proposed pedestrian bridge across the Grand River should be suitably designed to minimize visual impacts as much as possible to protect the view north along the Speed River from Settler's Fork/Linear Park. For example, Standard 11 of the *Standards and Guidelines for the Conservation of Historic Places in Canada* (2010) state: a) Conserve the heritage value and character-defining elements when creating any new additions

to an historic place or any related new construction. b) Make the new work physically and visually compatible with, subordinate to, and distinguishable from the historic place.

Additionally, the Standards and Guidelines recommend the following general design guidelines in relation to new additions in CHLs, particularly in relation to areas with significant visual relationships, ecological features, or built features:

- Designing a new feature when required by a new use that respects the historic visual relationships in the cultural landscape.
- Introducing a new element, when required by a new use, that does not have a negative impact on the heritage value and condition of the ecological feature.
- Designing a new built feature, when required by a new use, to be compatible with the heritage value of the cultural landscape. For example, erecting a new [structure] using traditional forms and materials, or installing signs and lighting compatible with the cultural landscape.

The results of the HIA should help guide the design of any proposed pedestrian bridge across the Grand River.

3. Where tree removals are anticipated, post construction rehabilitation including planting with sympathetic plant species should be considered to mitigate any impacts.

4. 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 heritage resources.

5. This report should be submitted by the proponent to heritage staff at the City of Cambridge, the Ministry of Heritage, Sport, Tourism, and Culture Industries, and any other relevant stakeholder with an interest in this project.

PROJECT PERSONNEL

Senior Project Manager:	Annie Veilleux, MA, CAHP Senior Cultural Heritage Specialist | Manager - Cultural Heritage Division
Project Coordinator:	Katrina Thatch, Hon. BA Archaeologist | Project Coordinator - Environmental Assessment Division
Project Manager:	Kristina Martens, BA, Dipl. Heritage Conservation Cultural Heritage Specialist | Project Manager - Cultural Heritage Division
Field Review:	Kristina Martens
Report Production:	Kristina Martens
Graphics Production:	Andrew Clish, BES Senior Archaeologist - Planning Assessment Division
Report Reviewer(s):	Meredith Stewart, MA, MSc, CAHP Intern Cultural Heritage Assistant - Cultural Heritage Division
	Annie Veilleux

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1.0 INTRODUCTION

ASI was contracted by R.J. Burnside & Associates Limited on behalf of the City of Cambridge, to conduct a Cultural Heritage Resource Assessment (CHRA) as part of the Blair-Preston Pedestrian Bridge and Trail Municipal Class Environmental Assessment. The project involves the development of a trail and pedestrian bridge spanning the Speed River to connect the communities of Blair and Preston. The Blair-Preston Pedestrian Bridge and Trail study area generally consists of lands owned by the rare Charitable Research Reserve generally known as the Preston Flats and is bounded by Fountain Street North and the Speed and Grand Rivers (Figure 1).

The purpose of this report is to describe the existing conditions of the study area, present an inventory of above ground built heritage resources and cultural heritage landscapes, assess potential impacts of the proposed undertaking, and propose appropriate mitigation measures and recommendations for minimizing and avoiding negative impacts on identified cultural heritage resources. This research was conducted by Kristina Martens, Cultural Heritage Specialist, under the senior project management of Annie Veilleux, Senior Cultural Heritage Specialist, both of ASI.

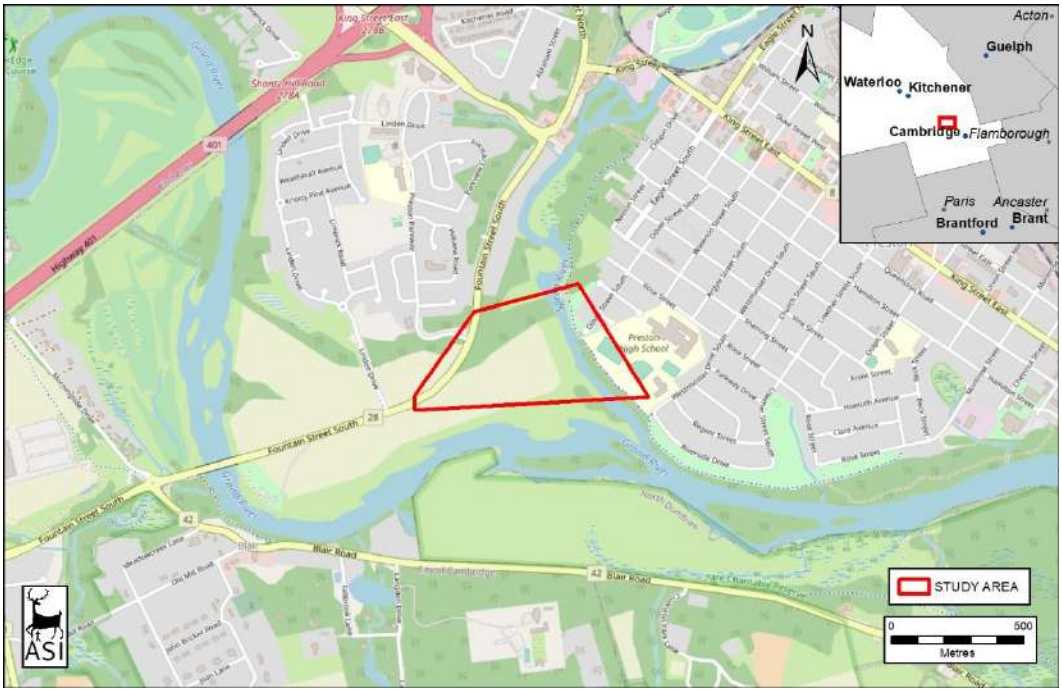

Figure 1: Location of the study area

2.0 BUILT HERITAGE RESOURCE AND CULTURAL HERITAGE LANDSCAPE ASSESSMENT CONTEXT

2.1 Legislation and Policy Context

The analysis throughout the study process addresses cultural heritage resources under various pieces of legislation and their supporting guidelines. This cultural heritage assessment considers cultural heritage resources in the context of improvements to specific areas, pursuant to the *Environmental Assessment Act* (EAA). The EAA (1990) provides for the protection, conservation and management of Ontario's environment. Under the EAA, "environment" is defined in Subsection 1(c) to include:

- cultural conditions that influence the life of man or a community, and;
- any building, structure, machine, or other device or thing made by man.

The *Ontario Heritage Act* (OHA) (Ministry of Culture 1990; now administered by the Ministry of Heritage, Sport, Tourism and Culture Industries) gives the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) the responsibility for the conservation, protection, and preservation of Ontario's cultural heritage resources. The 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 and has published two guidelines to assist in assessing cultural heritage resources as part of an environmental assessment: *Guideline for Preparing the Cultural Heritage Resource Component of Environmental Assessments* (Ministry of Culture and Communications 1992; now administered by the Ministry of Heritage, Sport, Tourism and Culture Industries), and *Guidelines on the Man-Made Heritage Component of Environmental Assessments* (Ministry of Culture and Recreation 1980; now administered by the Ministry of Heritage, Sport, Tourism and Culture Industries). Accordingly, both guidelines have been utilized in this assessment process.

The *Guidelines on the Man-Made Heritage Component of Environmental Assessments* (Section 1.0) states the following:

> When speaking of man-made heritage, we are concerned with the works of man and the effects of his activities in the environment rather than with movable human artifacts or those environments that are natural and completely undisturbed by man.

In addition, environment may be interpreted to include the combination and interrelationships of human artifacts with all other aspects of the physical environment, as well as with the social, economic, and cultural conditions that influence the life of the people and communities in Ontario. The *Guidelines on the Man-Made Heritage Component of Environmental Assessments* distinguish between two basic ways of visually experiencing this heritage in the environment, namely as cultural heritage landscapes and as cultural features.

The Ministry of Tourism and Culture also published *Standards and Guidelines for Conservation of Provincial Heritage Properties* (2010; now administered by the Ministry of Heritage, Sport, Tourism and Culture Industries) (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. 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 CHRA, the *Standards and Guidelines* provide points of reference to aid in determining heritage significance in the evaluation of these properties.

Similarly, the *Ontario Heritage Toolkit* (Ministry of Culture 2006a; now administered by the Ministry of Heritage, Sport, Tourism and Culture Industries) provides a guide to evaluate heritage properties. To conserve a cultural heritage resource, the Ontario Heritage Toolkit 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.

Additionally, the *Planning Act* (1990) and related *Provincial Policy Statement* (*PPS*) (2020), make a number of provisions relating to heritage conservation. One of the general purposes of the *Planning Act* is to integrate matters of provincial interest in provincial and municipal planning decisions. In order to inform all those involved in planning activities of the scope of these matters of provincial interest, Section 2 of the *Planning Act* provides an extensive listing. These matters of provincial interest shall be regarded when certain authorities, including the council of a municipality, carry out their responsibilities under the *Act*. One of these provincial interests is directly concerned with:

> 2.(d) the conservation of features of significant architectural, cultural, historical, archaeological or scientific interest

Part 4.6 of the *PPS* states that:

> The official plan is the most important vehicle for implementation of this Provincial Policy Statement. Comprehensive, integrated and long-term planning is best achieved through official plans.
>
> Official plans shall identify provincial interests and set out appropriate land use designations and policies. To determine the significance of some natural heritage features and other resources, evaluation may be required.

Those policies of relevance for the conservation of heritage features are contained in Section 2- Wise Use and Management of Resources, wherein Subsection 2.6 - Cultural Heritage and Archaeological Resources, makes the following provisions:

> 2.6.1 Significant built heritage resources and significant cultural heritage landscapes shall be conserved.

In addition, significance is also more generally defined. It is assigned a specific meaning according to the subject matter or policy context, such as wetlands or ecologically important areas. 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).

Accordingly, the foregoing guidelines and relevant policy statement were used to guide the scope and methodology of the cultural heritage assessment.

2.2 Municipal Heritage Policies

The study area is located within the City of Cambridge, in the Region of Waterloo. Policies relating to cultural heritage resources were reviewed from the following sources:

- City of Cambridge Official Plan (City of Cambridge 2018b)
- Regional Official Plan, Regional Municipality of Waterloo (Region of Waterloo 2015)
- Blair Village Heritage Conservation District Plan (Nicholas Hill Heritage Consultant and Green Scheels Pidgeon Planning Consultants Ltd. 1999)

3.0 ASSESSMENT METHODOLOGY

This cultural heritage assessment considers cultural heritage resources in the context of improvements to specified areas, pursuant to the EAA. This assessment addresses above-ground cultural heritage resources over 40 years old. Use of a 40-year-old threshold is a guiding principle when conducting a preliminary identification of cultural heritage resources. While identification of a resource that is 40 years old or older does not confer outright heritage significance, this threshold 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 retaining heritage value (Ministry of Heritage, Tourism and Sport 2016, now administered by the Ministry of Heritage, Sport, Tourism and Culture Industries).

For the purposes of this assessment, the term 'cultural heritage resources' is used to describe both built heritage resources and cultural heritage landscapes.

A built heritage resource is defined as the following (Government of Ontario 2020:41):

> …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.

A cultural heritage landscape is defined as the following (MHSTCI 2010:25):

> …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.

3.1 Data Collection

In the course of the cultural heritage assessment, all potentially affected cultural heritage resources are subject to inventory. Generally, when conducting an identification of cultural heritage resources within a study area, three stages of research and data collection are undertaken to appropriately establish the potential for and existence of cultural heritage resources in a geographic area; background research, 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 retaining cultural heritage value. Typically, resources identified during these stages of the research process are reflective of particular architectural styles, 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 cultural heritage resources. The field review is also used to identify cultural heritage resources that have not been previously identified on federal, provincial, or municipal databases.

Several investigative criteria are utilized during the field review to appropriately identify new cultural heritage resources. These investigative criteria are derived from provincial guidelines, definitions, and experience. During the environmental assessment, a built structure or landscape is identified as a cultural heritage resource if it is 40 years or older, and if the resource has potential to meet at least one of the following criteria:

Design/Physical Value:

- It is a rare, unique, representative or early example of a style, type, expression, material or construction method.
- It displays a high degree of craftsmanship or artistic merit.
- It demonstrates a high degree of technical or scientific achievement.
- The site and/or structure retains original stylistic features and has not been irreversibly altered so as to destroy its integrity.
- It demonstrates a high degree of excellence or creative, technical or scientific achievement at a provincial level in a given period.

Historical/Associative Value:

- It has a direct association with a theme, event, belief, person, activity, organization, or institution that is significant to: the City of Cambridge; the Province of Ontario; or Canada.
- It yields, or has the potential to yield, information that contributes to an understanding of the history of: the City of Cambridge; the Province of Ontario; or Canada.

- It demonstrates or reflects the work or ideas of an architect, artist builder, designer, or theorist who is significant to: the City of Cambridge; the Province of Ontario; or Canada.
- It represents or demonstrates a theme or pattern in Ontario's history.
- It demonstrates an uncommon, rare or unique aspect of Ontario's cultural heritage.
- It has a strong or special association with the entire province or with a community that is found in more than one part of the province. The association exists for historic, social, or cultural reasons or because of traditional use.
- It has a strong or special association with the life or work of a person, group or organization of importance to the province or with an event of importance to the province.

Contextual Value:

- It is important in defining, maintaining, or supporting the character of an area.
- It is physically, functionally, visually, or historically linked to its surroundings.
- It is a landmark.
- It illustrates a significant phase in the development of the community or a major change or turning point in the community's history.
- The landscape contains a structure other than a building (fencing, culvert, public art, statue, etc.) that is associated with the history or daily life of that area or region.
- There is evidence of previous historic and/or existing agricultural practices (e.g. terracing, deforestation, complex water canalization, apple orchards, vineyards, etc.)
- It is of aesthetic, visual or contextual important to the province.

If a property within or adjacent to the study area meets one of these criteria it will be identified as a potential cultural heritage resource in this report and is subject to further research where appropriate and when feasible. Typically, detailed archival research, permission to enter lands containing potential heritage resources, and further consultation is required to determine the specific heritage significance of the identified potential cultural heritage resource. The detailed research and analysis required to conduct a heritage evaluation under O. Reg 9/06 is considered beyond the scope of this CHRA. Instead, a preliminary evaluation and justification for inclusion as potential cultural heritage resources based on the criteria above is employed and is presented in this report.

Additional properties within the project study area were encountered and observed during field review, however, they were screened out as potential cultural heritage resources because they were not considered to be 40 years or older, and were not determined to satisfy at least one of the criteria identified above.

For the purpose of this CHRA, the following summarizes the tasks that were undertaken:

- The identification of major historical themes and activities within the study area through background research and review of available historical mapping (Section 4.0);
- A review to identify properties within and/or adjacent to the study area that have been listed on a municipal heritage register or inventory; designated under Part IV or V of the OHA; or included on a federal inventory (Section 5.1);

- Consultation with municipal and/or regional heritage staff, and members of the community as appropriate, with knowledge regarding the community in general or potential cultural heritage resources (Section 5.2);
- A field review to confirm the location and condition of previously identified cultural heritage resources and to identify any new potential cultural heritage resources (Section 5.4);
- A preliminary analysis of potential impacts of the undertaking on identified potential cultural heritage resources (Section 6.0);
- Development of appropriate mitigation measures and recommendations for minimizing and avoiding negative impacts on identified cultural heritage resources (Section 8.0);
- Mapping of all cultural heritage resource locations (Section 11.0); and,
- Preparation of the Cultural Heritage Resource Assessment report.

4.0 SUMMARY OF HISTORICAL DEVELOPMENT WITHIN THE STUDY AREA

This section provides a brief summary of historical research and a description of identified above-ground cultural heritage resources that may be affected by the proposed undertaking.

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

4.1 Physiography

The study area is situated within the Guelph Drumlin Field physiographic region of southern Ontario in a former Spillway in which the Grand and Speed Rivers are situated (Chapman and Putnam 1984). 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 (Chapman and Putnam 1984).

4.2 Indigenous Land Use and Settlement

Southern Ontario has a cultural history that begins approximately 11,000 years ago. The land now encompassed by the City of Cambridge has a cultural history which begins approximately 10,000 years ago and continues to the present. Table 1 provides a general summary of the history of Indigenous land use and settlement of the area.[1]

[1] While many types of information can inform the precontact settlement of the City of Cambridge, this summary table provides information drawn from archaeological research conducted in southern Ontario over the last century. As such, the terminology used in this review related to standard archaeological terminology for the province rather than relating to specific historical events within the region. The chronological ordering of this summary is made with respect to two temporal referents: BCE – before Common Era and CE – Common Era.

Table 1: Outline of Southern Ontario Indigenous History and Lifeways

Period	Archaeological/Material Culture	Date Range	Lifeways/Attributes
PALEO-INDIAN PERIOD			
Early	Gainey, Barnes, Crowfield	9000-8500 BCE	Big game hunters
Late	Holcombe, Hi-Lo, lanceolate	8500-7500 BCE	Small nomadic groups
ARCHAIC			
Early	Nettling, Bifurcate-base	7800-6000 BCE	Nomadic hunters and gatherers
Middle	Kirk, Stanley, Brewerton, Laurentian	6000-2000 BCE	Transition to territorial settlements
Late	Lamoka, Genesee, Crawford Knoll, Innes	2500-500 BCE	Polished/ground stone tools (small stemmed)
WOODLAND PERIOD			
Early	Meadowood	800-400 BCE	Introduction of pottery
Middle	Point Peninsula, Saugeen	400 BCE-CE 800	Incipient horticulture
Late	Algonkian, Iroquoian	CE 800-1300	Transition to village life and agriculture
	Algonkian, Iroquoian	CE 1300-1400	Establishment of large palisaded villages
	Algonkian, Iroquoian	CE 1400-1600	Tribal differentiation and warfare
POST-CONTACT PERIOD			
Early	Huron, Neutral, Petun, Odawa, Ojibwa	CE 1600-1650	Tribal displacements
Late	Six Nations Iroquois, Ojibwa	CE 1650-1800s	
	Euro-Canadian	CE 1800-present	European settlement

The study area is within the Treaty No.4, 1793 of the Crown to the Six Nations. The City of Cambridge was negotiated through several treaties related to the earliest period of land cessions in southern Ontario, beginning in in 1784 with the Between the Lakes Purchase/Treaty No.3 and the Haldimand Proclamation and continuing to 1794 with the ratification of the Simcoe Patent/Treaty No.4. These treaties describe the historical groups who with the Crown negotiated the transfer of land and in some cases the rights that are assured to these groups within the lands.

The advent and significance of historical treaties are rooted in the Royal Proclamation of 1763, issued by King George III. The Proclamation affirmed that Indigenous people lived under the protection of the Crown and that they were not to be "molested or disturbed in the Possession of such Parts of Our Dominions and Territories as, not having been ceded to, or purchased by Us, are reserved to them, or any of them, as their Hunting Grounds....". This statement recognized the existence of Aboriginal rights and title to vast areas within North America. Between 1764 and 1815, the government acquired the lands of the shoreline of the upper St. Lawrence as well as the lower Great Lakes. While the earliest treaties were related to the use of land for military and defensive purposes, following the American Revolutionary War many treaties were for the purposes of settling the roughly 30,000 United Empire Loyalists who refused to accept American rule. In relation to the City of Cambridge, this was the intent of the 1784 Haldimand Proclamation in order to provide land for the Six Nations Confederacy land to settle in recognition for their loyalty to the Crown during the American Revolutionary War.

4.2.1 Treaty No. 3 – The Between the Lakes Purchase (1784/1792)

Following the American Revolutionary War, the British Crown needed to find lands on which to settle United Empire Loyalists, including approximately 2,000 members of the Six Nations confederacy who had fought alongside British troops. Led by Sir Frederick Haldimand who was the governor of Quebec at that time, the Crown was initially planning on providing lands for Loyalist settlers in Quebec and Southeastern Ontario, including providing land in the Bay of Quinte for Six Nations refugees. This was not suitable for many of the members of Six Nations and a contingent of approximately 1,800 community members, led by Chief Joseph Brant, requested land north of Lake Erie along the Grand River (Surtees 1984:21).

Recognizing that under the terms of the Royal Proclamation the land needed to be purchased prior to settlement, Colonel John Butler was sent to negotiate with the Mississaugas of the Credit for lands east of Lake Ontario and north of Lake Erie. On May 22, 1784, the Mississaugas of the Credit agreed to cede approximately 3,000,000 acres (1,214,057 ha.) of land containing all or part of Brant, Elgin, Middlesex, Oxford, and Wellington Counties as well as the Regions of Haldimand-Norfolk, Halton, Hamilton-Wentworth, Niagara, and Waterloo. In exchange for these lands, the Mississaugas received £1180.74 worth of trade goods (Crown-Indigenous Relations and Northern Affairs 2016; Surtees 1984). Of the 3,000,000 acres (1,214,057 ha.), approximately 550,000 acres (222,577 ha.) was set aside for the settlement of Six Nations people.

However, due to uncertainties with the description of the lands in the original surrender, Treaty No. 3 was renegotiated on December 7, 1792 to clarify what was ceded. This largely revolved around the northern boundary of the Treaty area and in particular the area set aside for Six Nations settlement along the Grand River (see Section 4.2.2). The signees on the side of the British included Lieutenant Governor John Graves Simcoe, John Butler, Robert Kerr, Peter Russell, John McGill, and Davie William Smith. The signees on the side of the Mississauga included Chiefs Wabakayne, Wabanip, Kautabus, Wabaniship and Mottotow (Crown-Indigenous Relations and Northern Affairs 2016; Surtees 1984; Mississaugas of the Credit First Nation 2017).

4.2.2 The Haldimand Grant (1784) and the Simcoe Patent/Treaty No.4 (1794)

On August 8, 1783, Lord North instructed Governor Haldimand to set apart land for the Six Nations Iroquois and ensure that they carried on their hunting and fur trading with the British. On May 22, 1784, a tract of land along the Grand River was purchased by the British government from the Mississaugas of the Credit as part of the Between the Lakes Purchase (Treaty No.3). Joseph Brant led Haudenosaunee loyalists (1600 people) to the Haldimand tract in 1784 and in the fall of 1784, Sir Frederick Haldimand formally awarded the tract to the Mohawks “and others of the Six Nations [Iroquois].”
As part of the 1792 renegotiation of Treaty No.3, the Crown also redefined the boundaries of the Haldimand Tract. Upon review of the Haldimand Proclamation, politician and Indian Department official Sir John Johnson noted an error involving the location of the northern boundary of the tract. Haldimand had mistakenly assumed in 1784 that the headwaters of the Grand River resided within the area negotiated under Treaty No.3. However, the northern reach of the Haldimand Tract was within lands that were not negotiated until 1818 under treaties Nos.18 and 19 (Crown-Indigenous Relations and Northern Affairs 2016; Filice 2018; Surtees 1984). In order to clarify the boundaries of the tract, the

Crown appointed surveyor Augustus Jones to complete a survey of the Haldimand Tract in 1791. In so doing, Jones redefined the borders of the Six Nations' land parcel. Jones established straight-lined boundaries, rather than sinuous boundaries following every curve in the river, which can still be seen in today's municipal boundaries. Six Nations and Joseph Brant were not in agreement with this new definition and petitioned the government for control over the tract. This eventually led to the 1794 Simcoe Patent (Treaty No.4) which defined the rules of land ownership and leasing within the revised 30,000 acres of land provided to Six Nations. This 1794 patent did not address those lands northeast of the Jones Base Line and continues to be a source of dispute between Six Nations and the Crown.

The signees of Treaty No.4 on the side of the British included Lieutenant Governor John Graves Simcoe, John Butler, Robert Kerr, Peter Russell, John McGill, and Davie William Smith. The signees of the treaty on the side of the Mississaugas included Chiefs Wabakyne, Wabanip, Kautabus, Wabaniship, and Mottotow.

In the years following the signing of Treaty No.4, there were continued disputes regarding land use, ownership and the encroachment of white settlers. There were a series of surrenders that were issued as a result, and today this history and those surrenders are still contested and there are currently 29 specific land claims that have been filed by the Six Nations of the Grand River with the federal government in regard to lands within the Haldimand Tract (Johnston 1964; Lytwyn 2005).

4.3 Historical Euro-Canadian Township Survey and Settlement

Historically, the study area is located in the Former Waterloo Township, County of Waterloo, in part of Lot 6, Broken Front Beasley's Lower Block (BF BLB).

4.3.1 Township of Waterloo

The historic Township of Waterloo was originally known as Block Two of the Grand River land grant which was deeded to the Six Nations Iroquois by the British in 1784 for their loyalty to the Crown in the American War of Independence. In 1796, Block Two, a 38,045 ha. tract, was acquired by Richard Beasley from Joseph Brant on behalf of the Six Nations. He subdivided and sold the land, with an approximately 24,281 ha. tract of land going to the German Company of Pennsylvania, in November 1803 (Janusas 1988). Company members included Samuel and John Bricker; and Daniel, Jacob, and John Erb. The German Company of Pennsylvania had the lands surveyed by Augustus Jones to subdivide the land into 128 farm lots of approximately 181 ha. each and 32 farm lots of approximately 34 ha. each (Janusas 1988).

When Block Two was incorporated into the District of Gore (County of Halton) in 1816, it was named Waterloo Township, in honour of the battle that ended the Napoleonic Wars in Europe. It remained part of Halton County in the District of Gore until 1842 and then part of the District of Wellington. The County of Waterloo did not come into being until 1852 (Janusas 1988).

The first immigrants to settle in Waterloo Township were almost exclusively German Mennonites from Pennsylvania, who had originally emigrated from Switzerland, Germany and France. Most of these settlers were farmers but many were tradesmen and millers. Later settlers were generally of Scottish,

English, Irish, and continental German heritage, many of them farmers, but a majority of them were artisans and tradesmen. When the railway was laid through Waterloo Township in the mid-nineteenth century, it became the leading industrial center of Waterloo County (Janusas 1988).

Abraham Erb purchased approximately 181 ha. of land in 1805 and became the first settler in the City of Waterloo. He transferred a portion of his land and ownership of two mills to Jacob Snider in 1829. Snider's son inherited approximately 129 ha. which he sold to John Hoffman and Isaac Weber, who sectioned and sold the lands in 1854, at which point the population of Waterloo began to expand (Janusas 1988).

In the mid-1850s, the defining development of Waterloo Township and Waterloo County was the construction of the railway. The first railway line built into the township was a main line of the Grand Trunk Railway from Toronto, laid through in 1856. A number of other railway lines were soon laid across the township including: a Grand Trunk branch between Preston and Berlin (Kitchener) in 1857; a Great Western line from Galt, Preston, and Guelph in 1857; a Grand Trunk branch between Berlin and Galt in 1882; and a Grand Trunk Branch between Waterloo and Elmira in 1891.

4.3.2 Village of Blair

The flatlands of Blair are understood to have been established on an Indigenous settlement site (date unknown) and was first settled by and laid out by Benjamin B. Bowman and Henry Bechtel. The County's first school and first cemetery were located here. A post office was built in 1858 along the railway. The village was renamed to Blair after a prominent Canadian politician, as it was previously known as Covered Bridge, Durhamville, New Carlisle and Carlisle. Sawmills and flour mills were built by Mennonite settlers, and later generated electric power for local use and in Preston. By 1864, it had a saw mill, grist mill, nursery, distillery, hotel and various merchants and tradespeople (Sutherland 1864:108). In 1873, a branch line of the Grand Trunk Railway was built, connecting Blair to Galt and Berlin (Waterloo Region Museum 2017). In 1973, Blair was amalgamated with Galt, Hespeler and Preston into the City of Cambridge (Mika and Mika 1977).

4.3.3 Village of Preston

The village of Preston is located on the Speed River near its confluence with the Grand River. The village was founded in the early 1800s when John Erb built a saw and grist mill on the Speed River, as part of a migration of a group of German speaking Mennonites from Pennsylvania who settled in the area. Erb's extant grist mill is recognised as the oldest continuously operated industrial site in the region (City of Cambridge 2019). The settlement was originally named Cambridge Mills and was changed to Preston in 1830. Preston was home to the first "free school" in the province of Ontario. In the 1830s warm mineral springs were discovered and Preston became a famous health spa town, with hotels like the Del Monte Hotel (later Preston Springs), the Kress Hotel, and the Mineral Springs Bath House. The town survey was completed in 1834, which laid out streets and lots at right angles to the Great Road (present-day Highway 8) with almost all of the buildings in the settlement stretched out along the road. The Preston post office was established in 1837. By the 1850s Preston had two grist mills, two sawmills, two vinegar factories, a woollen factory, a foundry, a chair factory, two tanneries, a pottery, a starch factory and three breweries. The town was a popular stop for travellers along the Great Road, running from Dundas

north through Berlin. The town retained its German character, and its location on the Great Road and early railway connections ensured continued growth, with a number of factories and foundries manufacturing goods including flour, agricultural implements, furniture, stoves, shoes and textiles. By 1852 the population of Preston was approximately 1,400 people. By 1899, the population of Preston was 2,000 people and was incorporated as a town. In 1899 the Galt, Preston & Hespeler (GP&H) Street Railway opened Idylwild Park along the Speed River. Through the first half of the twentieth century the population grew to 14,000 people and incorporated as a city in 1915. In 1973, Preston was amalgamated with Galt, Hespeler and the hamlet of Blair into the City of Cambridge (Mika and Mika 1977).

The Preston & Berlin Street Railway (P&BR) Company Limited was formed in 1894, with construction beginning the same year, and service commenced between the two towns in 1904. In 1908, the P&BR and GP&HSR merged as the Berlin, Waterloo, Wellesley & Lake Huron Railway Company and was leased to the Canadian Pacific Railway for 99 years. Freight service began in 1905, and by 1911, service terminated in Waterloo. A postcard from the circa 1900 show that the railway ran down the unpaved road, and another postcard from the mid-1930s shows that the railway had been double tracked through the centre of King Street in Preston and the road was paved. In 1914, the name was changed to the Grand River Railway Company Limited (City of Cambridge 2018a; Miller 2004).

4.4 Review of Historical Mapping

The 1861 *Map of the County of Waterloo* and the 1881 *Illustrated Atlas of the County of Waterloo*, Township of Waterloo Page (Tremaine 1861; Parsell & Co. 1881) were examined to determine the presence of historical features within the study area during the nineteenth century (Figure 2 and Figure 3).

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.

Historically, the study area is located in the Former Waterloo Township, County of Waterloo, in part of Lot 6, Broken Front Beasley's Lower Block (BF BLB). Joseph Erb was the property owner during the nineteenth century. The 1861 map shows the former alignment of the P&BR through the study area, crossing the Speed River near the northern end of the study area. A tributary of the Speed River is also illustrated along the top end of the study area. Both maps show the villages of Preston and Blair, as well as the historically surveyed Fountain Street connecting the two settlements.

In addition to nineteenth-century mapping, historical topographic mapping and aerial photographs from the twentieth century were examined. The 1916 National Topographic System (NTS) Galt Sheet (Department of Militia and Defence 1916), the 1945 and 1963 aerial photographs of Cambridge (University of Waterloo 2016), and the 1975 NTS Preston-Hespeler Sheet (Energy, Mines and Resources

Canada 1975) were examined to determine the extent and nature of development and land uses within the study area (Figure 4 to Figure **7**).

In 1916, the study area is shown to be within an undeveloped area on the topographically flat lands between the Speed and Grand Rivers, southwest of Preston. No structures are shown within the study area. In 1945 the former alignment of the P&BR railway can be seen as a treed over corridor and the bridge over the Speed River has been removed. The study area is shown to contain agricultural fields on both sides of the river. By 1963, the schools and track field can be seen just east of the study area in Preston. Houses line residential streets where Preston had expanded southwest towards the Speed River. The 1975 map illustrates a small waterbody within the western end of the study area and a dotted line representing a trail along the eastern bank of the Speed River within the study area. Dover Street is shown to have been extended to its present terminus.

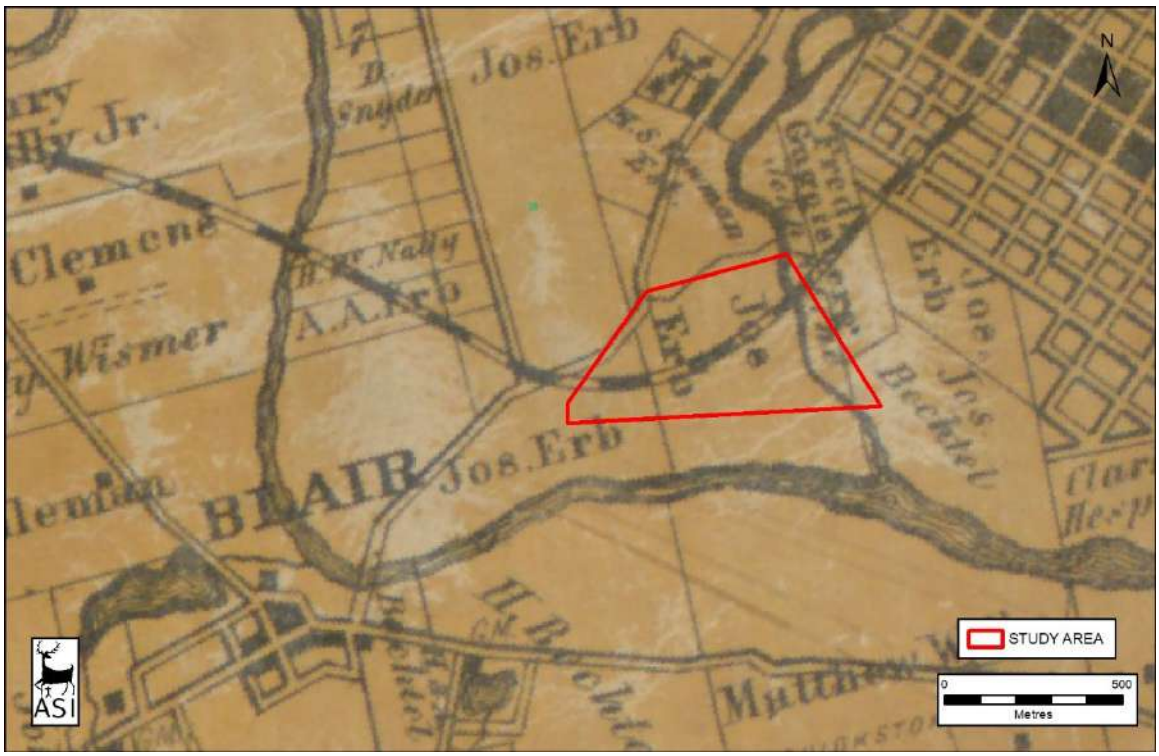

Figure 2: The study area overlaid on the 1861 Tremaine's Map of the County of Waterloo (Tremaine 1861)

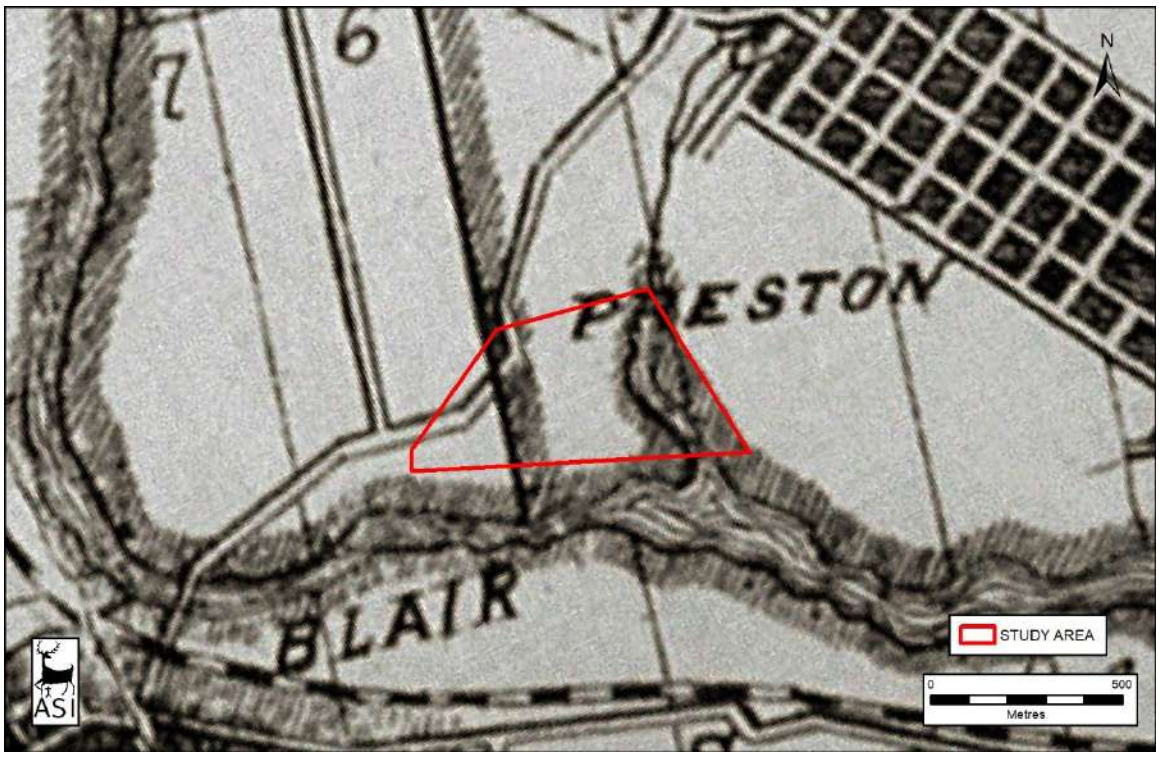

Figure 3: The study area overlaid on the 1881 Historical Atlas of the County of Waterloo (Parsell & Co. 1881)

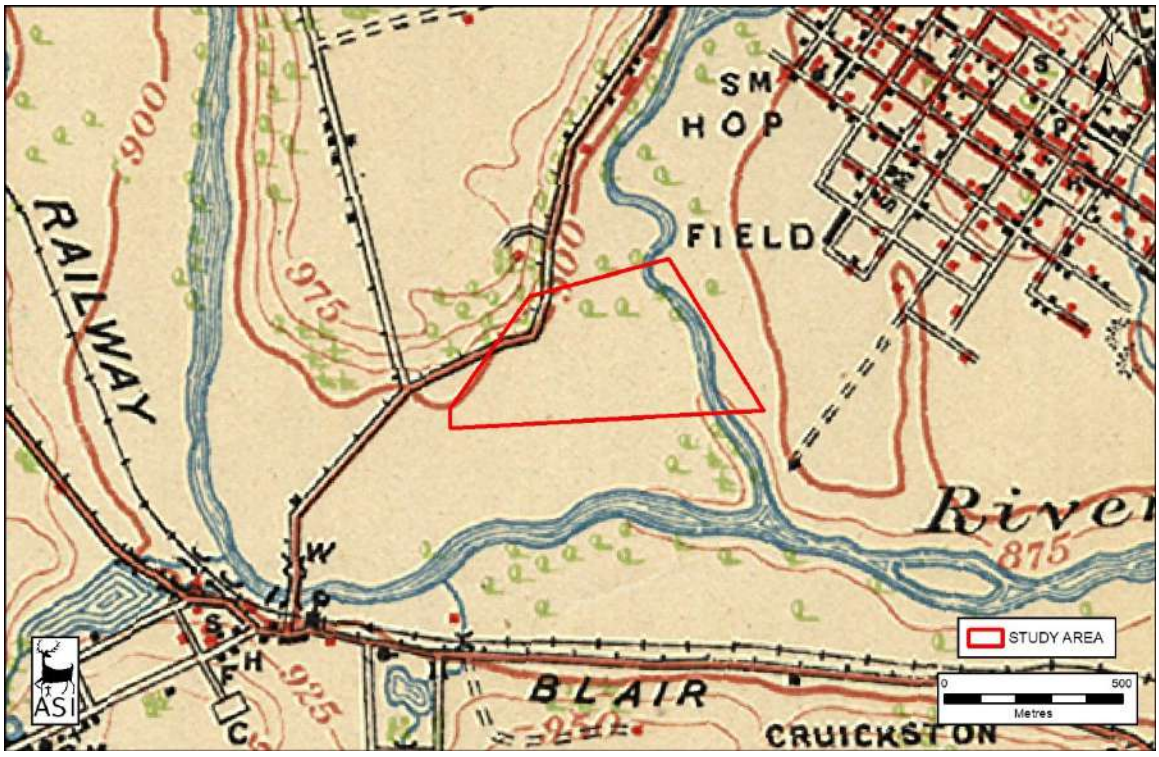

Figure 4: The study area overlaid on the 1916 topographic map of Waterloo (Department of Militia and Defence 1916)

Figure 5: The study area overlaid on the 1948 aerial photograph of Waterloo (University of Waterloo 2016)

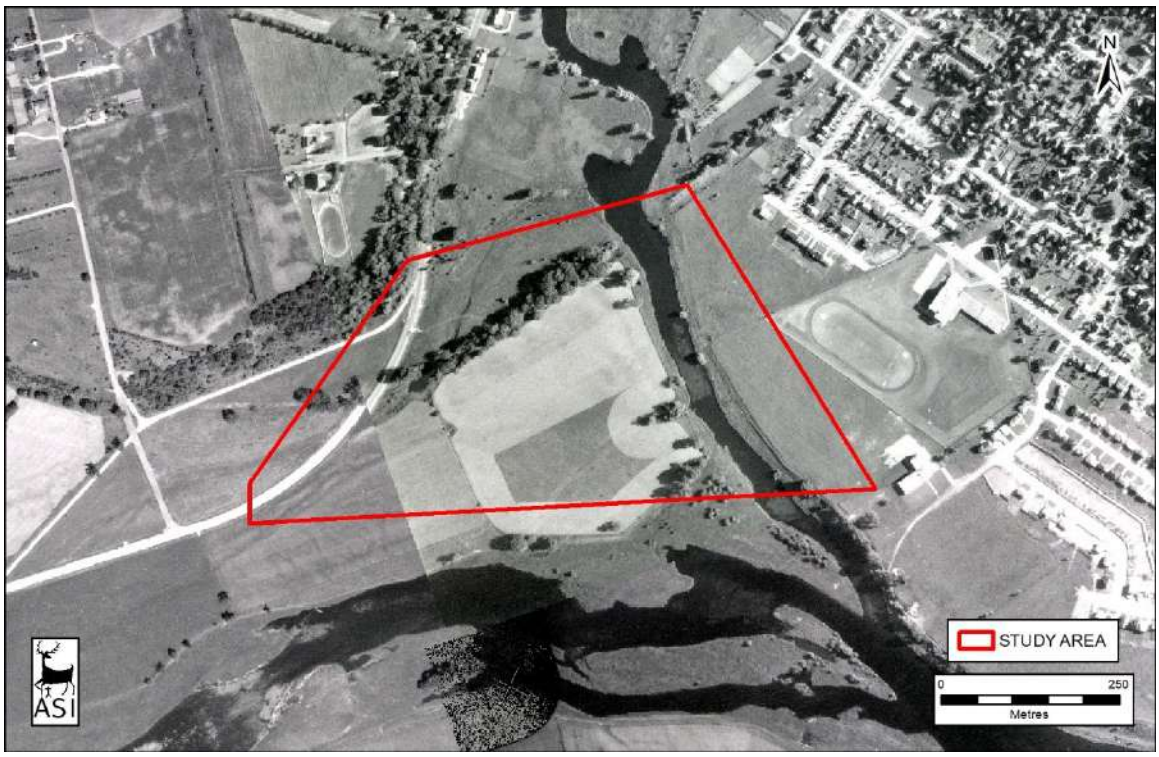

Figure 6: The study area overlaid on the 1963 aerial photograph of Waterloo (University of Waterloo Library 1963)

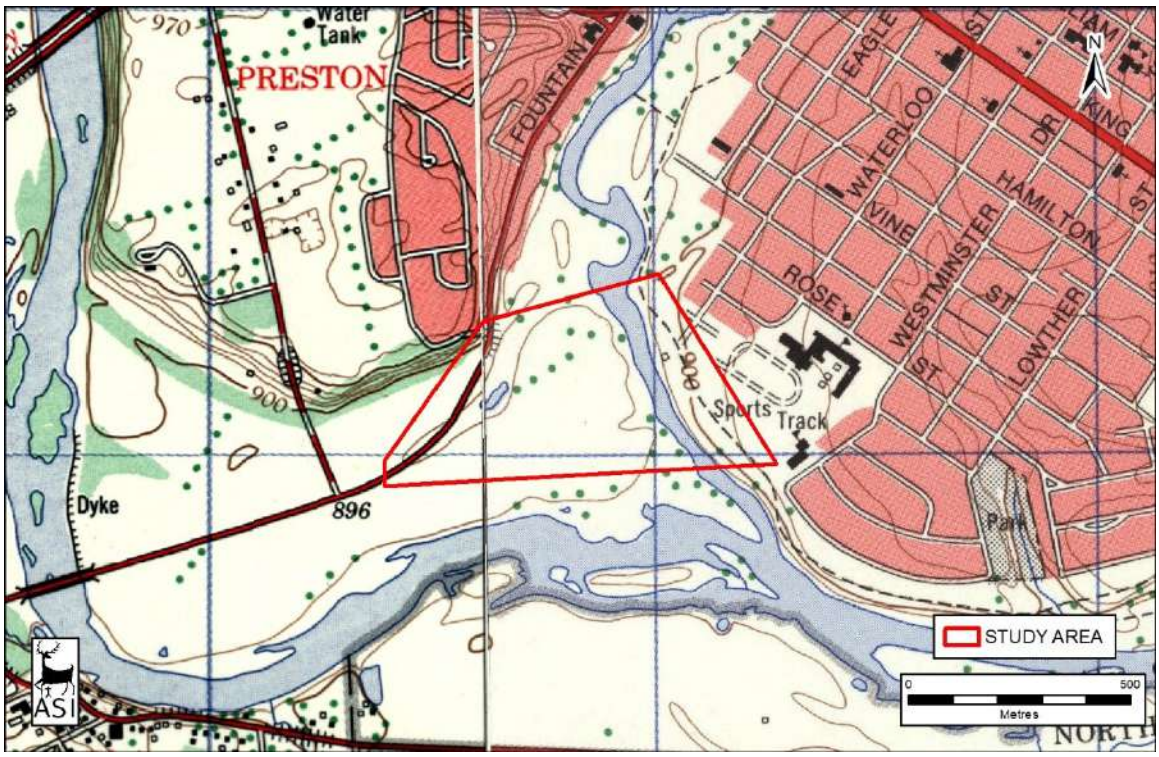

Figure 7: The study area overlaid on the 1975 topographic map of Waterloo (Energy, Mines and Resources Canada 1975)

5.0 IDENTIFICATION OF KNOWN AND POTENTIAL CULTURAL HERITAGE RESOURCES

5.1 Review of Existing Heritage Inventories

A number of resources were consulted in order to identify existing cultural heritage resources within or adjacent to the study area[2]. These resources include:

- The City of Cambridge Heritage Properties Register (City of Cambridge 2020);
- *Environmental Management Plan*, *rare* Charitable Research Reserve (rare Charitable Research Reserve 2014)
- 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.).

5.2 Public Consultation

The following stakeholders were contacted to gather information on potential cultural heritage resources, active and inactive cemeteries, and areas of identified Indigenous interest within and/or adjacent to the study area:

- Laura Waldie, Senior Heritage Planner, and John Calhoun, Senior Planner, City of Cambridge (email communication 2 November 2020). Email correspondence confirmed that there are no additional previously identified heritage resources or concerns regarding the study area.
- Bridget Coady, Principal Planner - Cultural Heritage, Region of Waterloo (email communication 2 November 2020). Email correspondence confirmed that there are no additional previously identified heritage resources or concerns regarding the study area.
- The MHSTCI (email communication 2 November 2020)[3]. Email correspondence confirmed that there are no additional previously identified heritage resources or concerns regarding the study area.
- The Ontario Heritage Trust (email communications 2 November 2020). A response was still outstanding at the time of report submission.

[2] Reviewed 30 October 2020
[3] Contacted at registrar@ontario.ca.

5.3 Summary of Previously Identified Cultural Heritage Resources

Based on the review of available municipal, provincial, and federal data, and the results of public consultation, there is one previously identified resource within the Blair-Preston Pedestrian Bridge and Trail study area. The resource is the Grand River Watershed Heritage River including the Speed River tributary (Canadian Heritage Rivers Board and Technical Planning Committee n.d.). This resource is mapped in Section 11.0 of this report.

5.4 Field Review

A field review of the study area was undertaken by Kristina Martens of ASI, on 21 October 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 **12**. No additional potential cultural heritage resources were identified during field review.

The study area consists of lands owned by the rare Charitable Research Reserve generally known as the Preston Flats and is bounded by Fountain Street South and the Speed and Grand Rivers. Fountain Street is an asphalt paved two-lane roadway connecting the Village of Blair to Preston crossing the Grand River west of the study area and generally following to the north and west of the Grand and Speed Rivers. Fountain Street has paved multi-use trail on both sides of the road separated from vehicular traffic with a curbed boulevard. The land south of Fountain Street South and between the Grand and Speed Rivers is known as the Preston Flats. This land is primarily under cultivation with some wetland areas and natural conservation activities carried out. This area is part of the flood-plain and does not have any buildings.

On the east side of the Speed River, Preston is developed with residential properties along Dover Street South to the Speed River. Several residential properties at the southwest end of Dover Street South as well as the sports fields of Preston High School and St. Joseph School are partially included in the study area. The schools were constructed in the 1960s and the residential properties at the southwest end of Dover Street South date to the 1970s. A sanitary pumping station is located at the end of Dover Street.

The Bob McMullen Linear Trail follows the east side of the Speed River. The 3.5 km trail extends from Chopin Street in the north to Bishop Street in the south. The trail is open to the school sports field. The trail has a stone dust surface. Just south of the study area the trail travels through Settler's Fork/Linear Park which provides a striking viewing site at the confluence of the Grand and Speed Rivers. An interpretative panel installed at the park states:

> You are looking at a panorama like no other in Cambridge or the Region of Waterloo – the Confluence of the Grand and Speed Rivers. This is the heartland of the Grand River watershed, a place of rich cultural, historical and natural significance.

Plate 1: Fountain Street South, looking north, south of Preston Parkway.

Plate 2: South side of Fountain Street South, looking east across Preston Flats, south of Preston Parkway.

Plate 3: Fountain Street South at Preston Parkway, looking north.

Plate 4: South side of Fountain Street at Preston Parkway, looking east across Preston Flats.

Plate 5: Bob McMullen Linear Trail, north end of study area looking south.

Plate 6: Looking southwest along Speed River, north end of study area.

Plate 7: Bob McMullen Linear Trail, north of Dover Street South looking south.

Plate 8: Looking east across Speed River from west end of Dover Street South.

Plate 9: Bob McMullen Linear Trail, south of Dover Street South looking north

Plate 10: Bob McMullen Trail, south end of the study area looking north.

Plate 11: View north at the confluence of the Grand (left) and Speed (right) Rivers.

Plate 12: View north at the confluence of the Grand and Speed Rivers.

5.5 Identified Cultural Heritage Resources

Based on the results of the background research and field review, one cultural heritage resource[4] was identified within the Blair-Preston Pedestrian Bridge and Trail study area (see Figure 8 and Table 2). A cultural heritage resource number has been assigned to the resource. A detailed inventory of the cultural heritage resource is presented in Section 10.0 and mapping of these features are provided in Section 11.0 of this report.

Table 2: Summary of cultural heritage resources within and/or adjacent to the study area

CHR #	Location/Name	Heritage Recognition	Description
CHL 1	Grand River Watershed	Canadian Heritage River	Includes both the Grand River and Speed River and surrounding area

6.0 SCREENING FOR POTENTIAL IMPACTS

6.1 Preliminary Impact Assessment Considerations

To assess the potential impacts of the undertaking, identified cultural heritage resources are considered against a range of possible impacts, based on the *Ontario Heritage Tool Kit InfoSheet #5: Heritage Impact Assessments and Conservation Plans* (Ministry of Tourism and Culture 2006, now administered by the Ministry of Heritage, Sport, Tourism and Culture Industries). 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 built heritage resources or cultural heritage landscapes dependent on the type of construction methods and machinery selected for the project and proximity and composition of cultural heritage resources. Potential vibration impacts are identified as having potential to affect an identified cultural heritage

[4] For the purpose of this assessment, the term 'cultural heritage resource' is used to describe both cultural heritage landscapes and built heritage resources (see Section 3.0 for definitions).

resource where work is taking place within 50 m of structures on the heritage 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 MHTSCI (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).

Several additional factors are also considered when evaluating potential impacts on identified cultural heritage resources. 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.

For the purposes of evaluating potential impacts of development and site alteration, MHTSCI (2010) defines "adjacent" as: "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."

The proposed undertaking should endeavor to avoid adversely affecting cultural heritage resources and intervention should be managed in such a way that its impact is sympathetic with the value of the resources. When the nature of the undertaking is such that adverse impacts are unavoidable, it may be necessary to implement management or mitigation strategies that alleviate the deleterious effects on cultural heritage resources. 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.

Various works associated with infrastructure improvements have the potential to affect cultural heritage resources in a variety of ways, and as such, appropriate mitigation measures for the undertaking need to be considered.

6.2 Potential Impacts of the Preferred Design Concept on Cultural Heritage Resources and Mitigation Strategies

The proposed undertaking for the Blair-Preston Pedestrian Bridge and Trail study area involves the development of a trail and pedestrian bridge spanning the Speed River to connect the communities of Blair and Preston (Appendix A). Trail routes are within the lands owned by the rare Charitable Research Reserve. The off-road link will connect the Bob McMullen Linear Trail to the existing multi-use trail on Fountain Street via a bridge over the Speed River. The bridge and trail will provide a major off-road

connection to downtown Preston as well as a connection to the 401 pedestrian bridge connecting to Kitchener and the Doon area. An off-road route was identified in the City of Cambridge's Trail Master Plan (2020) and Cycling Master Plan (2020) and the Region of Waterloo's Active Transportation Master Plan (2014) (City of Cambridge n.d.).

The potential impacts on all cultural heritage resources within the study area are outlined in Table 3. Where direct impacts to cultural heritage resources are anticipated, 'Y' is listed in the column for direct impacts. Where they may be potential for indirect impacts, 'P' is listed in the column for indirect impacts. Where no impacts to cultural heritage resources are anticipated, 'N' is listed in the columns for both direct and indirect impacts.

Table 3: Potential Impacts of the Proposed Undertaking

Feature ID	Location/ Name	Direct Impacts	Indirect Impacts	Potential Impacts	Mitigation Strategies
CHL 1	Grand River Watershed Canadian Heritage River	Y	P	- Alteration of the resource due to the introduction of a new physical and visual element. The pedestrian bridge will change the quality of the Speed River at this location however there are no identified cultural features of the Watershed at this location. As recreation within and in relation to the Grand River Watershed is a recognized value in the Heritage River designation, increasing recreational use of the area through the addition of a pedestrian bridge and trail is not anticipated to result in negative impacts. - There is a significant panoramic view of the confluence of the Grand and Speed Rivers at Settler's Fork/Linear Park just south of the study area. The proposed location of the bridge is not anticipated to impact the view north along the Speed River as it is not anticipated to be visible. - The duration of these impacts will be permanent. - Construction related impacts include short-term disruption resulting from construction activities (i.e., introduction of construction related physical, visual, noise-related, and atmospheric elements).	- Conduct a Heritage Impact Assessment. - Ensure location and design of the bridge does not obstruct the views north along the Speed River from Settler's Fork/Linear Park. - The design and material of the proposed pedestrian bridge across the Grand River should be suitably designed to minimize the visual impacts as much as possible and to be sympathetic to the historical setting and context of the area.

7.0 CONCLUSIONS

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 as well as residential subdivision including school properties dating to the mid-twentieth century. A review of federal, provincial, and municipal registers, inventories, and databases revealed that there is one previously identified feature of cultural heritage value within the Blair-Preston Pedestrian Bridge and Trail study area. No additional features were identified during the fieldwork.

Key Findings

- One cultural heritage resource was identified within the study area. The Grand River Watershed is commemorated as a Canadian Heritage River.

- The preferred alternative will result in direct and indirect impacts to the cultural heritage of the Grand River Watershed Canadian Heritage River. The proposed pedestrian bridge will result in an alteration of the resource due to the introduction of a new physical and visual element. The proposed location of the pedestrian bridge is not anticipated to impact the view north along the Speed River as it is not anticipated to be visible from the significant viewing point at the confluence of the Grand and Speed Rivers.

8.0 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 impacts to identified cultural heritage resources.

2. A cultural heritage impact assessment (HIA) should be carried out for the Grand River Watershed Canadian Heritage River. The HIA should include consultation with Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI), the Region of Waterloo, and the City of Cambridge to help form appropriate mitigation measure in order to minimize impacts to the resource.

   The design and material of the proposed pedestrian bridge across the Grand River should be suitably designed to minimize visual impacts as much as possible to protect the view north along the Speed River from Settler's Fork/Linear Park. For example, Standard 11 of the *Standards and Guidelines for the Conservation of Historic Places in Canada* (2010) state: a) Conserve the heritage value and character-defining elements when creating any new additions to an historic place or any related new construction. b) Make the new work physically and visually compatible with, subordinate to, and distinguishable from the historic place.

Additionally, the Standards and Guidelines recommend the following general design guidelines in relation to new additions in CHLs, particularly in relation to areas with significant visual relationships, ecological features, or built features:

- Designing a new feature when required by a new use that respects the historic visual relationships in the cultural landscape.
- Introducing a new element, when required by a new use, that does not have a negative impact on the heritage value and condition of the ecological feature.
- Designing a new built feature, when required by a new use, to be compatible with the heritage value of the cultural landscape. For example, erecting a new [structure] using traditional forms and materials, or installing signs and lighting compatible with the cultural landscape.

The results of the HIA should help guide the design of any proposed pedestrian bridge across the Grand River.

3. Where tree removals are anticipated, post construction rehabilitation including planting with sympathetic plant species should be considered to mitigate any impacts.

4. 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 heritage resources.

5. This report should be submitted by the proponent to heritage staff at the City of Cambridge, the Ministry of Heritage, Sport, Tourism, and Culture Industries, and any other relevant stakeholder with an interest in this project.

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10.0 CULTURAL HERITAGE RESOURCE INVENTORY

Cultural Heritage Resource Number
CHR 1

Property Type
Waterway

Address or Location
Grand River

Level of Heritage Recognition
Canadian Heritage River

Property Description
- Passes through the study area

Cultural Heritage Value or Interest and associated heritage attributes
The Grand River and its major tributaries - the Conestogo, Eramosa, Nith and Speed Rivers - were designated Canadian Heritage Rivers in 1994. The designation recognizes the outstanding human heritage values and excellent recreational opportunities along the rivers. The designation carries no regulatory or legal authority or restrictions.

Further information on the Grand River as a Canadian Heritage River can be found here: https://www.grandriver.ca/en/our-watershed/Heritage-River-Designation.aspx

Photo


Looking southwest along Speed River, north end of study area.


View north at the confluence of the Grand (left) and Speed (right) Rivers.

11.0 CULTURAL HERITAGE RESOURCE LOCATION MAPPING

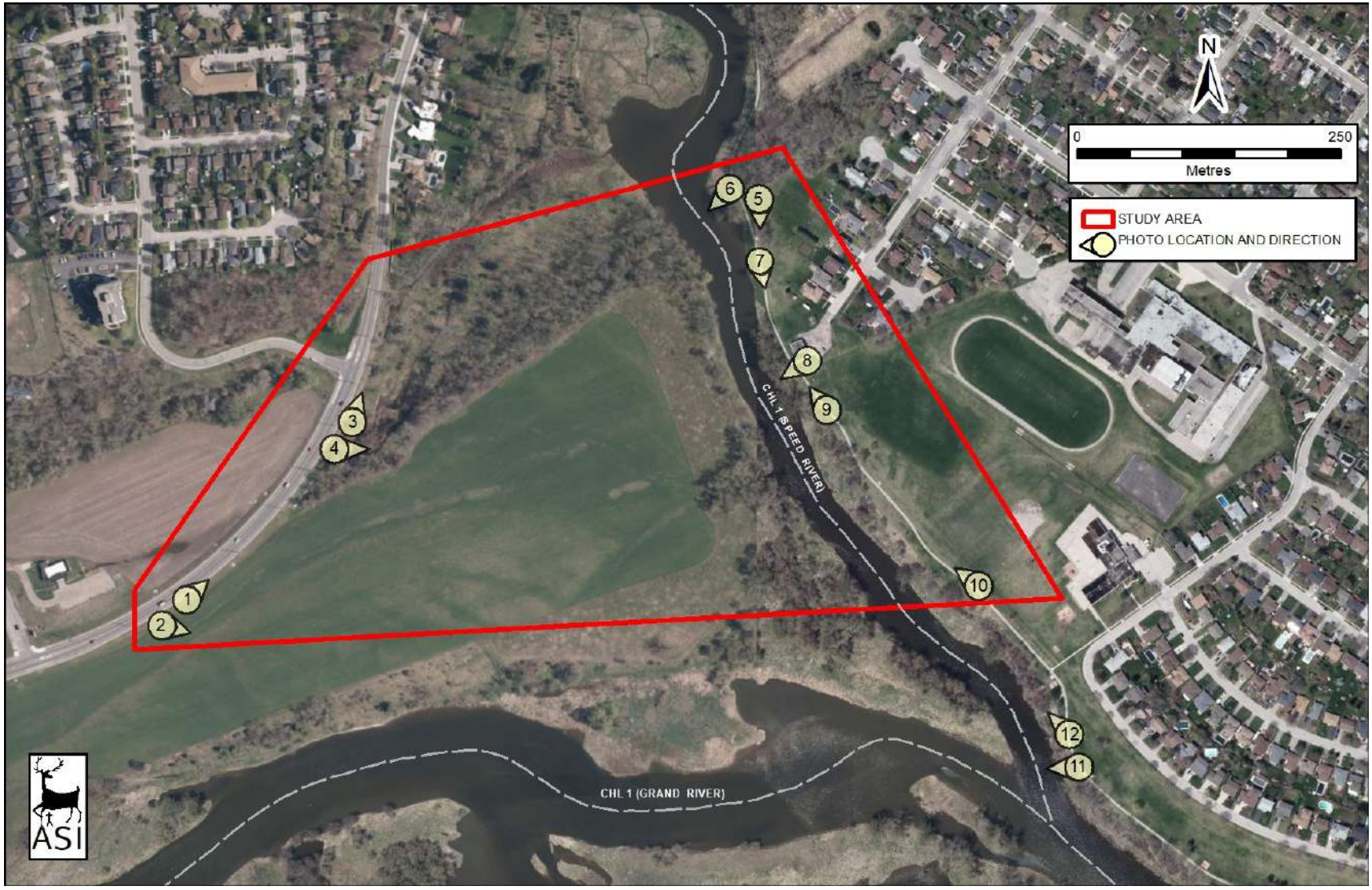
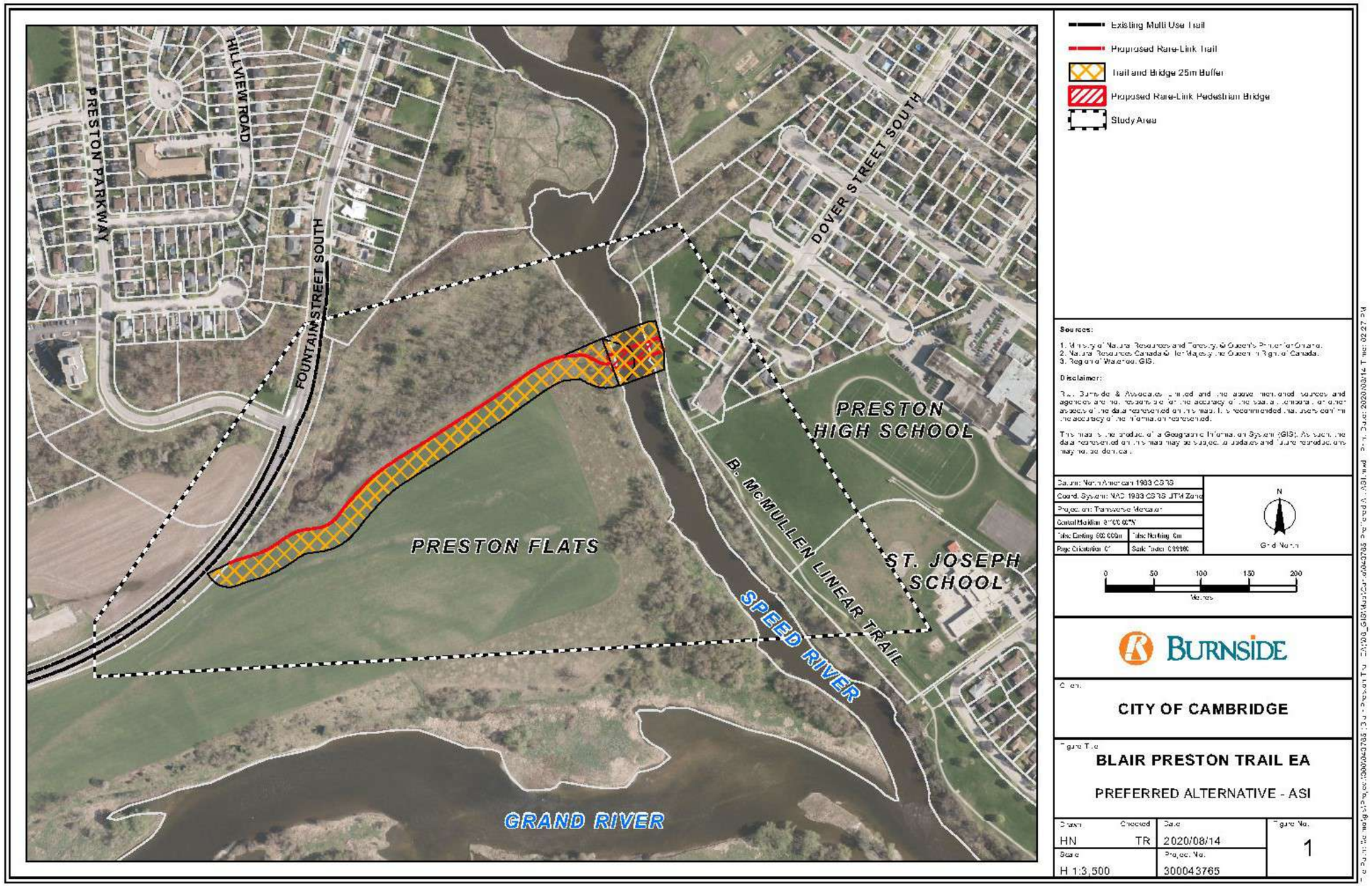


Figure 8: Location of Known Cultural Heritage Resource and Photographic Plates in the Blair-Preston Pedestrian Bridge and Trail study area

APPENDIX A: PREFERRED DESIGN CONCEPT



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Appendix D
Evaluation Matrix

Blair Preston Trail EA- Evaluation of Alternative Solutions

CRITERIA FOR EVALUATING ALTERNATIVES	Do Nothing	Alternative 1 – Northern Route	Alternative 2 – Dover Street South Route	Alternative 3 – Southern Route
NATURAL ENVIRONMENT				
Impacts to existing trees and vegetation	No impacts	Area of woodland and meadow to be disturbed = 798 m2	Area of woodland and meadow to be disturbed = 1407 m2	Area of woodland and meadow to be disturbed = 1627 m2
Rating	○	◔	◑	◕
Impacts to migrating, breeding and wintering birds	No impacts	Confluence of the Speed and Grand Rivers provides most significant migratory stopover habitat. This Alternative is farthest from confluence. Some potential to impact migrating, breeding, and wintering birds due to increased foot traffic adjacent to (or within) potential habitat.	Confluence of the Speed and Grand Rivers provides most significant migratory stopover habitat. This Alternative is close to the confluence. Some potential to impact migrating, breeding, and wintering birds due to increased foot traffic adjacent to (or within) potential habitat.	Confluence of the Speed and Grand Rivers provides most significant migratory stopover habitat. This Alternative is closest to confluence. Some potential to impact migrating, breeding, and wintering birds due to increased foot traffic adjacent to (or within) potential habitat.
Rating	○	◔	◑	◕
Impacts to small wetland on rare lands/amphibian habitat	No impacts	Minor potential to impact wetland during construction and as a result of changes to drainage to the wetland.	Minor potential to impact wetland during construction and as a result of changes to drainage to the wetland.	Minor potential to impact wetland during construction and as a result of changes to drainage to the wetland.
Rating	○	◔	◔	◔
Impacts to the Provincially Significant Speed River Wetland Complex	No impacts	Trail and bridge are appx 69 m downstream of PSW.	Trail and brige are appx 100 m downstream of PSW.	Trail and brige are appx 100 m downstream of PSW.
Rating	○	◑	◔	◔
Impacts to Significant Wildlife Habitat	No impacts	The bridge is close to possible turtle nesting habitat. Wildlife habitats in the woodland and wetlands to the north may be indirectly affected.	The bridge is downstream of possible turtle nesting habitat. Wildlife habitats in the woodland and wetlands to the north may be indirectly affected.	The bridge is well-downstream of possible turtle nesting habitat. Wildlife habitats in the woodland and wetlands to the north may be indirectly affected.
Rating	○	◕	◑	◔
Impacts to Species at Risk	No impacts	Approx. 1856m2 of Bobolink habitat, 285m2 of Monarch habitat and 503m2 of potential bat roosting habitat to be affected. Increased foot traffic may inhibit nesting within the vicinity of the trail.	Approx. 2036m^2 of Bobolink habitat, 863m^2 of Monarch habitat and 535m^2 of potential bat habitat to be affected. Increased foot traffic may inhibit nesting within the vicinity of the trail.	Approx. 2682m^2 of Bobolink habitat, 532m^2 of Monarch habitat and 1086m^2 of potential bat habitat to be affected. Increased foot traffic may inhibit nesting within the vicinity of the trail.
Rating	○	◔	◑	◕
Impacts to aquatic habitat in the Speed River	No impacts	Minimal risk to aquatic SAR from clear-span bridge installation with appropriate erosion control and construction best practices. Bridge is 168m from nearest spawning area.	Minimal risk to aquatic SAR from clear-span bridge installation with appropriate erosion control and construction best practices. Bridge is 61m from nearest spawning area.	Minimal risk to aquatic SAR from clear-span bridge installation with appropriate erosion control and construction best practices. Bridge is 32m from nearest spawning area.
Rating	○	◔	◑	◕
Impacts to surface water quality	No impacts	Minor risk to water quality due to erosion with appropriate erosion control and contruction mitigation. Some risk of increased instance of litter/dumping due to enhanced public access.	Minor risk to water quality due to erosion with appropriate erosion control and contruction mitigation. Some risk of increased instance of litter/dumping due to enhanced public access.	Minor risk to water quality due to erosion with appropriate erosion control and contruction mitigation. Some risk of increased instance of litter/dumping due to enhanced public access.
Rating	○	◑	◑	◑
SUMMARY NATURAL ENVIRONMENT	○	◔	◔	◑

CRITERIA FOR EVALUATING ALTERNATIVES	Do Nothing	Alternative 1 – Northern Route	Alternative 2 – Dover Street South Route	Alternative 3 – Southern Route
SOCIAL ENVIRONMENT				
Route layout and connectivity within the City's trail network	Additional connectivity across the City's trail network would not be achieved.	This alternative would connect Fountain Street South to an existing mult-use trail to the east of Speed River.	This alternative would connect Fountain Street South to an existing mult-use trail to the east of Speed River.	This alternative would connect Fountain Street South to an existing mult-use trail to the east of Speed River.
Rating	●	○	○	○

Potential for trespassing/off trail uses	The potentail for trespassing would not be increased or decreased from current conditions if no trail or bridge are built.	The northern route represents the straightest and most direct path for a trail to extend from Fountain Street S to the eastern side of the Speed River. Potential for trespassing/off-trail use would be minimized in this scenario. Some trespassing into the woodland and wetlands to the north and other portions of rare lands may occur.	Alternative 3 bends almost 90 degrees south to a bridge crossing that lines up approximately with Dover Street on the eastern side of the Speed River. This 90 degree bend increases potential for tresspassing/off-trail shortcuts created by pedestrians to cut through *rare* lands. Some trespassing into the woodland and wetlands to the north and other portions of rare lands may occur.	Alternative 4 represents the longest total path length due to a 500 m N/S section of trail extending from the proposed bridge location west of the Speed River. This path represents the greatest potential for trespassing/off-trail shortcuts by pedestrians looking for the shortest path from the bridge to Fountain Street. Some trespassing into the woodland and wetlands to the north and other portions of rare lands may occur.
Rating	○	◔	◑	●
SUMMARY SOCIAL ENVIRONMENT	◑	○	◔	◑

CRITERIA FOR EVALUATING ALTERNATIVES	Do Nothing	Alternative 1 – Northern Route	Alternative 2 – Dover Street South Route	Alternative 3 – Southern Route
CULTURAL ENVIRONMENTS				
Impacts to Built Heritage and Cultural Heritage Landscapes	No impacts	No structures are present and thus there will be no effect on Built Heritage. The site may represent a Cultrual Heritage Landscape. Further studies are required.	No structures are present and thus there will be no effect on Built Heritage. The site may represent a Cultrual Heritage Landscape. Further studies are required.	No structures are present and thus there will be no effect on Built Heritage. The site may represent a Cultrual Heritage Landscape. Further studies are required.
Rating	○	◑	◑	◑
Impacts to archaeological resources	No impacts	Trail and bridge located within an area of high archaeological potential.	Trail and bridge located within an area of high archaeological potential.	Trail and bridge located within an area of high archaeological potential.
Rating	○	◕	◕	◕
SUMMARY CULTURAL ENVIRONMENTS	○	◑	◑	◑

CRITERIA FOR EVALUATING ALTERNATIVES	Do Nothing	Alternative 1 – Northern Route	Alternative 2 – Dover Street South Route	Alternative 3 – Southern Route
LAND USE/POLICY				
Compatibility with City and Region policies and plans	This alternative does not support the City or Region in their initiative to enhance connectivity for multi-use trail systems.	Trail within the City of Cambridge "Investigate Opportunities for New Trails" area. This alternative would support the Waterloo Region's vision for a sustainable and liveable Waterloo Region by enhancing connectivity of the multi-modal trail system in Cambridge.	Trail within the City of Cambridge "Investigate Opportunities for New Trails" area. This alternative would support the Waterloo Region's vision for a sustainable and liveable Waterloo Region by enhancing connectivity of the multi-modal trail system in Cambridge.	Trail within the City of Cambridge "Investigate Opportunities for New Trails" area. This alternative would support the Waterloo Region's vision for a sustainable and liveable Waterloo Region by enhancing connectivity of the multi-modal trail system in Cambridge.
Rating	●	○	○	○
Area of rare lands affected	No impacts	An area of 2653m^2 is anticipated to be disturbed overall.	An area of 3443m^2 is anticipated to be disturbed overall.	An area of 4309m^2 is anticipated to be disturbed overall.
Rating	○	◔	◑	◕
Compatibility with rare land management plan	Compatible with rare's land management plan.	Agricultural lands are identified as low priority protection areas. Treed areas and wetlands are considered high priority protection areas. A small very high proprity protection area is located adjacent to the trail route. Rare's plan allows new trails in low priority areas. New trails are generally not permitted within high or very high priority areas. A small portion of the trail and bridge will be located within a high priority area.	Agricultural lands are identified as low priority protection areas. Treed areas and wetlands are considered high priority protection areas. A small very high proprity protection area is located adjacent to the trail route. Rare's plan allows new trails in low priority areas. New trails are generally not permitted within high or very high priority areas. A moderate portion of the trail and bridge will be located within a high priority area.	Agricultural lands are identified as low priority protection areas. Treed areas and wetlands are considered high priority protection areas. A small very high proprity protection area is located adjacent to the trail route. Rare's plan allows new trails in low priority areas. New trails are generally not permitted within high or very high priority areas. A larger portion of the trail and bridge will be located within a high priority area relative to other Alternatives.
Rating	○	◑	◕	●
SUMMARY LAND USE/POLICY	○	◔	◑	◑

CRITERIA FOR EVALUATING ALTERNATIVES	Do Nothing	Alternative 1 – Northern Route	Alternative 2 – Dover Street South Route	Alternative 3 – Southern Route
TECHNICAL ENVIRONMENT				
Flood impacts to adjacent property	No impacts	No significant flood impacts anticipated to adjacent property from either the trail system or proposed Speed River bridge.	No significant flood impacts anticipated to adjacent property from either the trail system or proposed Speed River bridge.	No significant flood impacts anticipated to adjacent property from either the trail system or proposed Speed River bridge.
Rating	○	◔	◔	◔
Flood impacts to constructed trail and bridge	No impacts	The trail is within the floodplain of the Grand/Speed confluence. Some flood impacts are anticipated for high return-period storms in this location. The proposed bridge is to be designed with soffit above the regional floodline.	The southern extent of the trail is at a lower elevation than the southern extent of Alternative 1, and therefore more susceptible to flooding. The proposed bridge is to be designed with soffit above the regional floodline.	The southern extent of the trail is at a lower elevation than the southern extent of Alternative 1, and therefore more susceptible to flooding. The proposed bridge is to be designed with soffit above the regional floodline.
Rating	○	◑	◕	●
Ease/complexity of construction	No construction	There may be minor challenges with an existing sanitary sewer in the vicinity of the bridge.	Various sanitary sewers and a storm sewer are close to the bridge location, potentially complicating construction.	No significant construction challenges are anticipated.
Rating	○	◑	◕	◔
SUMMARY TECHNICAL ENVIRONMENT	○	◔	◑	◑

CRITERIA FOR EVALUATING ALTERNATIVES	Do Nothing	Alternative 1 – Northern Route	Alternative 2 – Dover Street South Route	Alternative 3 – Southern Route
ECONOMIC ENVIRONMENT				
Comparative capital and operational costs	No costs	Trail Length = 473 m. Bridge Span = 70.7 m. Total Bridge/Switchback Length = 116 m. This alternative has the shortest trail length and the second longest bridge. It is anticipated to have a moderate cost.	Trail Length = 539 m. Bridge Span = 74.7 m. Total Bridge/Switchback Length = 120 m. This alternative has the second highest trail length and the longest bridge. It is anticipated to be the highest-costed alternative.	Trail Length = 677 m. Bridge Span = 59.7 m. Total Bridge/Switchback Length = 105 m. This alternative has the longest trail length but the shortest bridge. It is anticipated to be the least costly alternative.
Rating	○	◕	●	◔
Impacts to agricultural uses and income on rare lands	No impacts	1840m^2 potentially temporarily or permanently removed from agricultural production.	2060m^2 potentially temporarily or permanently removed from agricultural production.	2995m^2 potentially temporarily or permanently removed from agricultural production.
Rating	○	◔	◑	◕
SUMMARY ECONOMIC ENVIRONMENT	○	◑	◕	◑

CRITERIA FOR EVALUATING ALTERNATIVES	Do Nothing	Alternative 1 – Northern Route	Alternative 2 – Dover Street South Route	Alternative 3 – Southern Route
PROBLEM STATEMENT				
Addresses Problem Statement	No	Yes	Yes	Yes
SUMMARY PROBLEM STATEMENT	**Not Preferred**	**Preferred**	**Preferred**	**Preferred**

CRITERIA FOR EVALUATING ALTERNATIVES	Do Nothing	Alternative 1 – Northern Route	Alternative 2 – Dover Street South Route	Alternative 3 – Southern Route
OVERALL SUMMARY	**Not Preferred**	**Most Preferred**	**Somewhat Preferred**	**Least Preferred**

ORDER OF PREFERENCE

Most Preferred ○

More Preferred ◔

Somewhat Preferred ◑

Less Preferred ◕

Least Preferred ●

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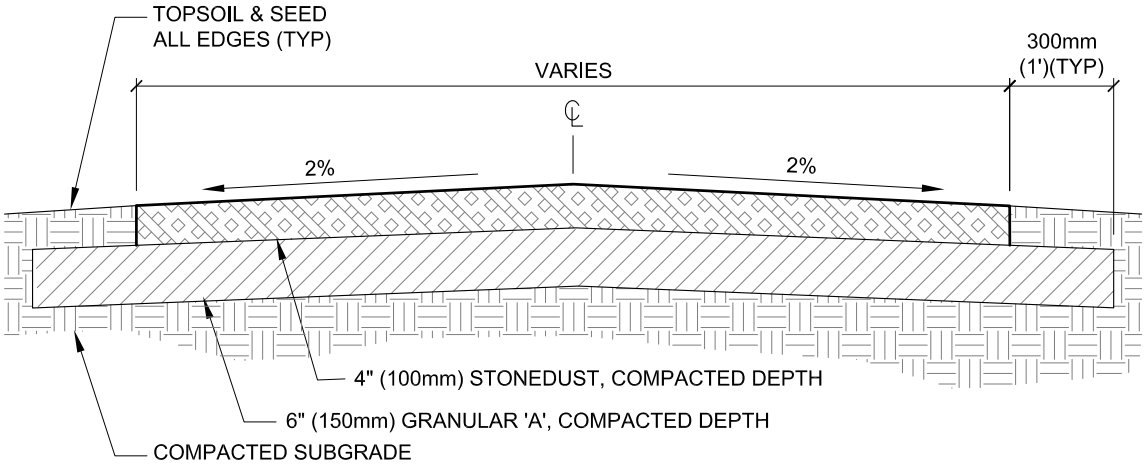
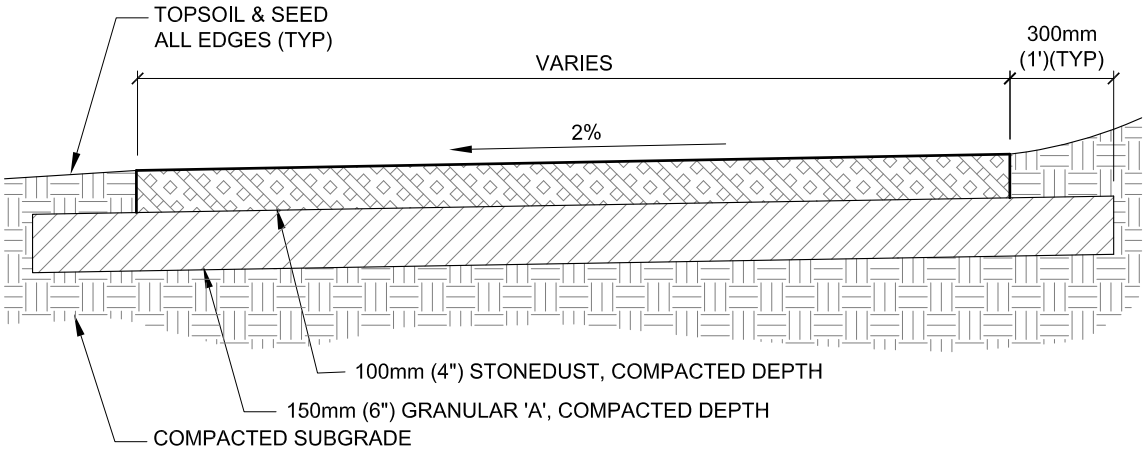
Appendix E
Trail Details



STONEDUST PATH - CROWNED



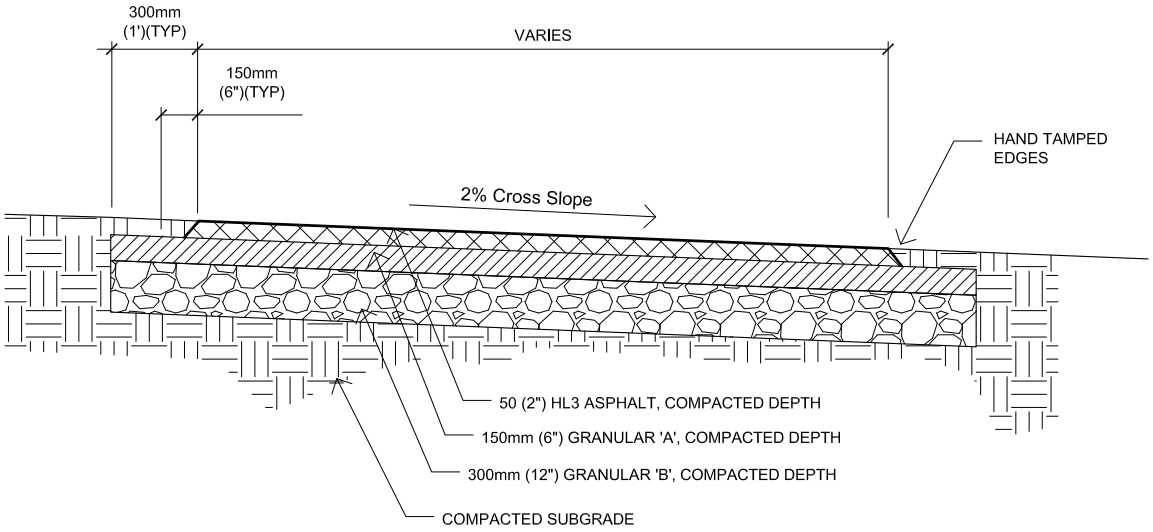
STONEDUST PATH - CROSS SLOPED

NOTES:

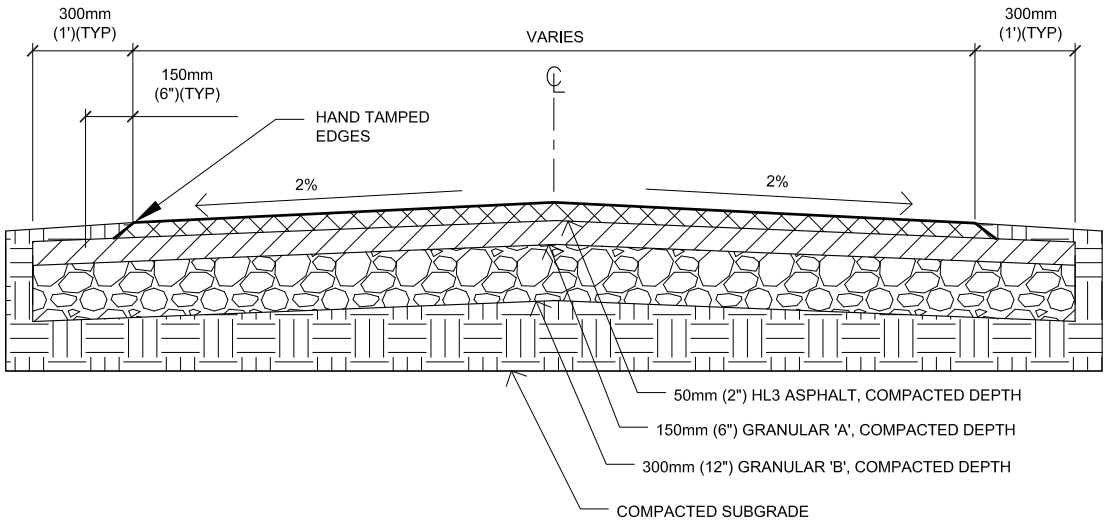
1. REPLACE 100mm (4") STONEDUST (COMPACTED DEPTH) WITH 75mm (3") ENVIROBOND STABILIZED CRUSHED STONE PAVING MATERIAL (COMPACTED DEPTH) WHERE INDICATED ON SITE PLAN.
2. CONTRACTOR SHALL CUT / FILL EXISTING GRADE AS REQUIRED IN ORDER TO ACCOMODATE PROPOSED TRAIL. ANY SIDE SLOPES REQUIRED TO MATCH EXISTING GRADES SHALL NOT EXCEED 2:1 SLOPE.
3. CROSS SLOPES SUBJECT TO FINAL APPROVAL OF LANDSCAPE ARCHITECT

TYPICAL STONEDUST PATH C/W SHOULDER

CITY OF CAMBRIDGE		COMMUNITY SERVICES DEPARTMENT
DRAWN BY: L.DRENNAN	DESIGN BY: S. RIESE	STANDARD NO. CSD-L-07
DATE: JANUARY 2007	REVISED: JANUARY 2007	



ASPHALT PATH - CROSS SLOPED

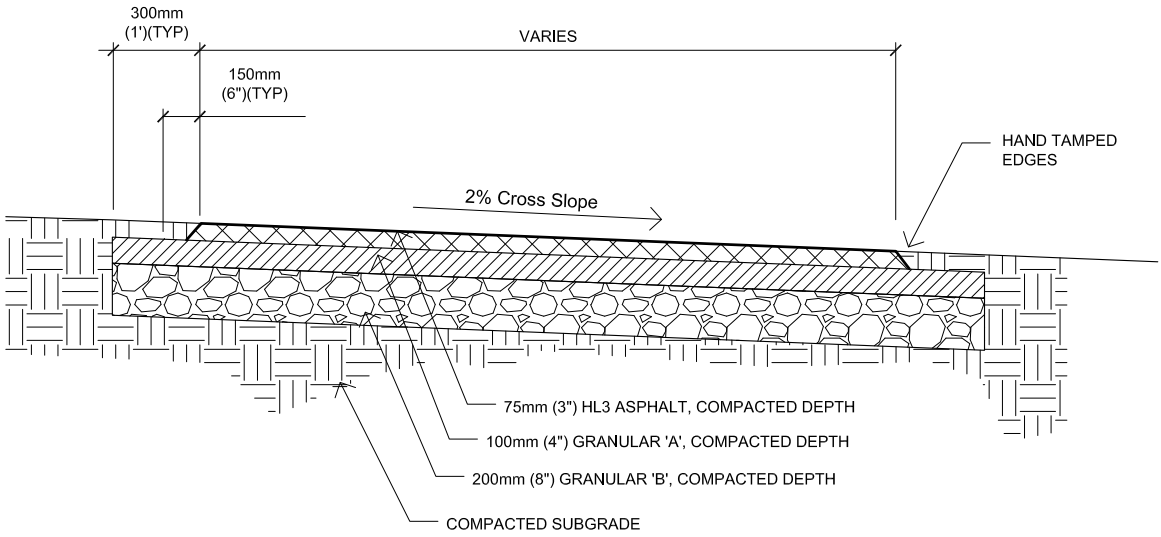


ASPHALT PATH - CROWNED

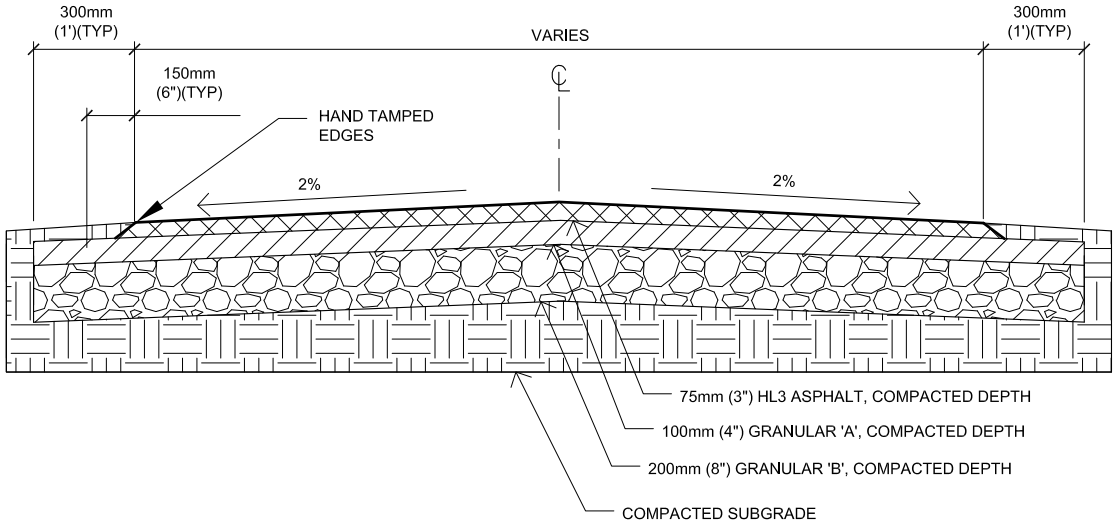
NOTE:
CROSS SLOPES SUBJECT TO FINAL APPROVAL OF LANDSCAPE ARCHITECT
PRIOR TO PAVING.

ASPHALT PATH c/w SHOULDER DETAIL (50mm ASPHALT)

CITY OF CAMBRIDGE		COMMUNITY SERVICES DEPARTMENT
DRAWN BY: L. DRENNAN	DESIGN BY: S. REISE	STANDARD NO. CSD-L-11-A
DATE: FEBRUARY 8,2007	REVISED: MARCH 2013	



ASPHALT PATH - CROSS SLOPED

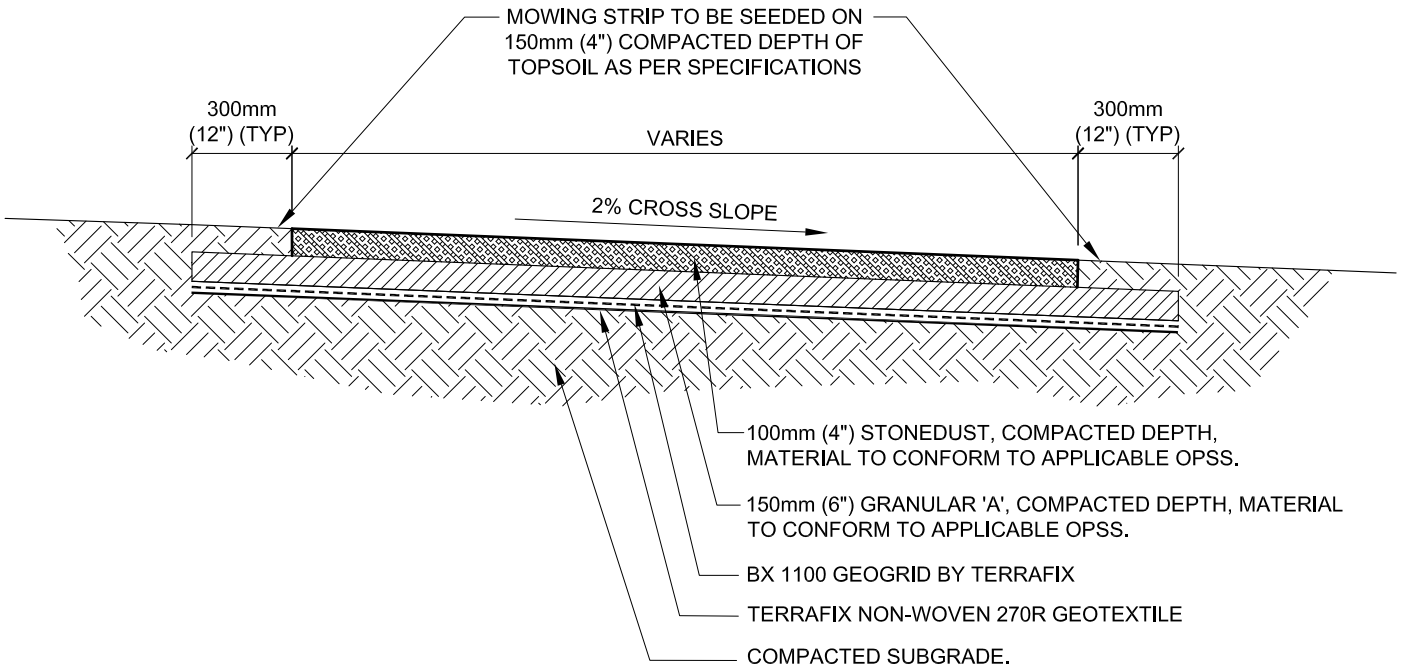


ASPHALT PATH - CROWNED

NOTE:
CROSS SLOPES SUBJECT TO FINAL APPROVAL OF LANDSCAPE ARCHITECT
PRIOR TO PAVING.

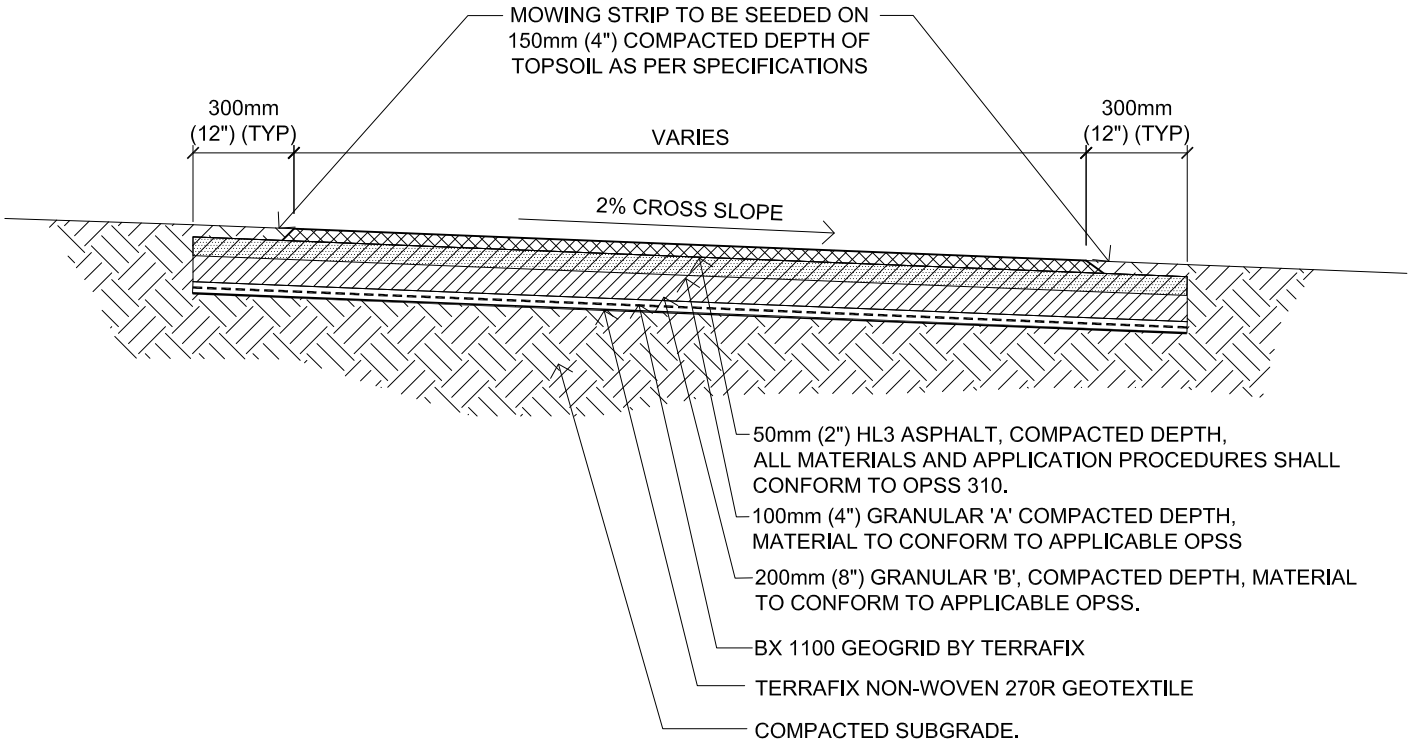
ASPHALT PATH c/w SHOULDER DETAIL (75mm ASPHALT)

CITY OF CAMBRIDGE		COMMUNITY SERVICES DEPARTMENT
DRAWN BY: L. DRENNAN	DESIGN BY: S. REISE	STANDARD NO. CSD-L-11-B
DATE: FEBRUARY 8,2007	REVISED: JANUARY 2010	



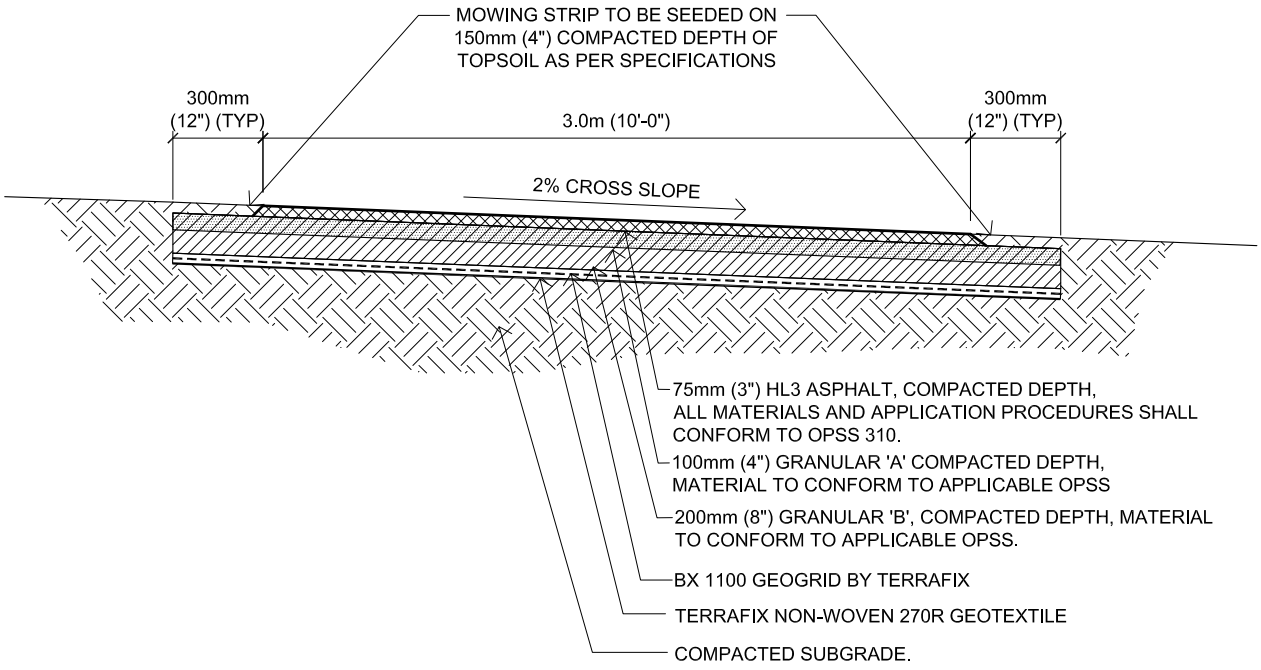
STONEDUST PATH WITH GEOGRID

CITY OF CAMBRIDGE	COMMUNITY SERVICES DEPARTMENT	SCALE: Not to Scale
DRAWN BY: L. DRENNAN	DESIGN BY: S. REISE	STANDARD NO. CSD-L-13
DATE: MARCH 2007	REVISED:	



ASHPALT PATH WITH GEOGRID (50mm ASPHALT)

CITY OF CAMBRIDGE	COMMUNITY SERVICES DEPARTMENT	SCALE: Not to Scale
DRAWN BY: L. DRENNAN	DESIGN BY: S. REISE	STANDARD NO. CSD-L-15-A
DATE: MARCH 2007	REVISED: JANUARY 2010	



ASHPALT PATH WITH GEOGRID (75mm ASPHALT)

CITY OF CAMBRIDGE	COMMUNITY SERVICES DEPARTMENT	SCALE: Not to Scale
DRAWN BY: L. DRENNAN	DESIGN BY: S. REISE	STANDARD NO. CSD-L-15-B
DATE: MARCH 2007	REVISED:MARCH 2009	

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Appendix F
Hydraulic Performance Memo

R.J. Burnside & Associates Limited 292 Speedvale Avenue West Unit 20 Guelph ON N1H 1C4 CANADA
telephone (519) 823-4995 **fax** (519) 836-5477 **web** www.rjburnside.com

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Memorandum

Date: June 15, 2021 **Project No.:** 300043765.0000

Project Name: Blair Preston Trail and Pedestrian Bridge

Client Name: City of Cambridge

To: Shane Taylor, City of Cambridge

From: Alec Fry, M.Eng., EIT

R.J. Burnside & Associates Limited (Burnside) was retained by the City of Cambridge (City) to prepare a Schedule B Municipal Class Environmental Assessment (EA) for the development of a trail and pedestrian bridge spanning the Speed River to connect the communities of Blair and Preston. Routes through lands owned by the rare Charitable Research Reserve (rare) were considered. The proposed trail and bridge will connect the B. McMullen Linear Trail (Linear Trail) to the existing multi-use trail on Fountain Street by crossing over the Speed River upstream of its confluence with the Grand River.

This Technical Memorandum will outline the hydraulic impact of the bridge structure at the preferred location on the park and surrounding lands by comparing pre- and post-construction conditions.

Pre-existing HEC-RAS hydraulic models were obtained from Grand River Conservation Authority (GRCA) for the Grand River and Speed River. The closest station on GRCA Speed River model (0.1) is approximately 600 m upstream of the confluence. Station 109 on the Grand River to Speed HEC model does cross the lowest reaches of the Speed and Grand Rivers approximately 300 m from the confluence. This unique configuration of cross sections within the GRCA floodplain hydraulic models, leaves the project area in the “confluence zone” of the Grand and Speed Rivers. Accordingly, as the project area is in this zone where there are no existing cross sections, Burnside has created a new HEC-RAS model to refine the floodplain hydraulics for the Speed River at Preston Flats within 500 m of the confluence. As the project area resides between cross sections 108 and 109 on the Grand River model, an average of the two flood elevations, at these respective cross sections was used as a tailwater condition within our HEC-RAS model as detailed in Table 1.

Table 1: Aggregate W.S. Elevation at Grand / Speed River Confluence

Design Event	Design Flow (Grand River) (m^3/s)	W.S. Elevation – River Station 108 (m)	W.S. Elevation – River Station 109 (m)	Resulting Downstream Speed River W.S.
Regional	2180.00	272.93	273.13	273.03
100-Year	2023.00	272.66	272.86	272.76
50-Year	1823.00	272.31	272.53	272.42
20-Year	1562.00	271.88	272.12	272.00
10-Year	1333.00	271.50	271.75	271.63
5-Year	1044.00	270.97	271.25	271.11
2-year	731.00	270.33	270.64	270.49

Key methodology used in this new HEC-RAS model include the following:

- An additional 19 cross sections have been created along the Speed River to refine flood elevations;
- Peak flows for the Speed River have been referenced directly from the GRCA Speed River Floodplain Hydraulic Model;
- GRCA Coss Section Stations 108 and 109 from the Grand River model were used as a downstream boundary condition. These two cross sections are approximately 200 m upstream and downstream of the confluence, and the average water surface elevation was taken as the downstream water surface of the Speed River. This calculated water surface elevation from the GRCA model was inputted as Known Water Surface Elevation in the Burnside model;
- Mannings ‘n’ roughness values for both the channel and over bank areas have been referenced directly from the GRCA Speed River HEC-RAS model; and
- Reach lengths have been measured in the CAD environment.

Burnside analyzed several structure geometries with varying soffit elevations to evaluate the impact of a proposed structure and trail on the park and surrounding area. Below is a summary of the pre- and post-construction backwater flood elevations.

Preferred Crossing Location (Alternative 1)

Speed River Crossing Alternative 1 is located 560 m north of the confluence with the Grand River. The natural top of bank elevation to the west of this location is approximately 270 m, though the eastern bank continues to rise steeply beyond the initial bank to elevations of approximately 273 m, then rapidly rising further to 274.5 m, coinciding with the trail adjacent to Preston High School property and residential subdivisions beyond. As anticipated, the Regional flood elevation of 273.15 m at Cross Section 0.0701 impacts the developed lands to the east only marginally but will spill into the floodplain to the west. Burnside evaluated the impact of several different bridge geometries, which set the proposed soffit elevations above the Regional Flood elevations. For Crossing No. 1, the preliminary span has been determined at 105.7 m (clear-span of 70.7 m + 7 x 5 m pedestrian switchbacks).

We have reviewed varying soffit elevations and their response to Regional Peak flows. It has been determined that a soffit elevation above the Regional Flood Elevation provides the least hydraulic impact and is therefore the preferred option. The soffit elevation used for the simulation is 273.15 m. The results have been summarized in Table 2.

Table 2: Crossing Alternative 1 – Soffit = 273.15, Headwater Comparison at Station 0.0701

Design Event	Design Flow (Speed River) (m^3/s)	Existing Headwater Elevation (m)	Proposed Headwater Elevation (m)	Difference in Headwater Elevation (m)
Regional	679.0	273.12	273.14	0.02

As illustrated above, the revised HEC-RAS model with increased cross-sectional data has refined the flood elevations in the vicinity of Crossing Alternative 1. Further, this refinement in flood elevations has been able to demonstrate that the proposed 105.7 m span, Crossing Alternative 1, has a negligible impact on the Preston Flats floodplain with a proposed soffit elevation of 273.15 m.

Currently, within the HEC-RAS model and associated conceptual drawings of the proposed structure, we have assumed fill to be the primary material to transition pedestrian traffic from existing ground elevations to the bridge deck itself. A detailed floodplain cut / fill analysis has not been completed under the scope of this project; however, we acknowledge that this will be a requirement at the detailed design stage. Alternatives may also be considered to elevate the tail to the bridge deck via a boardwalk type of feature at the detailed design stage.

Recommended Structure Geometry

Based on the hydraulic performance of the three alternatives, Burnside notes that the proposed Speed River Crossing No. 1 appears to have negligible impacts on the Study Area and the greater Preston Flats floodplain.

Through the design process, it was determined that a lower bridge soffit would result in less fill within the floodplain but not substantially impact flood elevations. As the area is inundated due to the Grand River, flow velocities remain low. In an attempt to cut down on costs, the bridge soffit has been lowered to the lowest elevation while permitting the required navigation clearance through the Speed River. We have calculated the Navigation Clearance elevation of 271.80 m (1.5 m of clearance + an estimated bank full water elevation of 270.30 m). To accommodate the Navigation Clearance, we have set the soffit elevation of the bridge at 272.00 m or 0.2 m above the required Navigation Clearance. Based on our hydraulic review of the site, Burnside recommends the following minimum geometries be used in the design.

Speed River Bridge – Crossing 1:

- Span = 54.0 m; and
- Soffit Minimum Elevation = 272.00 m.

Table 3: Preferred Crossing Alternative – Soffit = 272.00, Headwater Comparison at Cross Section 0.0701

Design Event	Design Flow (Speed River) (m^3/s)	Existing Headwater Elevation (m)	Proposed Headwater Elevation (m)	Difference in Headwater Elevation (m)
Regional	679.0	273.12	273.14	0.02
100-Year	269.0	272.78	272.78	0
50-Year	240.0	272.45	272.45	0
20-Year	209.0	272.05	272.05	0
10-Year	181.0	271.71	271.72	0.01
5-Year	153.0	271.25	271.26	0.01
2-Year	110.0	270.78	270.79	0.01

As illustrated in Table 3, lowering the bridge down to the minimum navigation clearance does not impact flood elevations near the confluence of the Speed and Grand Rivers. We believe this alternative provides the most feasible option to cross the Speed River on the Blair Preston Trail system.

Supporting concept drawings, HEC-RAS output files and digital modelling files have been appended for reference.

If you have any questions or comments, do not hesitate to contact the undersigned.

R.J. Burnside & Associates Limited

Alec Fry, M.Eng., EIT
AF/TK:sp

Tim Koen, P.Eng.
Water Resource Engineer

Enclosure(s) Appendix A: Figure 6-1: Proposed Alternatives
Appendix B: HEC-RAS Output

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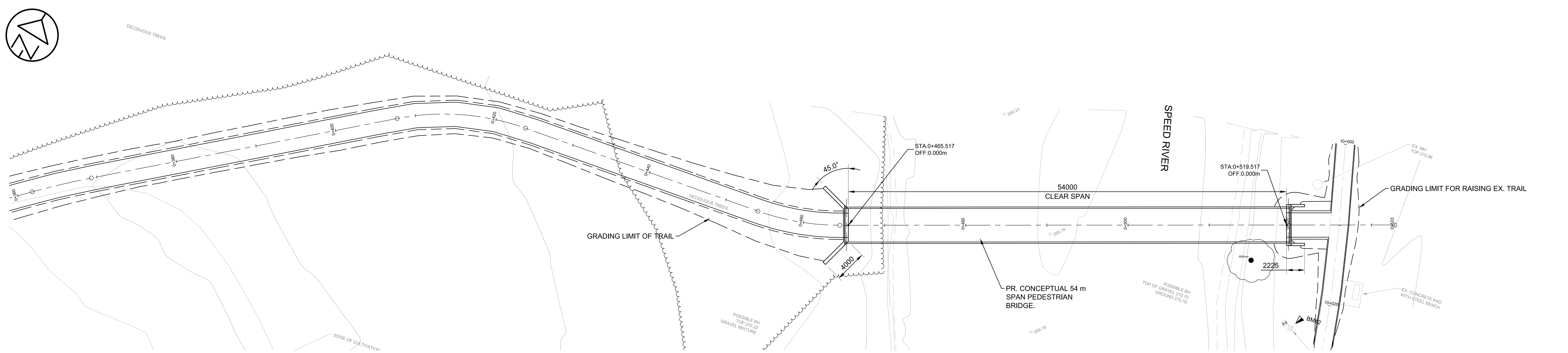
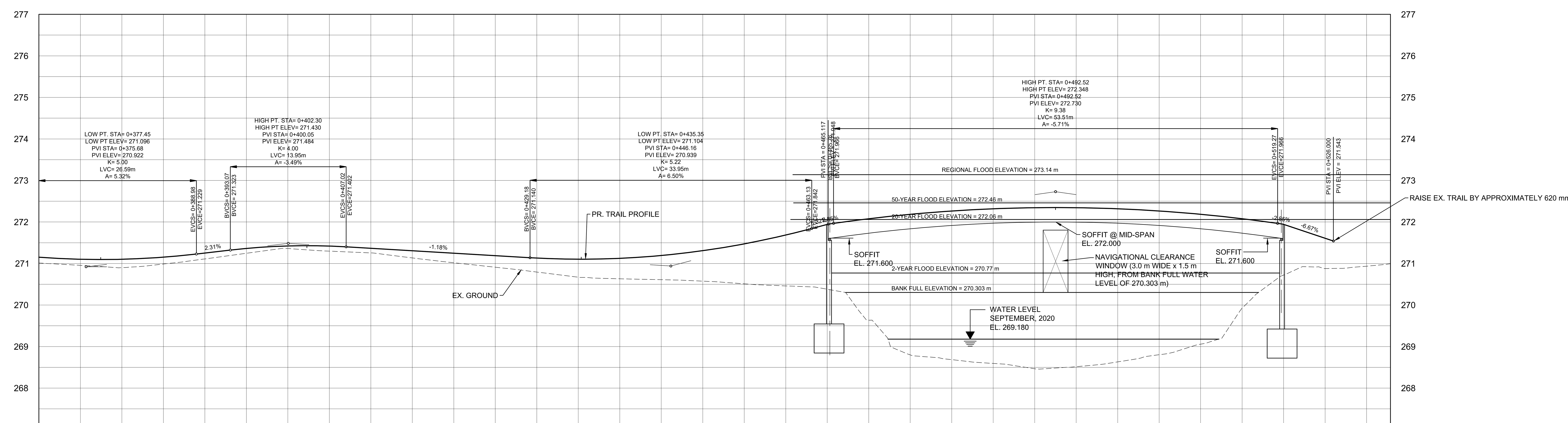
Appendix A

Figure 6-1 Proposed Alternatives





EXIST\PROP CENTERLINE ELEVATION	271.01 / 271.151	270.90 / 271.102	271.11 / 271.252	271.36 / 271.423	271.26 / 271.367	271.02 / 271.248	270.79 / 271.131	270.63 / 271.124	270.58 / 271.309	270.46 / 271.685	269.64 / 272.078	268.69 / 272.264	268.47 / 272.345	268.63 / 272.318	269.06 / 272.185	270.72 / 271.942	270.93	270.99
CHAINAGE	0+370	0+380	0+390	0+400	0+410	0+420	0+430	0+440	0+450	0+460	0+470	0+480	0+490	0+500	0+510	0+520	0+530	0+532.87

Notes
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2. The contractor shall verify all dimensions, levels, and datums on site and report any discrepancies or omissions to this office prior to construction.
3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.

NOT FOR CONSTRUCTION

No.	Issue / Revision	Date	Auth.
1	DRAFT SUBMISSION FOR REVIEW	21/04/01	TR

BENCHMARK #2 ELEV. 271.687 m

TOP OF EXISTING BLUE MONITORING WELL CASING ON EAST SIDE OF SPEED RIVER, ADJACENT TO EXISTING TRAIL.

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Client
CITY OF CAMBRIDGE
50 DICKSON STREET
CAMBRIDGE, ON
N1R 5W8

Drawing Title
BLAIR PRESTON TRAIL CROSSING

PLAN AND PROFILE
PROPOSED TRAIL
STA. 0+370 TO 0+532.87

Drawn	Checked	Designed	Checked	Date	Drawing No.
TDL	MB	TDL	MB	21/02/22	B-001
Project No. 300043765		Contract No. CONTRACT NO.		Revision No. 0	
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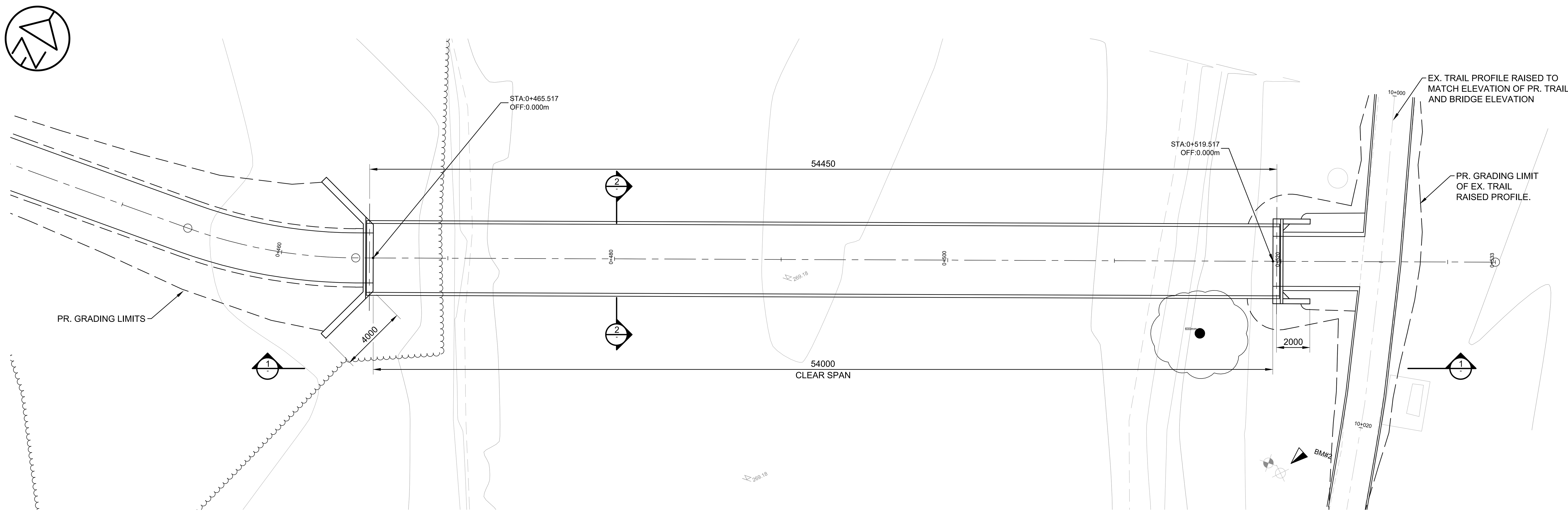
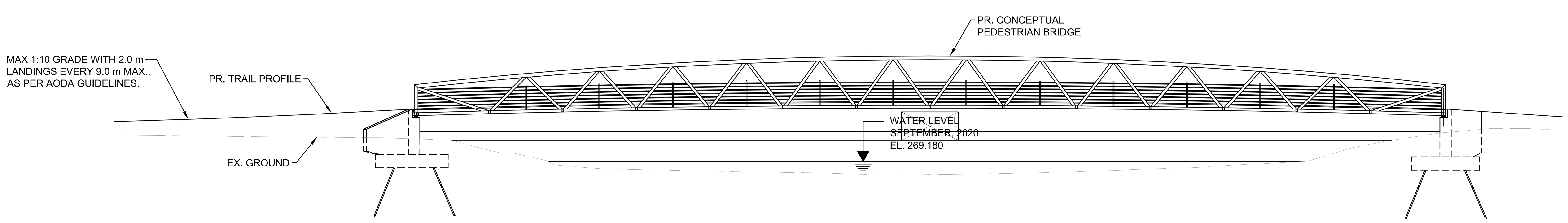
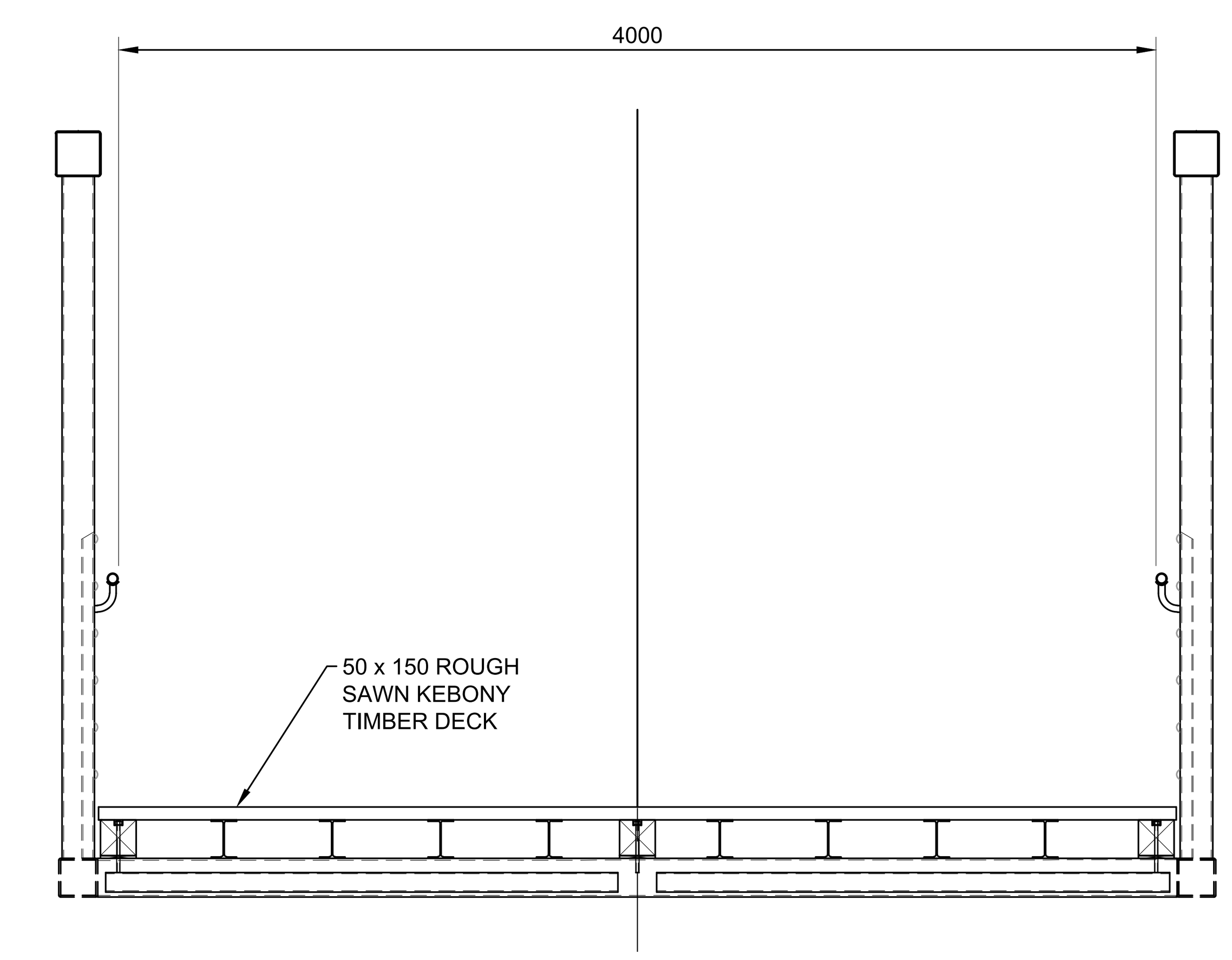


PLAN - TRAIL CROSSING
SCALE: 1:150



1 ELEVATION - TRAIL CROSSING
SCALE: 1:150



2 SECTION - BRIDGE
SCALE: 1:25

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3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.

NOT FOR CONSTRUCTION

No.	Issue / Revision	Date	Auth.
1	DRAFT SUBMISSION FOR REVIEW	21/04/01	TR

BENCHMARK #2 ELEV. 271.687 m
TOP OF EXISTING BLUE MONITORING WELL CASING ON EAST SIDE OF SPEED RIVER, ADJACENT TO EXISTING TRAIL.

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Client
CITY OF CAMBRIDGE
50 DICKSON STREET
CAMBRIDGE, ON
N1R 5W8

Drawing Title
BLAIR PRESTON TRAIL CROSSING
GENERAL ARRANGEMENT
PROPOSED TRAIL

Drawn	Checked	Designed	Checked	Date	Drawing No.
TDL	MB	TDL	MB	20/02/22	B-002
Project No. 300043765		Contract No. CONTRACT NO.		Revision No. 0	
Scale AS NOTED					

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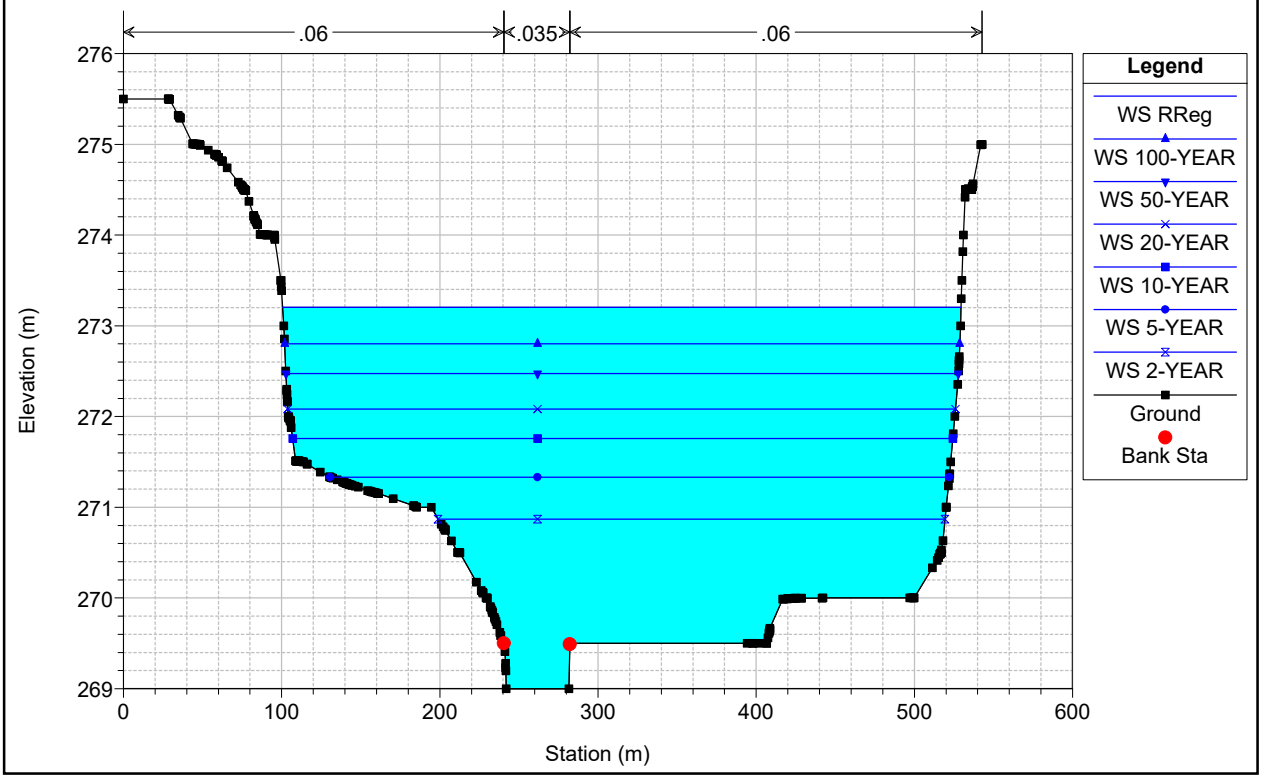
Appendix B

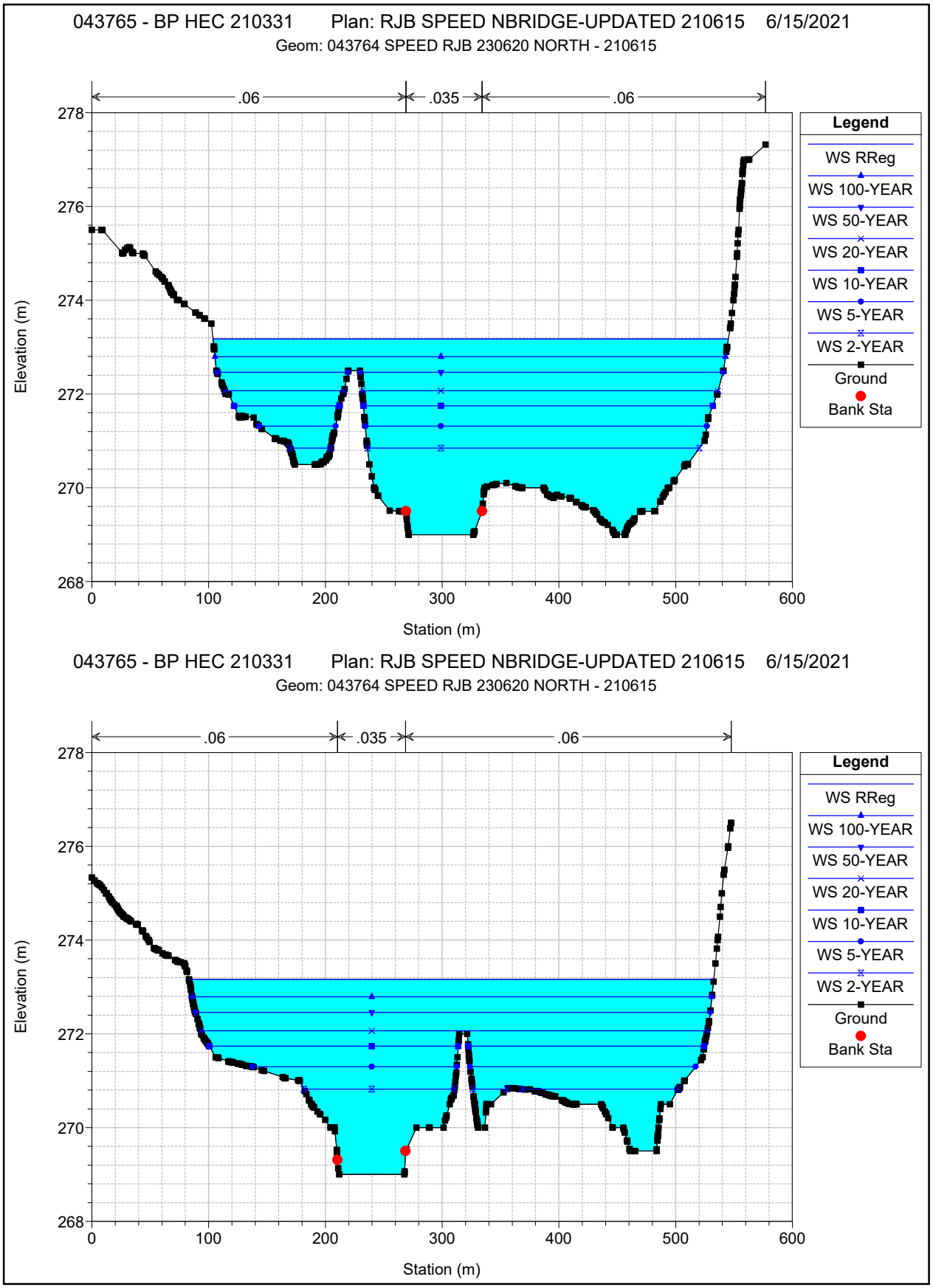
HEC-RAS Output

No Data for Plot

043765 - BP HEC 210331 Plan: RJB SPEED NBRIDGE-UPDATED 210615 6/15/2021

Geom: 043764 SPEED RJB 230620 NORTH - 210615

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043765 - BP HEC 210331 Plan: RJB SPEED NBRIDGE-UPDATED 210615 6/15/2021
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Ground
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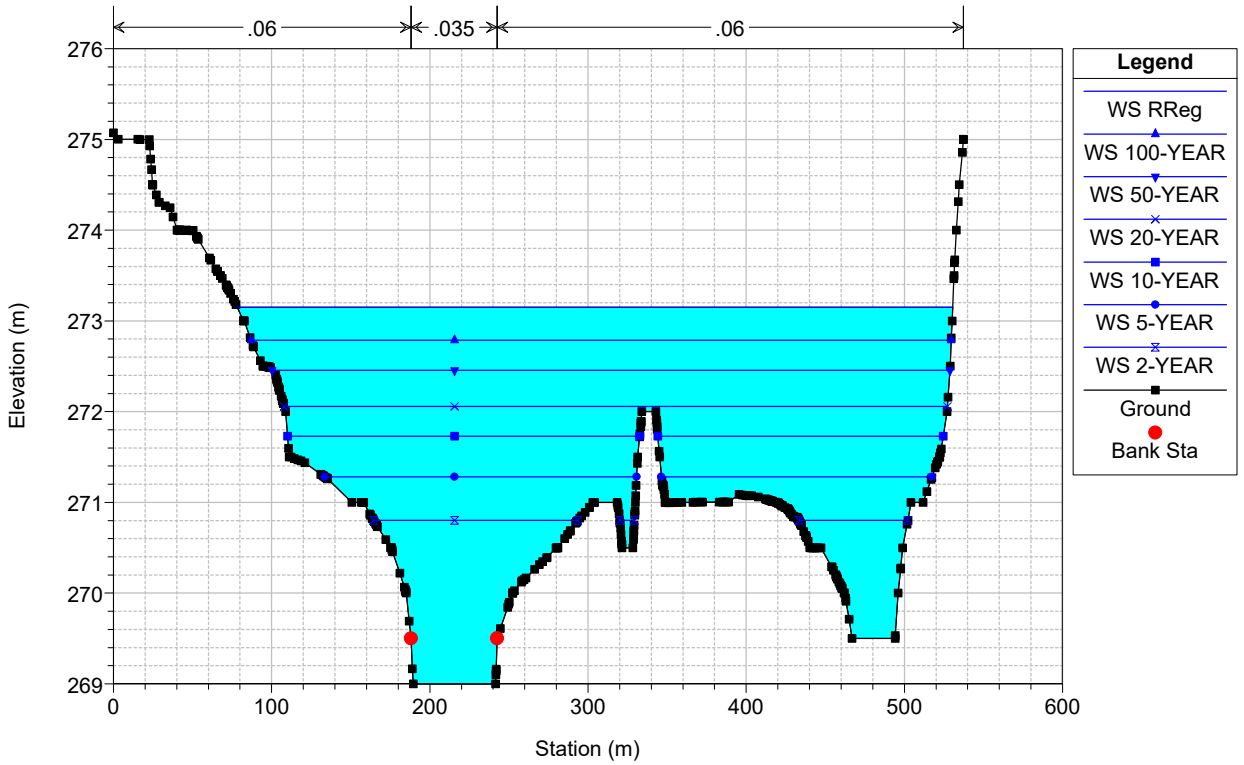

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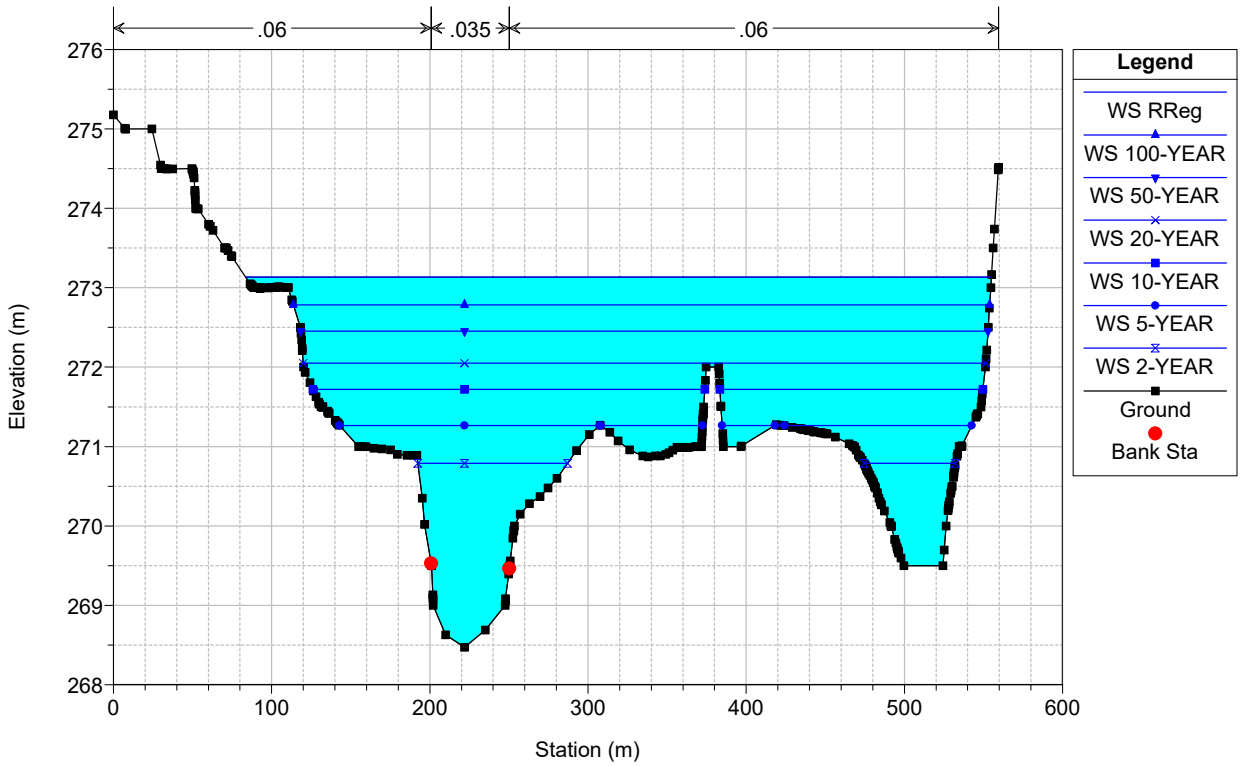

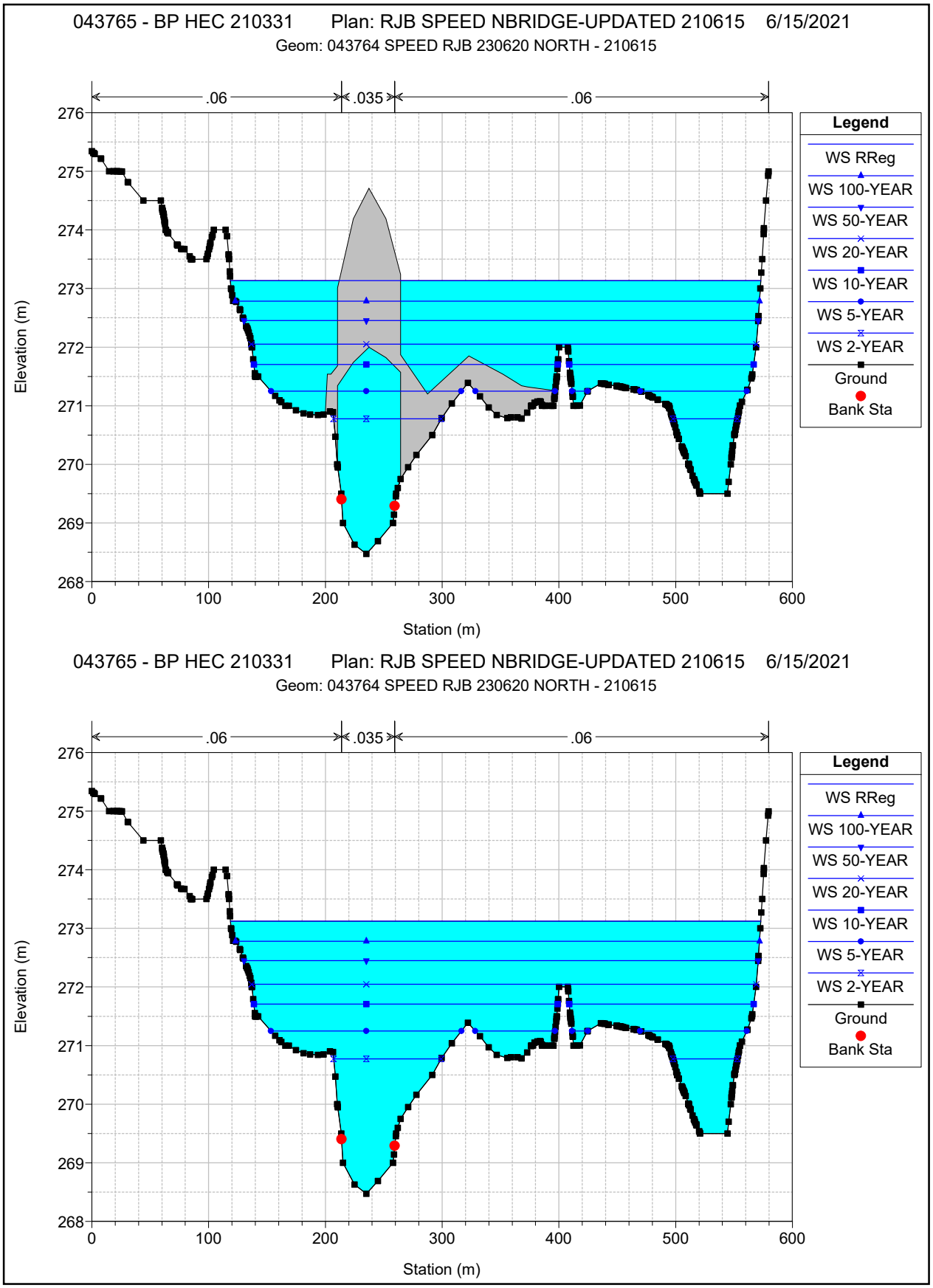
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WS 2-YEAR
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Elevation (m)
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WS 2-YEAR
Ground
Bank Sta

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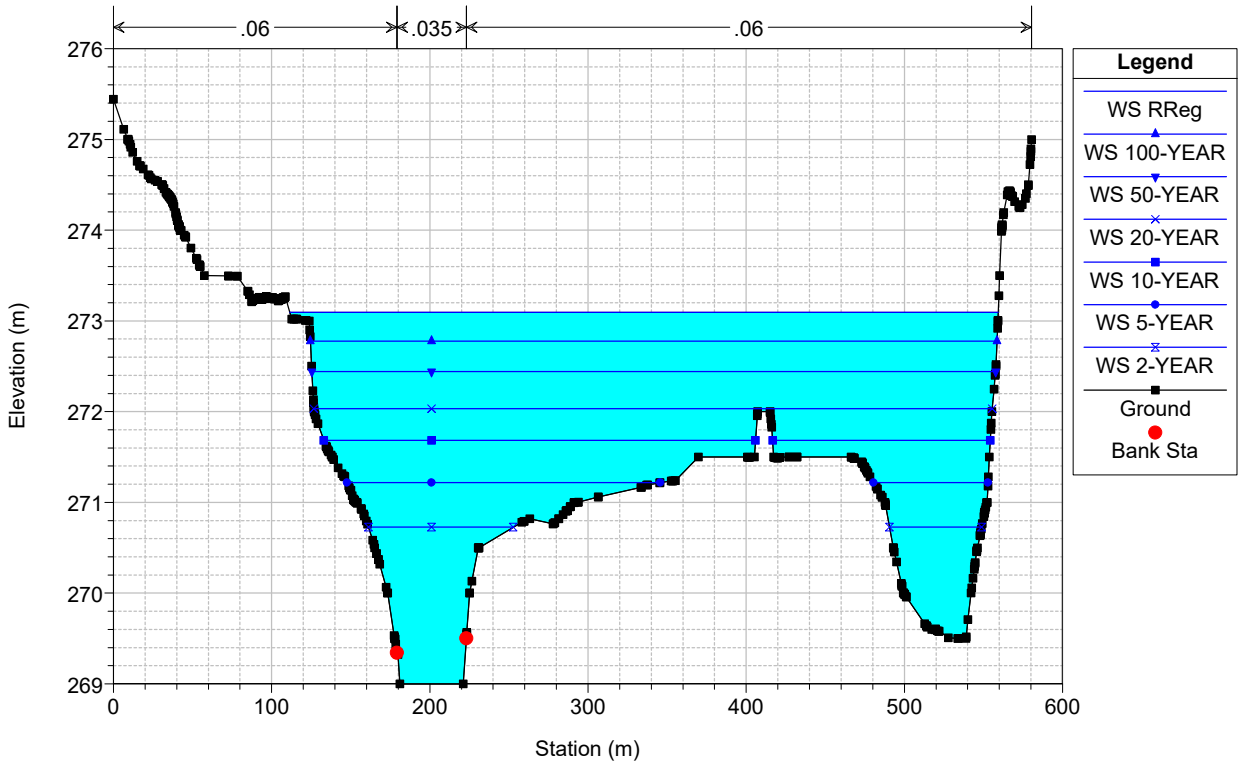

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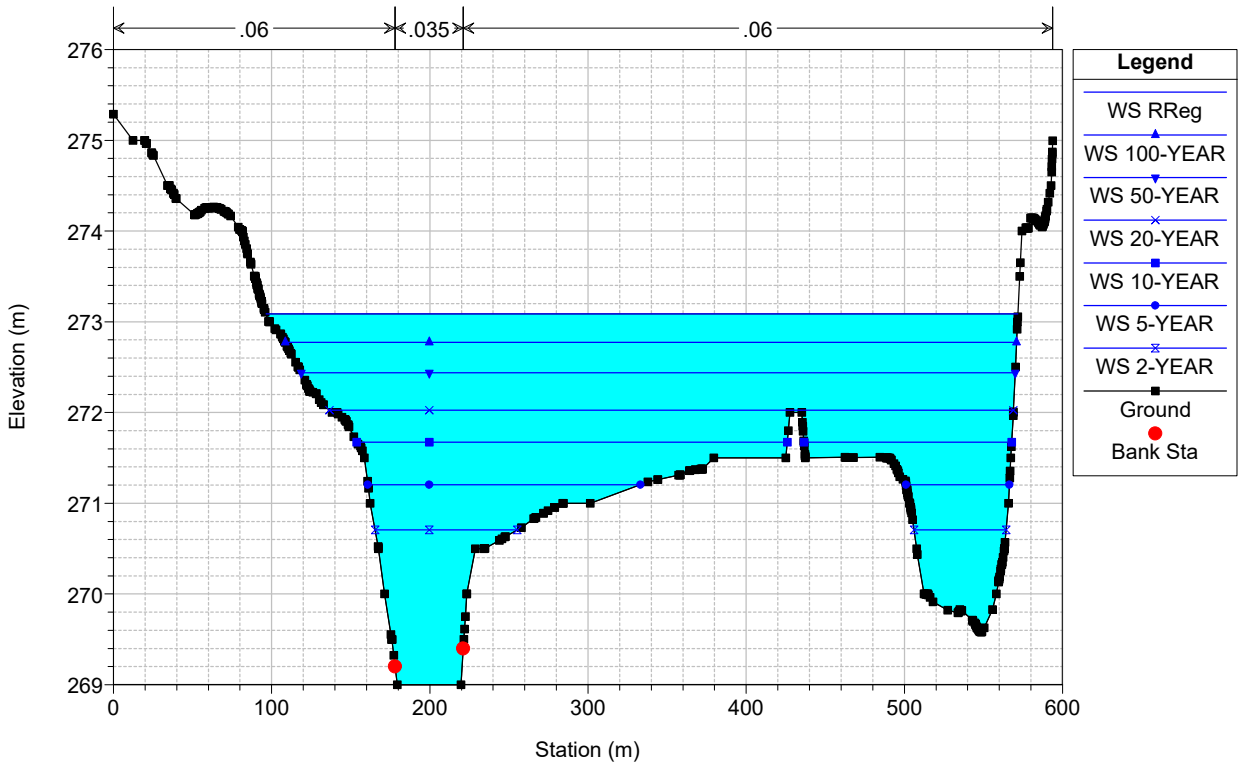

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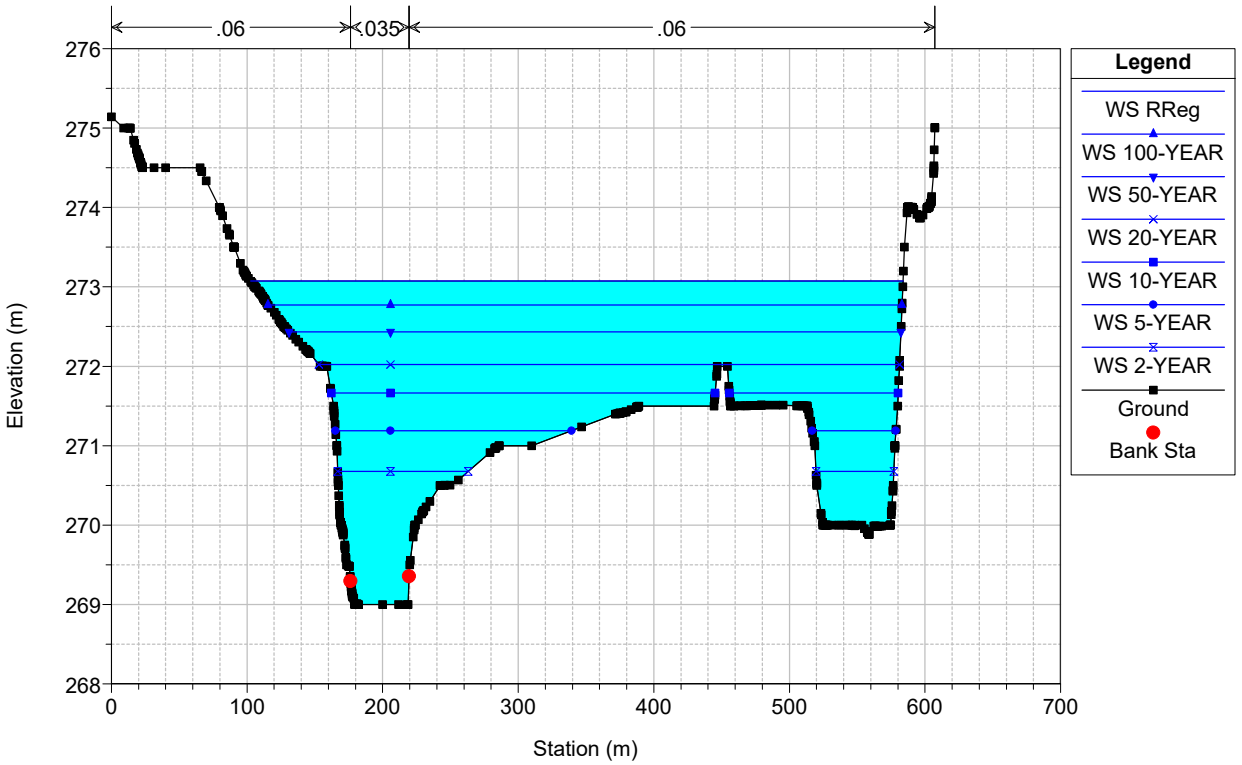

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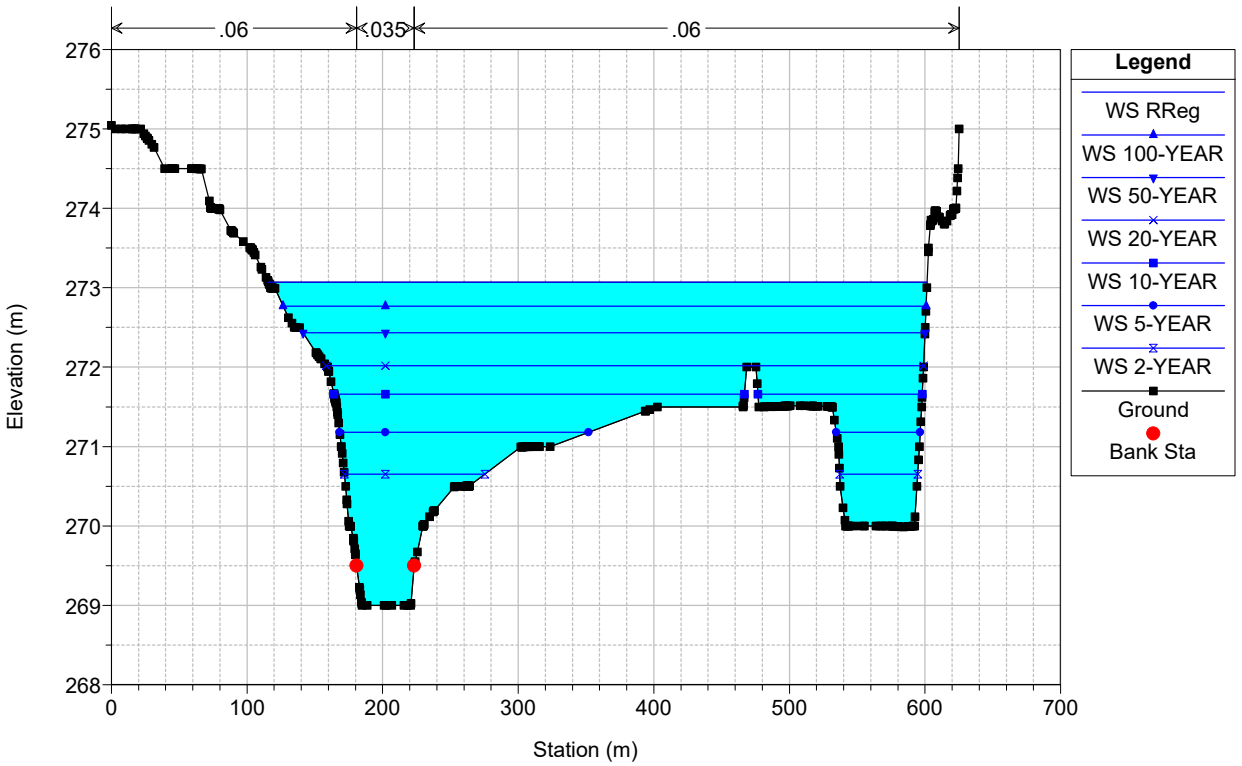

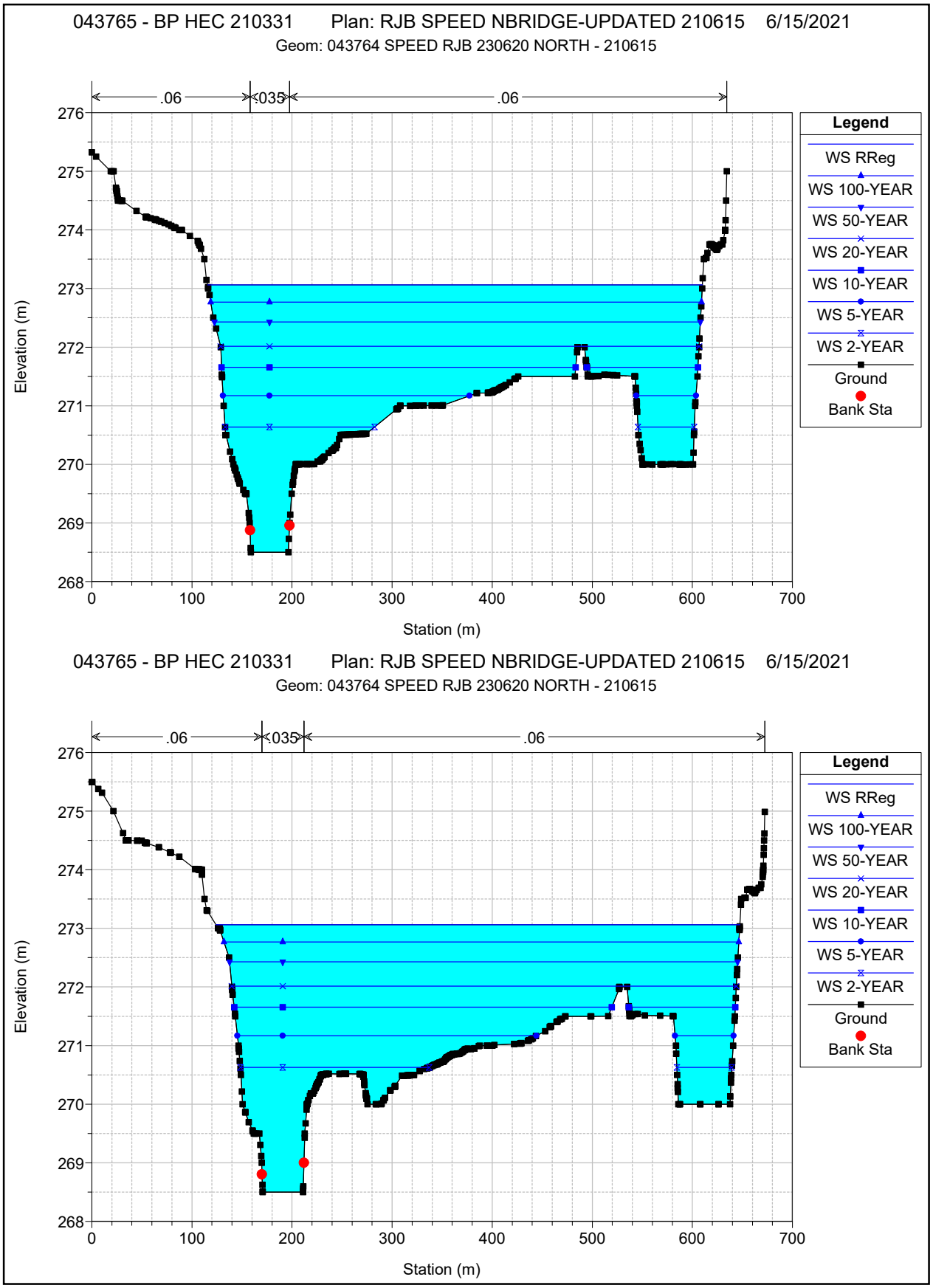
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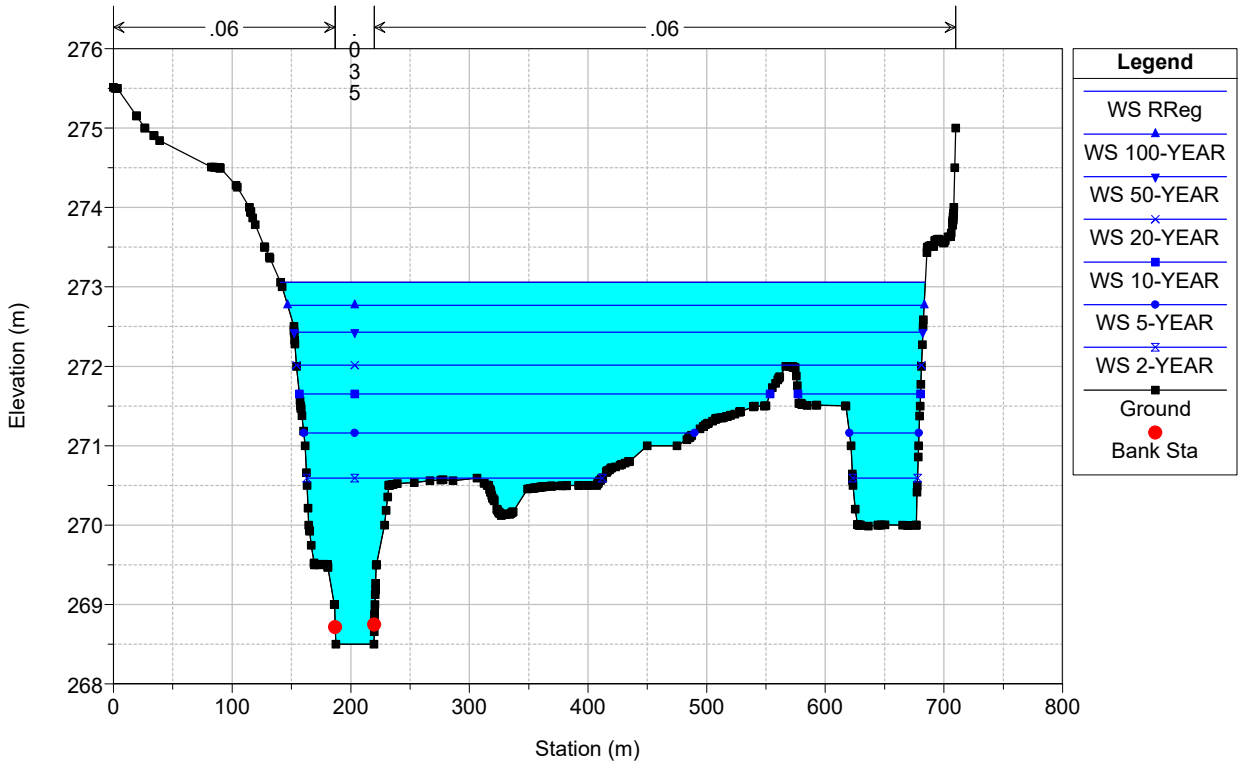

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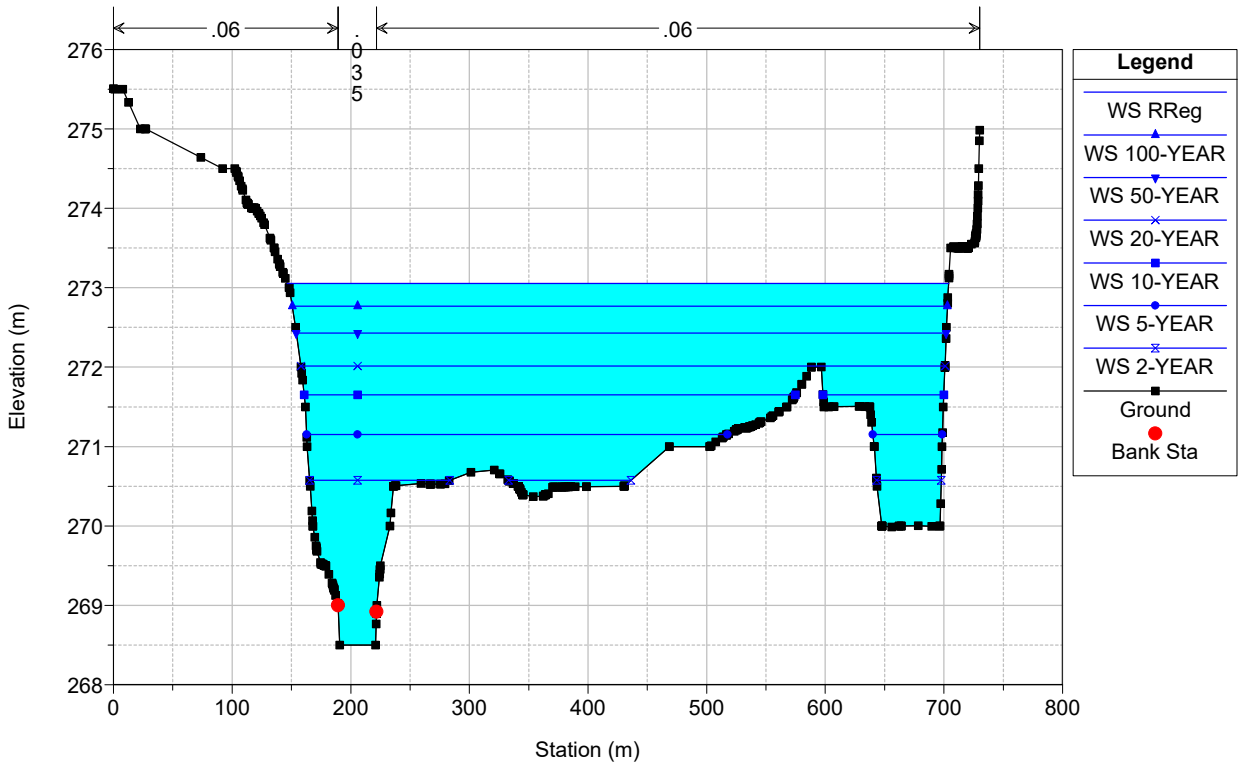

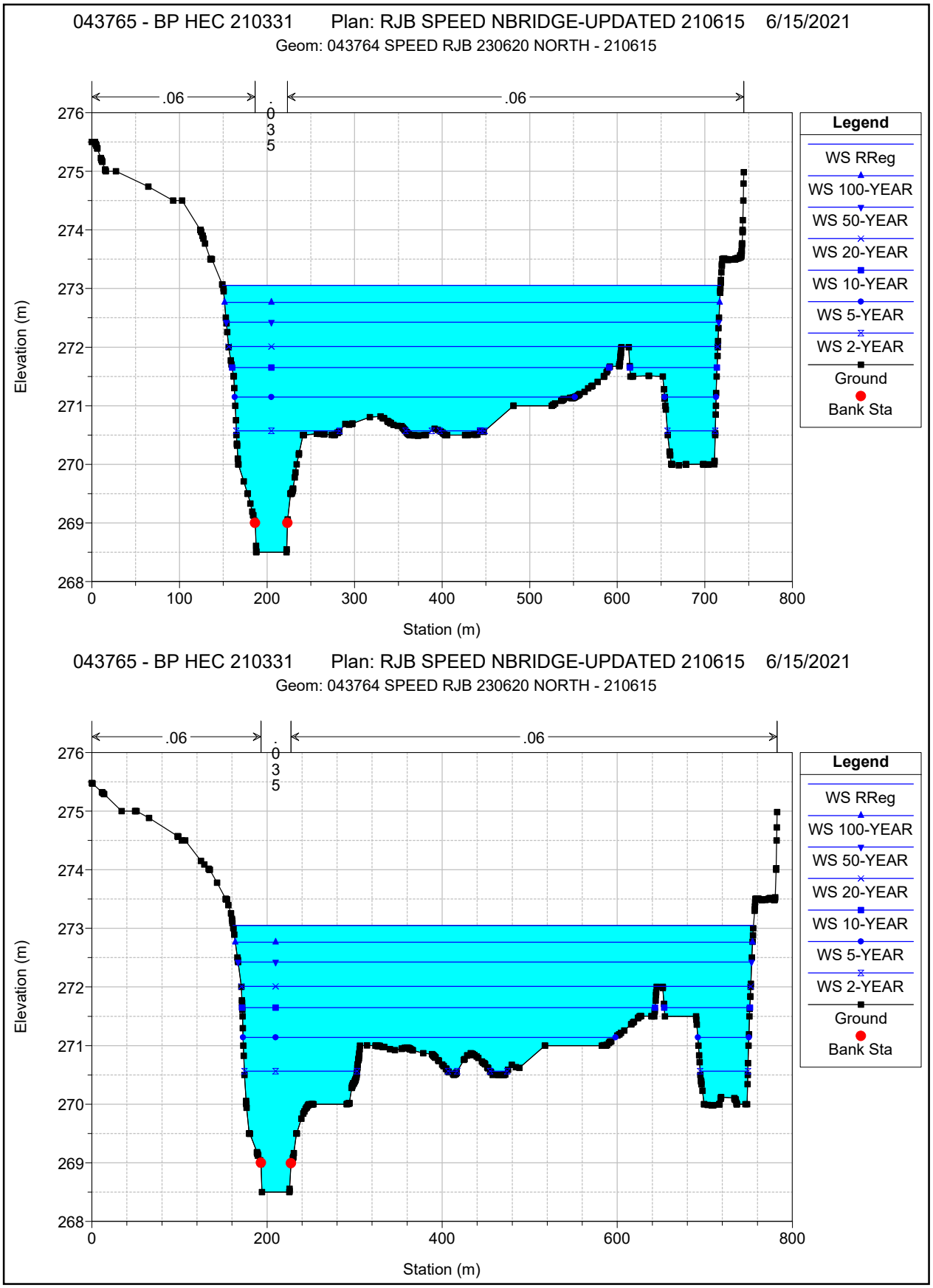
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.06
.035
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Legend
WS RReg
WS 100-YEAR
WS 50-YEAR
WS 20-YEAR
WS 10-YEAR
WS 5-YEAR
WS 2-YEAR
Ground
Bank Sta
Elevation (m)
Station (m)
276
275
274
273
272
271
270
269
268
0
100
200
300
400
500
600
700
800
043765 - BP HEC 210331 Plan: RJB SPEED NBRIDGE-UPDATED 210615 6/15/2021
Geom: 043764 SPEED RJB 230620 NORTH - 210615
.06
.035
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Legend
WS RReg
WS 100-YEAR
WS 50-YEAR
WS 20-YEAR
WS 10-YEAR
WS 5-YEAR
WS 2-YEAR
Ground
Bank Sta
Elevation (m)
Station (m)
276
275
274
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272
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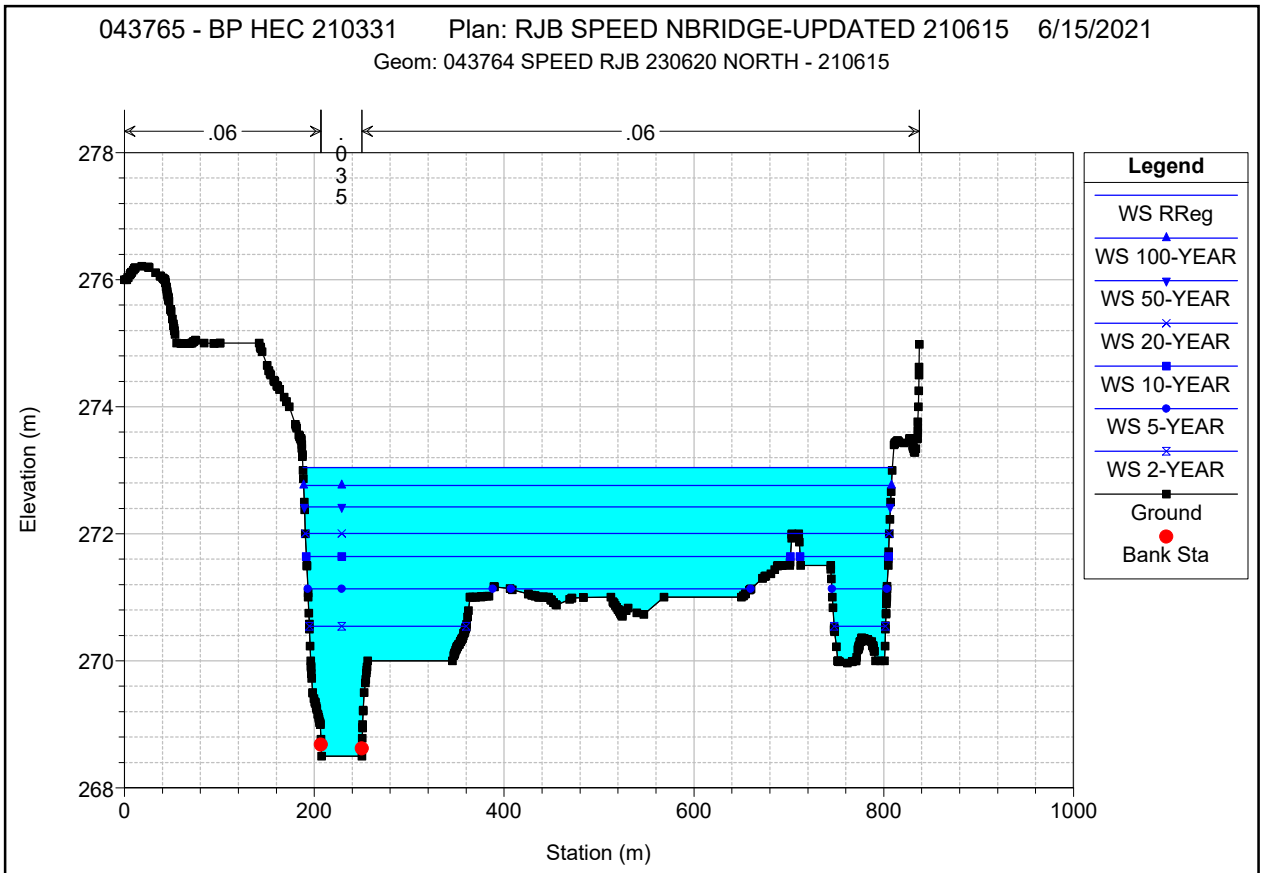
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.06
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Legend
WS RReg
WS 100-YEAR
WS 50-YEAR
WS 20-YEAR
WS 10-YEAR
WS 5-YEAR
WS 2-YEAR
Ground
Bank Sta
Elevation (m)
Station (m)
268
270
272
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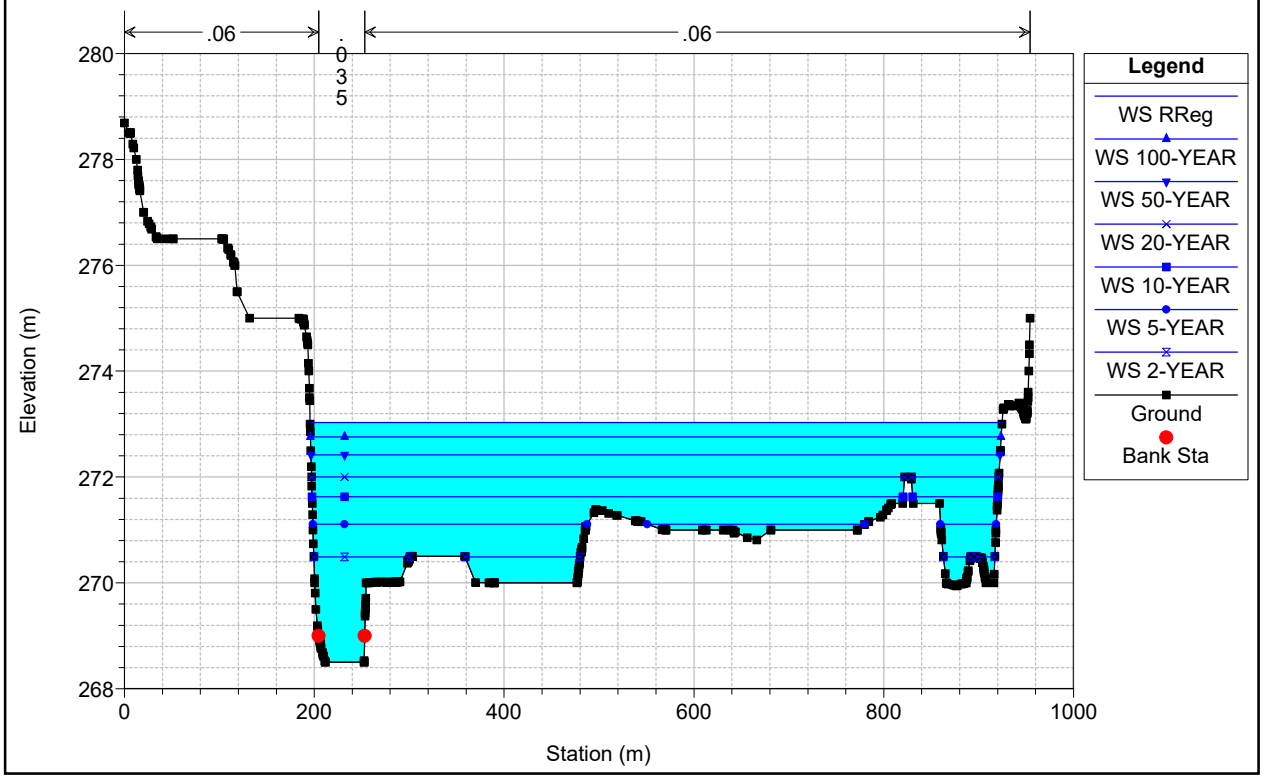
043765 - BP HEC 210331 Plan: RJB SPEED NBRIDGE-UPDATED 210615 6/15/2021
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.06
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Legend
WS RReg
WS 100-YEAR
WS 50-YEAR
WS 20-YEAR
WS 10-YEAR
WS 5-YEAR
WS 2-YEAR
Ground
Bank Sta
Elevation (m)
Station (m)
268
270
272
274
276
278
280
0
200
400
600
800
1000

Project Name: Blair Preston Trail and Pedestrian Bridge
Project No.: 300043764
Watershed: Credit Valley Conservation (CVC)
River: Speed
Reach: Speed C

Exising Condition HEC-RAS Hydraulic Output Summary

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Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
043765 - SPEED C	0.31334	RReg	679	269	273.19		273.21	0.000167	0.95	1313.31	428.85	0.15
043765 - SPEED C	0.31334	100-YEAR	269	269	272.8		272.8	0.00004	0.44	1144.98	426.79	0.07
043765 - SPEED C	0.31334	50-YEAR	240	269	272.47		272.47	0.000048	0.45	1005.11	425.12	0.08
043765 - SPEED C	0.31334	20-YEAR	209	269	272.08		272.08	0.000062	0.47	838.69	422.12	0.09
043765 - SPEED C	0.31334	10-YEAR	181	269	271.75		271.75	0.000079	0.49	700.67	417.18	0.1
043765 - SPEED C	0.31334	5-YEAR	153	269	271.32		271.33	0.000124	0.55	526.22	389.89	0.12
043765 - SPEED C	0.31334	2-YEAR	110	269	270.86		270.87	0.000176	0.57	365.49	320.19	0.13
043765 - SPEED C	0.15982	RReg	679	269	273.16		273.19	0.000165	0.94	1279.47	441.25	0.15
043765 - SPEED C	0.15982	100-YEAR	269	269	272.79		272.8	0.000039	0.43	1116.47	437.3	0.07
043765 - SPEED C	0.15982	50-YEAR	240	269	272.46		272.47	0.000045	0.43	973.41	422.73	0.08
043765 - SPEED C	0.15982	20-YEAR	209	269	272.07		272.07	0.000057	0.45	809.55	407.25	0.08
043765 - SPEED C	0.15982	10-YEAR	181	269	271.74		271.74	0.00007	0.46	678	388.93	0.09
043765 - SPEED C	0.15982	5-YEAR	153	269	271.3		271.31	0.000106	0.51	516.36	357.39	0.11
043765 - SPEED C	0.15982	2-YEAR	110	269	270.84		270.85	0.000149	0.52	358.56	318.82	0.12
043765 - SPEED C	0.12087	RReg	679	269	273.15		273.18	0.000215	1.08	1187.01	449.19	0.17
043765 - SPEED C	0.12087	100-YEAR	269	269	272.79		272.79	0.000052	0.5	1025.81	445.22	0.08
043765 - SPEED C	0.12087	50-YEAR	240	269	272.46		272.46	0.000065	0.52	879.35	440.92	0.09
043765 - SPEED C	0.12087	20-YEAR	209	269	272.06		272.07	0.000091	0.57	705.67	433.91	0.1
043765 - SPEED C	0.12087	10-YEAR	181	269	271.73		271.74	0.000121	0.61	564.68	415	0.12
043765 - SPEED C	0.12087	5-YEAR	153	269	271.29		271.3	0.000215	0.72	388.7	366.29	0.15
043765 - SPEED C	0.12087	2-YEAR	110	269	270.81		270.84	0.000347	0.79	232.06	284.34	0.19
043765 - SPEED C	0.094	RReg	679	269	273.14		273.17	0.00026	1.18	1114.15	451.87	0.19
043765 - SPEED C	0.094	100-YEAR	269	269	272.78		272.79	0.000063	0.55	957.33	442.64	0.09
043765 - SPEED C	0.094	50-YEAR	240	269	272.45		272.46	0.000079	0.58	812.48	428.18	0.1
043765 - SPEED C	0.094	20-YEAR	209	269	272.05		272.07	0.000115	0.64	643.65	419.22	0.12
043765 - SPEED C	0.094	10-YEAR	181	269	271.72		271.73	0.000159	0.7	506.53	402.82	0.14
043765 - SPEED C	0.094	5-YEAR	153	269	271.27		271.3	0.000309	0.86	331.46	366.88	0.18
043765 - SPEED C	0.094	2-YEAR	110	269	270.79		270.83	0.000436	0.88	191.54	206.34	0.21
043765 - SPEED C	0.0701	RReg	679	268.47	273.12		273.16	0.000279	1.28	1092.42	470.94	0.19
043765 - SPEED C	0.0701	100-YEAR	269	268.47	272.78		272.79	0.000065	0.59	938.49	440.09	0.09
043765 - SPEED C	0.0701	50-YEAR	240	268.47	272.45		272.46	0.000083	0.62	793.31	434.45	0.1
043765 - SPEED C	0.0701	20-YEAR	209	268.47	272.05		272.06	0.000122	0.7	619.67	431.36	0.12
043765 - SPEED C	0.0701	10-YEAR	181	268.47	271.71		271.73	0.000171	0.77	477.15	413.7	0.14
043765 - SPEED C	0.0701	5-YEAR	153	268.47	271.25		271.29	0.000318	0.94	293.74	374.79	0.19
043765 - SPEED C	0.0701	2-YEAR	110	268.47	270.78		270.81	0.000379	0.9	173.64	151.75	0.2
043765 - SPEED C	0.05299	RReg	679	268.47	273.12		273.16	0.000282	1.28	1094.57	454.2	0.2
043765 - SPEED C	0.05299	100-YEAR	269	268.47	272.78		272.79	0.000068	0.6	941.4	448.77	0.09
043765 - SPEED C	0.05299	50-YEAR	240	268.47	272.45		272.46	0.000087	0.64	793.71	440.23	0.11
043765 - SPEED C	0.05299	20-YEAR	209	268.47	272.05		272.06	0.000129	0.72	618.53	432.37	0.13
043765 - SPEED C	0.05299	10-YEAR	181	268.47	271.71		271.73	0.000185	0.8	474.55	418.24	0.15
043765 - SPEED C	0.05299	5-YEAR	153	268.47	271.25		271.28	0.000332	0.96	291.62	336	0.19
043765 - SPEED C	0.05299	2-YEAR	110	268.47	270.77		270.81	0.000417	0.94	172.03	147.37	0.21
043765 - SPEED C	-0.00068	RReg	679	269	273.1		273.14	0.000367	1.39	1009.85	447.83	0.22
043765 - SPEED C	-0.00068	100-YEAR	269	269	272.78		272.79	0.000088	0.64	869.84	434.11	0.11
043765 - SPEED C	-0.00068	50-YEAR	240	269	272.44		272.45	0.000118	0.7	724.85	432.2	0.12
043765 - SPEED C	-0.00068	20-YEAR	209	269	272.03		272.05	0.000189	0.82	549.48	428.79	0.15
043765 - SPEED C	-0.00068	10-YEAR	181	269	271.68		271.71	0.000295	0.94	404.08	410.47	0.18
043765 - SPEED C	-0.00068	5-YEAR	153	269	271.22		271.26	0.000504	1.08	245.23	270.42	0.23
043765 - SPEED C	-0.00068	2-YEAR	110	269	270.73		270.78	0.000757	1.12	143.77	149.8	0.27
043765 - SPEED C	-0.01875	RReg	679	269	273.09		273.13	0.000386	1.43	1007.37	475.29	0.23
043765 - SPEED C	-0.01875	100-YEAR	269	269	272.77		272.78	0.000094	0.67	860.51	462.32	0.11
043765 - SPEED C	-0.01875	50-YEAR	240	269	272.44		272.45	0.000128	0.74	707.07	451.31	0.13
043765 - SPEED C	-0.01875	20-YEAR	209	269	272.03		272.05	0.00021	0.86	525.28	432.44	0.16
043765 - SPEED C	-0.01875	10-YEAR	181	269	271.67		271.71	0.000326	0.99	380.04	403.53	0.19
043765 - SPEED C	-0.01875	5-YEAR	153	269	271.21		271.25	0.000532	1.11	230.16	237.67	0.24
043765 - SPEED C	-0.01875	2-YEAR	110	269	270.71		270.76	0.000838	1.17	136.35	148.19	0.29
043765 - SPEED C	-0.04386	RReg	679	269	273.08		273.12	0.000392	1.44	1003.13	481.23	0.23
043765 - SPEED C	-0.04386	100-YEAR	269	269	272.77		272.78	0.000095	0.67	858.47	467.62	0.11
043765 - SPEED C	-0.04386	50-YEAR	240	269	272.43		272.45	0.00013	0.74	703.74	451.2	0.13
043765 - SPEED C	-0.04386	20-YEAR	209	269	272.02		272.04	0.000212	0.87	522.68	428.2	0.16
043765 - SPEED C	-0.04386	10-YEAR	181	269	271.67		271.7	0.000337	1	375.73	407.66	0.2
043765 - SPEED C	-0.04386	5-YEAR	153	269	271.19		271.24	0.000563	1.14	226.98	235.7	0.25
043765 - SPEED C	-0.04386	2-YEAR	110	269	270.68		270.74	0.000941	1.23	131.84	153.53	0.3
043765 - SPEED C	-0.05947	RReg	679	269	273.07		273.12	0.000378	1.41	1027.87	485.71	0.22
043765 - SPEED C	-0.05947	100-YEAR	269	269	272.77		272.78	0.000091	0.66	882.96	474.16	0.11
043765 - SPEED C	-0.05947	50-YEAR	240	269	272.43		272.45	0.000125	0.72	725.18	458.73	0.12
043765 - SPEED C	-0.05947	20-YEAR	209	269	272.02		272.04	0.000207	0.85	539.25	440.61	0.16
043765 - SPEED C	-0.05947	10-YEAR	181	269	271.66		271.69	0.000341	1	385.41	423.81	0.2
043765 - SPEED C	-0.05947	5-YEAR	153	269	271.18		271.23	0.000591	1.15	230.45	245.39	0.25
043765 - SPEED C	-0.05947	2-YEAR	110	269	270.65		270.72	0.00108	1.29	127.79	161.27	0.32
043765 - SPEED C	-0.10788	RReg	679	268.5	273.06		273.1	0.000269	1.28	1163.74	494.46	0.19
043765 - SPEED C	-0.10788	100-YEAR	269	268.5	272.77		272.78	0.000062	0.59	1018.29	490.25	0.09
043765 - SPEED C	-0.10788	50-YEAR	240	268.5	272.43		272.44	0.000081	0.64	853.53	485.48	0.1
043765 - SPEED C	-0.10788	20-YEAR	209	268.5	272.02		272.03	0.000124	0.73	654.1	478.02	0.12
043765 - SPEED C	-0.10788	10-YEAR	181	268.5	271.66		271.68	0.000188	0.84	485.71	464.81	0.15
043765 - SPEED C	-0.10788	5-YEAR	153	268.5	271.17		271.2	0.000315	0.97	301.95	306.09	0.19
043765 - SPEED C	-0.10788	2-YEAR	110	268.5	270.64		270.68	0.000494	1.05	172.19	205.81	0.23
043765 - SPEED C	-0.13175	RReg	679	268.5	273.06		273.09	0.000233	1.2	1243.53	523.38	0.18
043765 - SPEED C	-0.13175	100-YEAR	269	268.5	272.77		272.77	0.000053	0.54	1091.6	514.3	0.08
043765 - SPEED C	-0.13175	50-YEAR	240	268.5	272.43		272.44	0.000068	0.59	919.15	507.74	0.09
043765 - SPEED C	-0.13175	20-YEAR	209	268.5	272.01		272.03	0.000105	0.67	709.52	504.14	0.11
043765 - SPEED C	-0.13175	10-YEAR	181	268.5	271.66		271.67	0.000156	0.76	532.93	483.65	0.14
043765 - SPEED C	-0.13175	5-YEAR	153	268.5	271.17		271.19	0.000272	0.9	334.04	357.35	0.18
043765 - SPEED C	-0.13175	2-YEAR	110	268.5	270.63		270.67	0.000459	1.01	176.51	243.52	0.22
043765 - SPEED C	-0.15642	RReg	679	268.5	273.06		273.08	0.000229	1.18	1306.13	543.68	0.18
043765 - SPEED C	-0.15642	100-YEAR	269	268.5	272.77		272.77	0.000052	0.54	1148.69	536.57	0.08
043765 - SPEED C	-0.15642	50-YEAR	240	268.5	272.43		272.44	0.000068	0.59	968.63	529.85	0.09
043765 - SPEED C	-0.15642	20-YEAR	209	268.5	272.01		272.02	0.000107	0.68	749.38	526.83	0.12
043765 - SPEED C	-0.15642	10-YEAR	181	268.5	271.65		271.67	0.000164	0.78	565.36	500.09	0.14
043765 - SPEED C	-0.15642	5-YEAR	153	268.5	271.16		271.19	0.000316	0.97	348.98	388.11	0.19
043765 - SPEED C	-0.15642	2-YEAR	110	268.5	270.59		270.65	0.0007	1.23	156.18	304.13	0.27
043765 - SPEED C	-0.17246	RReg	679	268.5	273.06		273.08	0.000218	1.15	1344.22	557.36	0.17
043765 - SPEED C	-0.17246	100-YEAR	269	268.5	272.77		272.77	0.00005	0.53	1183.51	552.26	0.08
043765 - SPEED C	-0.17246	50-YEAR	240	268.5	272.43		272.43	0.000066	0.57	997.49	547.91	0.09
043765 - SPEED C	-0.17246	20-YEAR	209	268.5	272.01		272.02	0.000104	0.67	770.91	542.97	0.11
043765 - SPEED C	-0.17246	10-YEAR	181	268.5	271.65		271.67	0.00016	0.77	580.74	515.8	0.14
043765 - SPEED C	-0.17246	5-YEAR	153	268.5	271.15		271.18	0.000333	0.99	349.86	413.25	0.19
043765 - SPEED C	-0.17246	2-YEAR	110	268.5	270.57		270.64	0.000781	1.29	145.66	275.62	0.29
043765 - SPEED C	-0.18271	RReg	679	268.5	273.05		273.08	0.0002	1.1	1379.54	568.72	0.17

Project Name: Blair Preston Trail and Pedestrian Bridge
Project No.: 300043764
Watershed: Credit Valley Conservation (CVC)
River: Speed
Reach: Speed C

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Exising Condition HEC-RAS Hydraulic Output Summary

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
043765 - SPEED C	-0.18271	100-YEAR	269	268.5	272.77		272.77	0.000046	0.51	1215.98	565.35	0.08
043765 - SPEED C	-0.18271	50-YEAR	240	268.5	272.43		272.43	0.00006	0.55	1025.2	562.43	0.09
043765 - SPEED C	-0.18271	20-YEAR	209	268.5	272.01		272.02	0.000095	0.64	792.18	558.62	0.11
043765 - SPEED C	-0.18271	10-YEAR	181	268.5	271.65		271.66	0.000146	0.74	594.58	530.07	0.13
043765 - SPEED C	-0.18271	5-YEAR	153	268.5	271.15		271.18	0.000309	0.95	352.48	447.1	0.19
043765 - SPEED C	-0.18271	2-YEAR	110	268.5	270.57		270.63	0.000661	1.18	147.04	253.36	0.26
043765 - SPEED C	-0.20982	RReg	679	268.5	273.05		273.07	0.000189	1.07	1442.24	594.51	0.16
043765 - SPEED C	-0.20982	100-YEAR	269	268.5	272.76		272.77	0.000043	0.49	1272.78	590.69	0.08
043765 - SPEED C	-0.20982	50-YEAR	240	268.5	272.43		272.43	0.000057	0.53	1073.49	586.48	0.09
043765 - SPEED C	-0.20982	20-YEAR	209	268.5	272.01		272.02	0.00009	0.62	830.3	581.64	0.11
043765 - SPEED C	-0.20982	10-YEAR	181	268.5	271.65		271.66	0.000144	0.73	622.3	569.16	0.13
043765 - SPEED C	-0.20982	5-YEAR	153	268.5	271.14		271.17	0.000332	0.99	359.48	483.54	0.19
043765 - SPEED C	-0.20982	2-YEAR	110	268.5	270.56		270.61	0.000611	1.13	167.5	213.39	0.25
043765 - SPEED C	-0.25373	RReg	679	268.5	273.04		273.06	0.000164	1	1506.95	620.99	0.15
043765 - SPEED C	-0.25373	100-YEAR	269	268.5	272.76		272.77	0.000037	0.46	1333.08	619.3	0.07
043765 - SPEED C	-0.25373	50-YEAR	240	268.5	272.42		272.43	0.000049	0.5	1123.38	617.35	0.08
043765 - SPEED C	-0.25373	20-YEAR	209	268.5	272.01		272.01	0.000077	0.58	865.95	615.32	0.1
043765 - SPEED C	-0.25373	10-YEAR	181	268.5	271.64		271.65	0.000122	0.68	644.51	603.1	0.12
043765 - SPEED C	-0.25373	5-YEAR	153	268.5	271.13		271.16	0.000245	0.85	360.8	505.75	0.17
043765 - SPEED C	-0.25373	2-YEAR	110	268.5	270.55		270.59	0.000454	0.98	184.11	219.45	0.22
043765 - SPEED C	-0.38199	RReg	679	268.5	273.03	270.98	273.04	0.000118	0.84	1787.28	728.83	0.13
043765 - SPEED C	-0.38199	100-YEAR	269	268.5	272.76	270.25	272.76	0.000026	0.38	1590.64	727.57	0.06
043765 - SPEED C	-0.38199	50-YEAR	240	268.5	272.42	269.89	272.42	0.000035	0.42	1343.4	726.06	0.07
043765 - SPEED C	-0.38199	20-YEAR	209	268.5	272	269.77	272.01	0.000055	0.48	1038.86	717.21	0.08
043765 - SPEED C	-0.38199	10-YEAR	181	268.5	271.63	269.66	271.64	0.00009	0.57	774.57	712.39	0.1
043765 - SPEED C	-0.38199	5-YEAR	153	268.5	271.11	269.54	271.13	0.000184	0.73	433.69	576.9	0.14
043765 - SPEED C	-0.38199	2-YEAR	110	268.5	270.49	269.34	270.53	0.000444	0.94	194.7	270.18	0.21

Project Name: Blair Preston Trail and Pedestrian Bridge
Project No.: 300043764
Watershed: Credit Valley Conservation (CVC)
River: Speed
Reach: Speed C

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Proposed Condition HEC-RAS Hydraulic Output Summary

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
043765 - SPEED C	0.31334	RReg	679	269	273.2		273.22	0.000165	0.95	1318.7	428.92	0.15
043765 - SPEED C	0.31334	100-YEAR	269	269	272.8		272.81	0.00004	0.44	1146.17	426.8	0.07
043765 - SPEED C	0.31334	50-YEAR	240	269	272.47		272.48	0.000047	0.45	1006.44	425.14	0.08
043765 - SPEED C	0.31334	20-YEAR	209	269	272.08		272.09	0.000062	0.47	840.19	422.15	0.09
043765 - SPEED C	0.31334	10-YEAR	181	269	271.76		271.76	0.000077	0.49	704.9	417.31	0.09
043765 - SPEED C	0.31334	5-YEAR	153	269	271.33		271.34	0.000122	0.55	530.56	391.56	0.12
043765 - SPEED C	0.31334	2-YEAR	110	269	270.87		270.88	0.000173	0.56	367.61	320.44	0.13
043765 - SPEED C	0.15982	RReg	679	269	273.18		273.2	0.000163	0.94	1285.19	441.39	0.15
043765 - SPEED C	0.15982	100-YEAR	269	269	272.79		272.8	0.000039	0.43	1117.7	437.33	0.07
043765 - SPEED C	0.15982	50-YEAR	240	269	272.47		272.47	0.000045	0.43	974.75	422.87	0.07
043765 - SPEED C	0.15982	20-YEAR	209	269	272.07		272.08	0.000057	0.45	811.02	407.39	0.08
043765 - SPEED C	0.15982	10-YEAR	181	269	271.75		271.75	0.000069	0.46	682.02	389.4	0.09
043765 - SPEED C	0.15982	5-YEAR	153	269	271.32		271.32	0.000104	0.5	520.47	358.02	0.11
043765 - SPEED C	0.15982	2-YEAR	110	269	270.84		270.85	0.000146	0.51	360.8	319.19	0.12
043765 - SPEED C	0.12087	RReg	679	269	273.16		273.19	0.000212	1.07	1192.93	449.45	0.17
043765 - SPEED C	0.12087	100-YEAR	269	269	272.79		272.8	0.000052	0.5	1027.07	445.25	0.08
043765 - SPEED C	0.12087	50-YEAR	240	269	272.46		272.47	0.000064	0.52	880.76	440.98	0.09
043765 - SPEED C	0.12087	20-YEAR	209	269	272.06		272.07	0.000091	0.57	707.25	433.97	0.1
043765 - SPEED C	0.12087	10-YEAR	181	269	271.74		271.75	0.000119	0.61	569.04	415.37	0.12
043765 - SPEED C	0.12087	5-YEAR	153	269	271.3		271.32	0.000209	0.72	393.07	368.36	0.15
043765 - SPEED C	0.12087	2-YEAR	110	269	270.82		270.84	0.000343	0.79	234.12	292.37	0.19
043765 - SPEED C	0.094	RReg	679	269	273.15		273.18	0.000256	1.18	1120.21	452.25	0.18
043765 - SPEED C	0.094	100-YEAR	269	269	272.79		272.8	0.000063	0.55	958.59	442.71	0.09
043765 - SPEED C	0.094	50-YEAR	240	269	272.46		272.47	0.000079	0.58	813.86	428.33	0.1
043765 - SPEED C	0.094	20-YEAR	209	269	272.06		272.07	0.000114	0.64	645.2	419.3	0.12
043765 - SPEED C	0.094	10-YEAR	181	269	271.73		271.74	0.000156	0.69	510.84	403.07	0.13
043765 - SPEED C	0.094	5-YEAR	153	269	271.28		271.31	0.0003	0.85	336.04	368.4	0.18
043765 - SPEED C	0.094	2-YEAR	110	269	270.8		270.83	0.000428	0.87	193.12	207.41	0.21
043765 - SPEED C	0.0701	RReg	679	268.47	273.14	271.15	273.18	0.000275	1.27	1098.29	471.4	0.19
043765 - SPEED C	0.0701	100-YEAR	269	268.47	272.78	270.17	272.79	0.000065	0.58	939.64	440.14	0.09
043765 - SPEED C	0.0701	50-YEAR	240	268.47	272.45	270.07	272.46	0.000083	0.62	794.59	434.47	0.1
043765 - SPEED C	0.0701	20-YEAR	209	268.47	272.05	269.97	272.07	0.000121	0.7	621.05	431.38	0.12
043765 - SPEED C	0.0701	10-YEAR	181	268.47	271.72	269.88	271.74	0.000167	0.77	481.27	414.02	0.14
043765 - SPEED C	0.0701	5-YEAR	153	268.47	271.26	269.76	271.3	0.000312	0.94	297.83	380.23	0.19
043765 - SPEED C	0.0701	2-YEAR	110	268.47	270.79	269.55	270.82	0.000374	0.89	174.74	152.31	0.2
043765 - SPEED C	0.06155		Bridge									
043765 - SPEED C	0.05299	RReg	679	268.47	273.12		273.16	0.000281	1.28	1095.15	454.21	0.2
043765 - SPEED C	0.05299	100-YEAR	269	268.47	272.78		272.79	0.000068	0.6	941.51	448.79	0.09
043765 - SPEED C	0.05299	50-YEAR	240	268.47	272.45		272.46	0.000087	0.64	793.88	440.24	0.11
043765 - SPEED C	0.05299	20-YEAR	209	268.47	272.05		272.06	0.000129	0.72	618.92	432.38	0.13
043765 - SPEED C	0.05299	10-YEAR	181	268.47	271.71		271.73	0.000185	0.8	475.24	418.28	0.15
043765 - SPEED C	0.05299	5-YEAR	153	268.47	271.25		271.28	0.000331	0.96	292.17	336.59	0.19
043765 - SPEED C	0.05299	2-YEAR	110	268.47	270.77		270.81	0.000414	0.93	172.47	147.55	0.21
043765 - SPEED C	-0.00068	RReg	679	269	273.1		273.14	0.000367	1.39	1009.85	447.83	0.22
043765 - SPEED C	-0.00068	100-YEAR	269	269	272.78		272.79	0.000088	0.64	869.84	434.11	0.11
043765 - SPEED C	-0.00068	50-YEAR	240	269	272.44		272.45	0.000118	0.7	724.85	432.2	0.12
043765 - SPEED C	-0.00068	20-YEAR	209	269	272.03		272.05	0.000189	0.82	549.48	428.79	0.15
043765 - SPEED C	-0.00068	10-YEAR	181	269	271.68		271.71	0.000295	0.94	404.08	410.47	0.18
043765 - SPEED C	-0.00068	5-YEAR	153	269	271.22		271.26	0.000504	1.08	245.23	270.42	0.23
043765 - SPEED C	-0.00068	2-YEAR	110	269	270.73		270.78	0.000757	1.12	143.77	149.8	0.27
043765 - SPEED C	-0.01875	RReg	679	269	273.09		273.13	0.000386	1.43	1007.37	475.29	0.23
043765 - SPEED C	-0.01875	100-YEAR	269	269	272.77		272.78	0.000094	0.67	860.51	462.32	0.11
043765 - SPEED C	-0.01875	50-YEAR	240	269	272.44		272.45	0.000128	0.74	707.07	451.31	0.13
043765 - SPEED C	-0.01875	20-YEAR	209	269	272.03		272.05	0.00021	0.86	525.28	432.44	0.16
043765 - SPEED C	-0.01875	10-YEAR	181	269	271.67		271.71	0.000326	0.99	380.04	403.53	0.19
043765 - SPEED C	-0.01875	5-YEAR	153	269	271.21		271.25	0.000532	1.11	230.16	237.67	0.24
043765 - SPEED C	-0.01875	2-YEAR	110	269	270.71		270.76	0.000838	1.17	136.35	148.19	0.29
043765 - SPEED C	-0.04386	RReg	679	269	273.08		273.12	0.000392	1.44	1003.13	481.23	0.23
043765 - SPEED C	-0.04386	100-YEAR	269	269	272.77		272.78	0.000095	0.67	858.47	467.62	0.11
043765 - SPEED C	-0.04386	50-YEAR	240	269	272.43		272.45	0.00013	0.74	703.74	451.2	0.13
043765 - SPEED C	-0.04386	20-YEAR	209	269	272.02		272.04	0.000212	0.87	522.68	428.2	0.16
043765 - SPEED C	-0.04386	10-YEAR	181	269	271.67		271.7	0.000337	1	375.73	407.66	0.2
043765 - SPEED C	-0.04386	5-YEAR	153	269	271.19		271.24	0.000563	1.14	226.98	235.7	0.25
043765 - SPEED C	-0.04386	2-YEAR	110	269	270.68		270.74	0.000941	1.23	131.84	153.53	0.3
043765 - SPEED C	-0.05947	RReg	679	269	273.07		273.12	0.000378	1.41	1027.87	485.71	0.22
043765 - SPEED C	-0.05947	100-YEAR	269	269	272.77		272.78	0.000091	0.66	882.96	474.16	0.11
043765 - SPEED C	-0.05947	50-YEAR	240	269	272.43		272.45	0.000125	0.72	725.18	458.73	0.12
043765 - SPEED C	-0.05947	20-YEAR	209	269	272.02		272.04	0.000207	0.85	539.25	440.61	0.16
043765 - SPEED C	-0.05947	10-YEAR	181	269	271.66		271.69	0.000341	1	385.41	423.81	0.2
043765 - SPEED C	-0.05947	5-YEAR	153	269	271.18		271.23	0.000591	1.15	230.45	245.39	0.25
043765 - SPEED C	-0.05947	2-YEAR	110	269	270.65		270.72	0.00108	1.29	127.79	161.27	0.32
043765 - SPEED C	-0.10788	RReg	679	268.5	273.06		273.1	0.000269	1.28	1163.74	494.46	0.19
043765 - SPEED C	-0.10788	100-YEAR	269	268.5	272.77		272.78	0.000062	0.59	1018.29	490.25	0.09
043765 - SPEED C	-0.10788	50-YEAR	240	268.5	272.43		272.44	0.000081	0.64	853.53	485.48	0.1
043765 - SPEED C	-0.10788	20-YEAR	209	268.5	272.02		272.03	0.000124	0.73	654.1	478.02	0.12
043765 - SPEED C	-0.10788	10-YEAR	181	268.5	271.66		271.68	0.000188	0.84	485.71	464.81	0.15
043765 - SPEED C	-0.10788	5-YEAR	153	268.5	271.17		271.2	0.000315	0.97	301.95	306.09	0.19
043765 - SPEED C	-0.10788	2-YEAR	110	268.5	270.64		270.68	0.000494	1.05	172.19	205.81	0.23
043765 - SPEED C	-0.13175	RReg	679	268.5	273.06		273.09	0.000233	1.2	1243.53	523.38	0.18
043765 - SPEED C	-0.13175	100-YEAR	269	268.5	272.77		272.77	0.000053	0.54	1091.6	514.3	0.08
043765 - SPEED C	-0.13175	50-YEAR	240	268.5	272.43		272.44	0.000068	0.59	919.15	507.74	0.09
043765 - SPEED C	-0.13175	20-YEAR	209	268.5	272.01		272.03	0.000105	0.67	709.52	504.14	0.11
043765 - SPEED C	-0.13175	10-YEAR	181	268.5	271.66		271.67	0.000156	0.76	532.93	483.65	0.14
043765 - SPEED C	-0.13175	5-YEAR	153	268.5	271.17		271.19	0.000272	0.9	334.04	357.35	0.18
043765 - SPEED C	-0.13175	2-YEAR	110	268.5	270.63		270.67	0.000459	1.01	176.51	243.52	0.22
043765 - SPEED C	-0.15642	RReg	679	268.5	273.06		273.08	0.000229	1.18	1306.13	543.68	0.18
043765 - SPEED C	-0.15642	100-YEAR	269	268.5	272.77		272.77	0.000052	0.54	1148.69	536.57	0.08
043765 - SPEED C	-0.15642	50-YEAR	240	268.5	272.43		272.44	0.000068	0.59	968.63	529.85	0.09
043765 - SPEED C	-0.15642	20-YEAR	209	268.5	272.01		272.02	0.000107	0.68	749.38	526.83	0.12
043765 - SPEED C	-0.15642	10-YEAR	181	268.5	271.65		271.67	0.000164	0.78	565.36	500.09	0.14
043765 - SPEED C	-0.15642	5-YEAR	153	268.5	271.16		271.19	0.000316	0.97	348.98	388.11	0.19
043765 - SPEED C	-0.15642	2-YEAR	110	268.5	270.59		270.65	0.0007	1.23	156.18	304.13	0.27
043765 - SPEED C	-0.17246	RReg	679	268.5	273.06		273.08	0.000218	1.15	1344.22	557.36	0.17
043765 - SPEED C	-0.17246	100-YEAR	269	268.5	272.77		272.77	0.00005	0.53	1183.51	552.26	0.08
043765 - SPEED C	-0.17246	50-YEAR	240	268.5	272.43		272.43	0.000066	0.57	997.49	547.91	0.09
043765 - SPEED C	-0.17246	20-YEAR	209	268.5	272.01		272.02	0.000104	0.67	770.91	542.97	0.11
043765 - SPEED C	-0.17246	10-YEAR	181	268.5	271.65		271.67	0.00016	0.77	580.74	515.8	0.14
043765 - SPEED C	-0.17246	5-YEAR	153	268.5	271.15		271.18	0.000333	0.99	349.86	413.25	0.19
043765 - SPEED C	-0.17246	2-YEAR	110	268.5	270.57		270.64	0.000781	1.29	145.66	275.62	0.29

Project Name: Blair Preston Trail and Pedestrian Bridge
Project No.: 300043764
Watershed: Credit Valley Conservation (CVC)
River: Speed
Reach: Speed C

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Proposed Condition HEC-RAS Hydraulic Output Summary

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
043765 - SPEED C	-0.18271	RReg	679	268.5	273.05		273.08	0.0002	1.1	1379.54	568.72	0.17
043765 - SPEED C	-0.18271	100-YEAR	269	268.5	272.77		272.77	0.000046	0.51	1215.98	565.35	0.08
043765 - SPEED C	-0.18271	50-YEAR	240	268.5	272.43		272.43	0.00006	0.55	1025.2	562.43	0.09
043765 - SPEED C	-0.18271	20-YEAR	209	268.5	272.01		272.02	0.000095	0.64	792.18	558.62	0.11
043765 - SPEED C	-0.18271	10-YEAR	181	268.5	271.65		271.66	0.000146	0.74	594.58	530.07	0.13
043765 - SPEED C	-0.18271	5-YEAR	153	268.5	271.15		271.18	0.000309	0.95	352.48	447.1	0.19
043765 - SPEED C	-0.18271	2-YEAR	110	268.5	270.57		270.63	0.000661	1.18	147.04	253.36	0.26
043765 - SPEED C	-0.20982	RReg	679	268.5	273.05		273.07	0.000189	1.07	1442.24	594.51	0.16
043765 - SPEED C	-0.20982	100-YEAR	269	268.5	272.76		272.77	0.000043	0.49	1272.78	590.69	0.08
043765 - SPEED C	-0.20982	50-YEAR	240	268.5	272.43		272.43	0.000057	0.53	1073.49	586.48	0.09
043765 - SPEED C	-0.20982	20-YEAR	209	268.5	272.01		272.02	0.00009	0.62	830.3	581.64	0.11
043765 - SPEED C	-0.20982	10-YEAR	181	268.5	271.65		271.66	0.000144	0.73	622.3	569.16	0.13
043765 - SPEED C	-0.20982	5-YEAR	153	268.5	271.14		271.17	0.000332	0.99	359.48	483.54	0.19
043765 - SPEED C	-0.20982	2-YEAR	110	268.5	270.56		270.61	0.000611	1.13	167.5	213.39	0.25
043765 - SPEED C	-0.25373	RReg	679	268.5	273.04		273.06	0.000164	1	1506.95	620.99	0.15
043765 - SPEED C	-0.25373	100-YEAR	269	268.5	272.76		272.77	0.000037	0.46	1333.08	619.3	0.07
043765 - SPEED C	-0.25373	50-YEAR	240	268.5	272.42		272.43	0.000049	0.5	1123.38	617.35	0.08
043765 - SPEED C	-0.25373	20-YEAR	209	268.5	272.01		272.01	0.000077	0.58	865.95	615.32	0.1
043765 - SPEED C	-0.25373	10-YEAR	181	268.5	271.64		271.65	0.000122	0.68	644.51	603.1	0.12
043765 - SPEED C	-0.25373	5-YEAR	153	268.5	271.13		271.16	0.000245	0.85	360.8	505.75	0.17
043765 - SPEED C	-0.25373	2-YEAR	110	268.5	270.55		270.59	0.000454	0.98	184.11	219.45	0.22
043765 - SPEED C	-0.38199	RReg	679	268.5	273.03	270.98	273.04	0.000118	0.84	1787.28	728.83	0.13
043765 - SPEED C	-0.38199	100-YEAR	269	268.5	272.76	270.25	272.76	0.000026	0.38	1590.64	727.57	0.06
043765 - SPEED C	-0.38199	50-YEAR	240	268.5	272.42	269.89	272.42	0.000035	0.42	1343.4	726.06	0.07
043765 - SPEED C	-0.38199	20-YEAR	209	268.5	272	269.77	272.01	0.000055	0.48	1038.86	717.21	0.08
043765 - SPEED C	-0.38199	10-YEAR	181	268.5	271.63	269.66	271.64	0.00009	0.57	774.57	712.39	0.1
043765 - SPEED C	-0.38199	5-YEAR	153	268.5	271.11	269.54	271.13	0.000184	0.73	433.69	576.9	0.14
043765 - SPEED C	-0.38199	2-YEAR	110	268.5	270.49	269.34	270.53	0.000444	0.94	194.7	270.18	0.21

Project Name: Blair Preston Trail and Pedestrian Bridge
Project No.: 300043764
Watershed: Credit Valley Conservation (CVC)
River: Speed
Reach: Speed C

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HEC-RAS Hydraulic Output Comparison Summary (Existing vs Proposed Conditions)

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	Existing W.S. Elev (m)	Proposed W.S. Elev (m)	Diff (m)	Existing Vel Chnl (m/s)	Proposed Vel Chnl (m/s)	Diff (m)
043765 - SPEED C	0.31334	RReg	679	269	273.19	273.2	0.01	0.95	0.95	0
043765 - SPEED C	0.31334	100-YEAR	269	269	272.8	272.8	0	0.44	0.44	0
043765 - SPEED C	0.31334	50-YEAR	240	269	272.47	272.47	0	0.45	0.45	0
043765 - SPEED C	0.31334	20-YEAR	209	269	272.08	272.08	0	0.47	0.47	0
043765 - SPEED C	0.31334	10-YEAR	181	269	271.75	271.76	0.01	0.49	0.49	0
043765 - SPEED C	0.31334	5-YEAR	153	269	271.32	271.33	0.01	0.55	0.55	0
043765 - SPEED C	0.31334	2-YEAR	110	269	270.86	270.87	0.01	0.57	0.56	-0.01
043765 - SPEED C	0.15982	RReg	679	269	273.16	273.18	0.02	0.94	0.94	0
043765 - SPEED C	0.15982	100-YEAR	269	269	272.79	272.79	0	0.43	0.43	0
043765 - SPEED C	0.15982	50-YEAR	240	269	272.46	272.47	0.01	0.43	0.43	0
043765 - SPEED C	0.15982	20-YEAR	209	269	272.07	272.07	0	0.45	0.45	0
043765 - SPEED C	0.15982	10-YEAR	181	269	271.74	271.75	0.01	0.46	0.46	0
043765 - SPEED C	0.15982	5-YEAR	153	269	271.3	271.32	0.02	0.51	0.5	-0.01
043765 - SPEED C	0.15982	2-YEAR	110	269	270.84	270.84	0	0.52	0.51	-0.01
043765 - SPEED C	0.12087	RReg	679	269	273.15	273.16	0.01	1.08	1.07	-0.01
043765 - SPEED C	0.12087	100-YEAR	269	269	272.79	272.79	0	0.5	0.5	0
043765 - SPEED C	0.12087	50-YEAR	240	269	272.46	272.46	0	0.52	0.52	0
043765 - SPEED C	0.12087	20-YEAR	209	269	272.06	272.06	0	0.57	0.57	0
043765 - SPEED C	0.12087	10-YEAR	181	269	271.73	271.74	0.01	0.61	0.61	0
043765 - SPEED C	0.12087	5-YEAR	153	269	271.29	271.3	0.01	0.72	0.72	0
043765 - SPEED C	0.12087	2-YEAR	110	269	270.81	270.82	0.01	0.79	0.79	0
043765 - SPEED C	0.094	RReg	679	269	273.14	273.15	0.01	1.18	1.18	0
043765 - SPEED C	0.094	100-YEAR	269	269	272.78	272.79	0.01	0.55	0.55	0
043765 - SPEED C	0.094	50-YEAR	240	269	272.45	272.46	0.01	0.58	0.58	0
043765 - SPEED C	0.094	20-YEAR	209	269	272.05	272.06	0.01	0.64	0.64	0
043765 - SPEED C	0.094	10-YEAR	181	269	271.72	271.73	0.01	0.7	0.69	-0.01
043765 - SPEED C	0.094	5-YEAR	153	269	271.27	271.28	0.01	0.86	0.85	-0.01
043765 - SPEED C	0.094	2-YEAR	110	269	270.79	270.8	0.01	0.88	0.87	-0.01
043765 - SPEED C	0.0701	RReg	679	268.47	273.12	273.14	0.02	1.28	1.27	-0.01
043765 - SPEED C	0.0701	100-YEAR	269	268.47	272.78	272.78	0	0.59	0.58	-0.01
043765 - SPEED C	0.0701	50-YEAR	240	268.47	272.45	272.45	0	0.62	0.62	0
043765 - SPEED C	0.0701	20-YEAR	209	268.47	272.05	272.05	0	0.7	0.7	0
043765 - SPEED C	0.0701	10-YEAR	181	268.47	271.71	271.72	0.01	0.77	0.77	0
043765 - SPEED C	0.0701	5-YEAR	153	268.47	271.25	271.26	0.01	0.94	0.94	0
043765 - SPEED C	0.0701	2-YEAR	110	268.47	270.78	270.79	0.01	0.9	0.89	-0.01
043765 - SPEED C	0.05299	RReg	679	268.47	273.12	273.12	0	1.28	1.28	0
043765 - SPEED C	0.05299	100-YEAR	269	268.47	272.78	272.78	0	0.6	0.6	0
043765 - SPEED C	0.05299	50-YEAR	240	268.47	272.45	272.45	0	0.64	0.64	0
043765 - SPEED C	0.05299	20-YEAR	209	268.47	272.05	272.05	0	0.72	0.72	0
043765 - SPEED C	0.05299	10-YEAR	181	268.47	271.71	271.71	0	0.8	0.8	0
043765 - SPEED C	0.05299	5-YEAR	153	268.47	271.25	271.25	0	0.96	0.96	0
043765 - SPEED C	0.05299	2-YEAR	110	268.47	270.77	270.77	0	0.94	0.93	-0.01
043765 - SPEED C	-0.00068	RReg	679	269	273.1	273.1	0	1.39	1.39	0
043765 - SPEED C	-0.00068	100-YEAR	269	269	272.78	272.78	0	0.64	0.64	0
043765 - SPEED C	-0.00068	50-YEAR	240	269	272.44	272.44	0	0.7	0.7	0
043765 - SPEED C	-0.00068	20-YEAR	209	269	272.03	272.03	0	0.82	0.82	0
043765 - SPEED C	-0.00068	10-YEAR	181	269	271.68	271.68	0	0.94	0.94	0
043765 - SPEED C	-0.00068	5-YEAR	153	269	271.22	271.22	0	1.08	1.08	0
043765 - SPEED C	-0.00068	2-YEAR	110	269	270.73	270.73	0	1.12	1.12	0
043765 - SPEED C	-0.01875	RReg	679	269	273.09	273.09	0	1.43	1.43	0
043765 - SPEED C	-0.01875	100-YEAR	269	269	272.77	272.77	0	0.67	0.67	0
043765 - SPEED C	-0.01875	50-YEAR	240	269	272.44	272.44	0	0.74	0.74	0
043765 - SPEED C	-0.01875	20-YEAR	209	269	272.03	272.03	0	0.86	0.86	0
043765 - SPEED C	-0.01875	10-YEAR	181	269	271.67	271.67	0	0.99	0.99	0
043765 - SPEED C	-0.01875	5-YEAR	153	269	271.21	271.21	0	1.11	1.11	0
043765 - SPEED C	-0.01875	2-YEAR	110	269	270.71	270.71	0	1.17	1.17	0
043765 - SPEED C	-0.04386	RReg	679	269	273.08	273.08	0	1.44	1.44	0
043765 - SPEED C	-0.04386	100-YEAR	269	269	272.77	272.77	0	0.67	0.67	0
043765 - SPEED C	-0.04386	50-YEAR	240	269	272.43	272.43	0	0.74	0.74	0
043765 - SPEED C	-0.04386	20-YEAR	209	269	272.02	272.02	0	0.87	0.87	0
043765 - SPEED C	-0.04386	10-YEAR	181	269	271.67	271.67	0	1	1	0
043765 - SPEED C	-0.04386	5-YEAR	153	269	271.19	271.19	0	1.14	1.14	0
043765 - SPEED C	-0.04386	2-YEAR	110	269	270.68	270.68	0	1.23	1.23	0
043765 - SPEED C	-0.05947	RReg	679	269	273.07	273.07	0	1.41	1.41	0
043765 - SPEED C	-0.05947	100-YEAR	269	269	272.77	272.77	0	0.66	0.66	0
043765 - SPEED C	-0.05947	50-YEAR	240	269	272.43	272.43	0	0.72	0.72	0
043765 - SPEED C	-0.05947	20-YEAR	209	269	272.02	272.02	0	0.85	0.85	0
043765 - SPEED C	-0.05947	10-YEAR	181	269	271.66	271.66	0	1	1	0
043765 - SPEED C	-0.05947	5-YEAR	153	269	271.18	271.18	0	1.15	1.15	0
043765 - SPEED C	-0.05947	2-YEAR	110	269	270.65	270.65	0	1.29	1.29	0
043765 - SPEED C	-0.10788	RReg	679	268.5	273.06	273.06	0	1.28	1.28	0
043765 - SPEED C	-0.10788	100-YEAR	269	268.5	272.77	272.77	0	0.59	0.59	0
043765 - SPEED C	-0.10788	50-YEAR	240	268.5	272.43	272.43	0	0.64	0.64	0
043765 - SPEED C	-0.10788	20-YEAR	209	268.5	272.02	272.02	0	0.73	0.73	0
043765 - SPEED C	-0.10788	10-YEAR	181	268.5	271.66	271.66	0	0.84	0.84	0
043765 - SPEED C	-0.10788	5-YEAR	153	268.5	271.17	271.17	0	0.97	0.97	0
043765 - SPEED C	-0.10788	2-YEAR	110	268.5	270.64	270.64	0	1.05	1.05	0
043765 - SPEED C	-0.13175	RReg	679	268.5	273.06	273.06	0	1.2	1.2	0
043765 - SPEED C	-0.13175	100-YEAR	269	268.5	272.77	272.77	0	0.54	0.54	0
043765 - SPEED C	-0.13175	50-YEAR	240	268.5	272.43	272.43	0	0.59	0.59	0
043765 - SPEED C	-0.13175	20-YEAR	209	268.5	272.01	272.01	0	0.67	0.67	0
043765 - SPEED C	-0.13175	10-YEAR	181	268.5	271.66	271.66	0	0.76	0.76	0
043765 - SPEED C	-0.13175	5-YEAR	153	268.5	271.17	271.17	0	0.9	0.9	0
043765 - SPEED C	-0.13175	2-YEAR	110	268.5	270.63	270.63	0	1.01	1.01	0
043765 - SPEED C	-0.15642	RReg	679	268.5	273.06	273.06	0	1.18	1.18	0
043765 - SPEED C	-0.15642	100-YEAR	269	268.5	272.77	272.77	0	0.54	0.54	0
043765 - SPEED C	-0.15642	50-YEAR	240	268.5	272.43	272.43	0	0.59	0.59	0
043765 - SPEED C	-0.15642	20-YEAR	209	268.5	272.01	272.01	0	0.68	0.68	0
043765 - SPEED C	-0.15642	10-YEAR	181	268.5	271.65	271.65	0	0.78	0.78	0
043765 - SPEED C	-0.15642	5-YEAR	153	268.5	271.16	271.16	0	0.97	0.97	0
043765 - SPEED C	-0.15642	2-YEAR	110	268.5	270.59	270.59	0	1.23	1.23	0
043765 - SPEED C	-0.17246	RReg	679	268.5	273.06	273.06	0	1.15	1.15	0
043765 - SPEED C	-0.17246	100-YEAR	269	268.5	272.77	272.77	0	0.53	0.53	0

Project Name: Blair Preston Trail and Pedestrian Bridge
Project No.: 300043764
Watershed: Credit Valley Conservation (CVC)
River: Speed
Reach: Speed C

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HEC-RAS Hydraulic Output Comparison Summary (Existing vs Proposed Conditions)

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	Existing W.S. Elev (m)	Proposed W.S. Elev (m)	Diff (m)	Existing Vel Chnl (m/s)	Proposed Vel Chnl (m/s)	Diff (m)
043765 - SPEED C	-0.17246	50-YEAR	240	268.5	272.43	272.43	0	0.57	0.57	0
043765 - SPEED C	-0.17246	20-YEAR	209	268.5	272.01	272.01	0	0.67	0.67	0
043765 - SPEED C	-0.17246	10-YEAR	181	268.5	271.65	271.65	0	0.77	0.77	0
043765 - SPEED C	-0.17246	5-YEAR	153	268.5	271.15	271.15	0	0.99	0.99	0
043765 - SPEED C	-0.17246	2-YEAR	110	268.5	270.57	270.57	0	1.29	1.29	0
043765 - SPEED C	-0.18271	RReg	679	268.5	273.05	273.05	0	1.1	1.1	0
043765 - SPEED C	-0.18271	100-YEAR	269	268.5	272.77	272.77	0	0.51	0.51	0
043765 - SPEED C	-0.18271	50-YEAR	240	268.5	272.43	272.43	0	0.55	0.55	0
043765 - SPEED C	-0.18271	20-YEAR	209	268.5	272.01	272.01	0	0.64	0.64	0
043765 - SPEED C	-0.18271	10-YEAR	181	268.5	271.65	271.65	0	0.74	0.74	0
043765 - SPEED C	-0.18271	5-YEAR	153	268.5	271.15	271.15	0	0.95	0.95	0
043765 - SPEED C	-0.18271	2-YEAR	110	268.5	270.57	270.57	0	1.18	1.18	0
043765 - SPEED C	-0.20982	RReg	679	268.5	273.05	273.05	0	1.07	1.07	0
043765 - SPEED C	-0.20982	100-YEAR	269	268.5	272.76	272.76	0	0.49	0.49	0
043765 - SPEED C	-0.20982	50-YEAR	240	268.5	272.43	272.43	0	0.53	0.53	0
043765 - SPEED C	-0.20982	20-YEAR	209	268.5	272.01	272.01	0	0.62	0.62	0
043765 - SPEED C	-0.20982	10-YEAR	181	268.5	271.65	271.65	0	0.73	0.73	0
043765 - SPEED C	-0.20982	5-YEAR	153	268.5	271.14	271.14	0	0.99	0.99	0
043765 - SPEED C	-0.20982	2-YEAR	110	268.5	270.56	270.56	0	1.13	1.13	0
043765 - SPEED C	-0.25373	RReg	679	268.5	273.04	273.04	0	1	1	0
043765 - SPEED C	-0.25373	100-YEAR	269	268.5	272.76	272.76	0	0.46	0.46	0
043765 - SPEED C	-0.25373	50-YEAR	240	268.5	272.42	272.42	0	0.5	0.5	0
043765 - SPEED C	-0.25373	20-YEAR	209	268.5	272.01	272.01	0	0.58	0.58	0
043765 - SPEED C	-0.25373	10-YEAR	181	268.5	271.64	271.64	0	0.68	0.68	0
043765 - SPEED C	-0.25373	5-YEAR	153	268.5	271.13	271.13	0	0.85	0.85	0
043765 - SPEED C	-0.25373	2-YEAR	110	268.5	270.55	270.55	0	0.98	0.98	0
043765 - SPEED C	-0.38199	RReg	679	268.5	273.03	273.03	0	0.84	0.84	0
043765 - SPEED C	-0.38199	100-YEAR	269	268.5	272.76	272.76	0	0.38	0.38	0
043765 - SPEED C	-0.38199	50-YEAR	240	268.5	272.42	272.42	0	0.42	0.42	0
043765 - SPEED C	-0.38199	20-YEAR	209	268.5	272	272	0	0.48	0.48	0
043765 - SPEED C	-0.38199	10-YEAR	181	268.5	271.63	271.63	0	0.57	0.57	0
043765 - SPEED C	-0.38199	5-YEAR	153	268.5	271.11	271.11	0	0.73	0.73	0
043765 - SPEED C	-0.38199	2-YEAR	110	268.5	270.49	270.49	0	0.94	0.94	0

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[THE DIFFERENCE IS OUR PEOPLE]

Appendix G
Stage 2 Archaeological Assessment

STAGE 2 ARCHAEOLOGICAL ASSESSMENT
BLAIR PRESTON PEDESTRIAN BRIDGE AND TRAIL

PART OF LOT 6, BROKEN FRONT BEASLEY LOWER BLOCK
(FORMER TOWNSHIP OF WATERLOO, COUNTY OF WATERLOO)
CITY OF CAMBRIDGE
REGIONAL MUNICIPALITY OF WATERLOO, ONTARIO

ORIGINAL REPORT

Prepared for:

R.J. Burnside & Associates Ltd.
292 Speedvale Avenue, Unit 20
Guelph, ON
N1H 1C4

Archaeological Licence #P1066 (J. Lytle)
MHSTCI PIF# P1066-0173-2020
ASI File: 20EA-174

31 March 2021

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Stage 2 Archaeological Assessment
Blair Preston Pedestrian Bridge and Trail
Part of Lot 6, Broken Front Beasley Lower Block
(Former Township of Waterloo, County of Waterloo)
City of Cambridge
Regional Municipality of Waterloo, Ontario

EXECUTIVE SUMMARY

Archaeological Services Inc. (ASI) was contracted by R.J. Burnside & Associates Ltd., on behalf of the City of Cambridge, to conduct a Stage 2 Archaeological Assessment as part of the Blair Preston Pedestrian Bridge and Trail project in the City of Cambridge, Ontario. The project involves the development of a trail and pedestrian bridge spanning the Speed River to connect the communities of Blair and Preston, through lands owned by ***rare*** Charitable Research Reserve.

A Stage 1 archaeological assessment was conducted as part of the Municipal Class Environmental Assessment for the Blair Preston Pedestrian Bridge and Trail by ASI in 2019. The background research and property inspection determined that parts of the Study Area retained archaeological potential and would require Stage 2 assessment.

The Stage 2 property assessment was conducted by ASI on November 4-5 and 10, 2020, in accordance with the *Ontario Heritage Act* and the *Standards and Guidelines for Consultant Archaeologists*. The Study Area comprises 1.6 hectares (ha) of agricultural field and scrublands adjacent to the Speed River. Approximately 16 % of the Study Area (0.25 ha) was documented as having no archaeological potential due to previous assessment (ASI 2019), and previous deep and pervasive disturbance associated with a sanitary main, water monitoring well, and gravel multi-use path. The remaining 84 % of the Study Area (1.3 ha) demonstrated archaeological potential and was subject to pedestrian survey at one metre intervals and test pit survey at five metre intervals.

During the course of the Stage 2 survey, nine precontact Indigenous findspots (P2, P4, P11, P12, P13, P15, P16, P17, and P23) and six precontact Indigenous sites were encountered (P1, P3, P5, P8, P14, and P18), and one previously registered precontact Indigenous site (AiHc-146) was relocated. Of the seven registered precontact Indigenous sites, including previously registered site AiHc-146, six exhibit further cultural heritage value or interest and meet the requirements for Stage 3 site-specific assessment as per S & G Section 2.2, Standard 1.a.i, and therefore require further work: P1 (AiHc-513), P3 (AiHc-514), P5 (AiHc-515), P14 (AiHc-517), P18 (AiHc-518) and previously registered site AiHc-146.

ASI

PROJECT PERSONNEL

Senior Project Manager:	Lisa Merritt, MSc. (P094) *Partner / Director* *Environmental Assessment Division*
Project Coordinator:	Hannah Brouwers, BA (Hon.) (R1270) *Archaeologist / Project Administrator* *Environmental Assessment Division*
	Katrina Thach, Hon. BA (R1225) *Archaeologist / Project Coordinator* *Environmental Assessment Division*
Project Director (Licensee):	Jessica Lytle, MSc. (P1066) *Lead Archaeologist / Project Manager* *Environmental Assessment Division*
Project Managers:	Caitlin Lacy, BA (R303) *Lead Archaeologist / Project Manager* *Environmental Assessment Division*
	Jessica Lytle
Field Director:	Alanna Martini, BA (R1088) *Associate Archaeologist / Field Director* *Environmental Assessment Division*
Field Archaeologists:	Katelynd Chojnacki, BA Brianne Glaves, BSc. Andrew Lawson, MA Brock Lowry, BA (Hon.)
Artifact Processing:	Kaitlyn McMullen, Hon. BA *Archaeologist / Lab Technician – Laboratory and Fieldwork Services* *Operations Division*
Lithic Analysis and Photography:	Debbie Steiss, MA (P049) *Senior Associate*
Indigenous Ceramic Analysis and Photography:	Robert Wojtowicz, BSc (R291) *Senior Archaeologists / Field Operations Coordinator & Fleet Manager* *Operations Division*
Report Preparation:	Jessica Lytle
Graphics:	Andrew Clish, BES (P046) *Senior Archaeologist / Senior Field Director* *Laboratory & Fieldwork Services* *Operations Division*

Report Review:	Caitlin Lacy
	Lisa Merritt

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1.0 PROJECT CONTEXT

Archaeological Services Inc. (ASI) was contracted by R.J. Burnside & Associates Ltd., on behalf of the City of Cambridge, to conduct a Stage 2 Archaeological Assessment as part of the Blair Preston Pedestrian Bridge and Trail project in the City of Cambridge, Ontario (Figure 1). The project involves the development of a trail and pedestrian bridge spanning the Speed River to connect the communities of Blair and Preston, through lands owned by ***rare*** Charitable Research Reserve. The proposed trail and bridge will connect the B. McMullen Linear Trail to the existing multi-use trail on Fountain Street by crossing over the Speed River upstream of its confluence with the Grand River. The bridge and trail will provide a major off-road connection to downtown Preston as well as a connection to the Highway 401 pedestrian bridge linking Cambridge to Kitchener and the Doon area. Currently all proposed construction for this project will be confined to the current Stage 2 Study Area for the Blair Preston Pedestrian Bridge and Trail. Lands outside of the current Stage 2 Study Area are not part of this assessment and additional archaeological assessment will be required if they are to be developed or disturbed.

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

1.1 Development Context

All work has been undertaken as required by the *Environmental Assessment Act,* RSO (Ministry of the Environment 1990 as amended 2010) and regulations made under the Act, and are therefore subject to all associated legislation. This project is being conducted in accordance with the Municipal Engineers' Association document *Municipal Class Environmental Assessment* (2000 as amended in 2007, 2011 and 2015).

In addition, this Stage 2 assessment has been commissioned to satisfy the recommendations of the previous Stage 1 assessment that was undertaken as part of a Schedule B Municipal Class Environmental Assessment (MCEA) for the Blair Preston Pedestrian Bridge and Trail, in the City of Cambridge (ASI 2019).

ASI has been actively engaging with Indigenous communities who have expressed an interest in the archaeological work within the Study Area for this project on behalf of the City of Cambridge. A detailed account of all Indigenous engagement can be found in the *Supplementary Documentation (SD): Indigenous Engagement* document associated with this report.

Permission to access the Study Area and carry out all activities necessary for the completion of this Stage 2 assessment was granted by R.J. Burnside & Associates Ltd. on March 20, 2019.

1.2 Historical Context

A comprehensive review of the precontact Indigenous and Euro-Canadian occupations of the Waterloo region is presented in the Stage 1 report (ASI 2019:1–9). To summarize, background research indicates that the general vicinity of the Study Area has been attractive to human settlement for thousands of years, primarily by Indigenous people but more recently by Euro-Canadian settlers.

Historically, the Study Area corridor is within Lot 6, Broken Front Beasley Lower Block in the Former Township of Waterloo, County of Waterloo, Ontario.

1.3 Archaeological Context

1.3.1 Previously Registered Archaeological Sites

In Ontario, information concerning archaeological sites is stored in the Ontario Archaeological Sites Database (OASD) maintained by the MHSTCI. This database contains archaeological sites registered within the Borden system. Under the Borden system, Canada has been divided into grid blocks based on latitude and longitude. A Borden block is approximately 13 km east to west, and approximately 18.5 km north to south. Each Borden block is referenced by a four-letter designator, and sites within a block are numbered sequentially as they are found. The Study Area under review is located in Borden block *AiHc*.

According to a 2020 review of the OASD, 34 previously registered archaeological sites are located within 1 km of the Stage 2 Study Area (MHSTCI 2020). Of these sites, Cruickston 7 (AiHc-146) is located within the current Study Area and Falcon (AiHc-325) is located within 50 m. Details about the sites are provided in Table 1 below.

Table 1: Previously Registered Sites within One Kilometre of the Study Area

Borden #	Site Name	Cultural Affiliation	Site Type	Researcher
AiHc-4	Collector	Archaic	Camp	ARA 1991
AiHc-9	Blair Flats 2	Archaic, Middle Woodland	Camp	Unknown 1974
AiHc-10	Blair Flats 3	Late Archaic	Camp	Unknown 1974
AiHc-15	Cambridge Bypass	Precontact Indigenous	Scatter	ARA 1991
AiHc-25	McNeal	Precontact Indigenous	Findspot	Lennox 1983 Knight 1991
AiHc-26	Blair Flats North East	Precontact Indigenous	Unknown	Redmon, Stothers 1982
AiHc-139	Cruickston 1	Precontact Indigenous		ARA 1991
AiHc-140	Nathaniel Dodge	Precontact Indigenous, Early Woodland; Euro-Canadian	Camp Homestead	ARA 1991
AiHc-143	Cruickston 4	Late Archaic	Camp	ARA 1991
AiHc-144	Cruickston 5	Precontact Indigenous	Camp	ARA 1991
AiHc-145	Cruickston 6	Middle Archaic, Middle Woodland, Late Woodland	Camp	ARA 1991; Dalton 2006
AiHc-146	**Cruickston 7**	**Precontact Indigenous**	**Camp**	**ARA 1991**
AiHc-147	Cruickston 8	Middle Woodland	Camp	ARA 1991
AiHc-148	Cruickston 9 Scatter M	Unknown	Camp	ARA 1991
AiHc-151	Cruickston 10	Late Archaic	Camp	ARA 1991
AiHc-173	-	Late Woodland	Unknown	Janusas 1993
AiHc-174	Shaniawski	Euro-Canadian	Homestead	ARA 1993

Borden #	Site Name	Cultural Affiliation	Site Type	Researcher
AiHc-208	Blair McDonald	Euro-Canadian	Homestead	Parker 1997
AiHc-321	Deep	Precontact Indigenous	Unknown	Dalton 2006
AiHc-322	Hackberry	Middle Archaic	Midden	Dalton 2006
AiHc-323	Elm	Precontact Indigenous	Unknown	Dalton 2006
AiHc-324	Goose Run	Late Woodland	Midden	Dalton 2006
AiHc-325	*Falcon*	*Precontact Indigenous*	*Unknown*	*Dalton 2006*
AiHc-339	Gun Flint	Euro-Canadian	Unknown	Dalton 2005
AiHc-353	Hilburn	Euro-Canadian	Homestead	ASI 2006
AiHc-354	McNally Dump	Euro-Canadian	Dump; Homestead	ASI 2006
AiHc-355	Jacob Echtel/ Limerick Road	Euro-Canadian	Homestead	ASI 2007
AiHc-459	-	Euro-Canadian	Homestead	Stantec 2012
AiHc-493	Fountain 15	Woodland	Camp	WSP 2019
AiHc-494	Fountain 5	Archaic, Late Woodland	Camp	WSP 2019
AiHc-495	Fountain 8	Early and Late Woodland	Camp	WSP 2019
AiHc-496	Fountain 9	Precontact Indigenous	Unknown	WSP 2019
AiHc-497	Fountain 11	Middle Woodland	Camp	WSP 2019
AiHc-499	-	Euro-Canadian	Residential	Detritus 2019

Sites in **bold** are within the Study Area
Sites in *italics* are within 50 m according to the OASD
ARA – Archaeological Research Associates Ltd.
TMHC – Timmins Martelle Heritage Consultants

1.3.2 Previous Archaeological Assessments

According to the background research, four previous reports detail fieldwork within 50 m of the current Study Area.

ASI (2019: PIF P1066-0097-2019) completed a Stage 1 archaeological assessment as part of the Municipal Class EA for the Blair Preston Pedestrian Bridge and Trail in the City of Cambridge, Ontario. The project proposed the construction of a trail from Fountain Street South to the B. McMullen Linear Trail, across rare Charitable Research Reserve lands, as well as construction of a pedestrian bridge over the Speed River. The Stage 1 background study determined that 43 previously registered sites were located within one kilometre of the larger Stage 1 Study Area; three of which were located within the Stage 1 Study Area, and one located within 100 m. A property inspection determined that while some portions were severely sloped and permanently low and wet, the balance of the Stage 1 Study Area demonstrated archaeological potential and would require Stage 2 assessment.

Archaeological Research Associates Ltd. (1995: licence 91-016, 95-018) conducted an archaeological assessment of the Cruickston Park Farm, approximately 397 ha in North Dumfries Township and the City of Cambridge, including parts of the current Study Area which fall within the northernmost part of the

subject property surveyed. The property was generally situated around and to the south of the confluence of the Speed and Grand Rivers. The field survey consisted of pedestrian survey and test pit survey at five metre intervals. A total of 53 archaeological finds were discovered or revisited from known locations (sites within 1 km are bolded), including **Scatter I (AiHc-146)** which is identified within the current Study Area (SD: Figure 2). **Scatter I/AiHc-146** was documented as an undetermined prehistoric camp site measuring 1 hectare in size, with over 100 lithic artifacts on the ground surface. AiHc-4 was previously registered at the time and was reidentified during the survey. Scatters A to O (AiHc-139/A, AiHc-140/B, AiHc-141/C, AiHc-142/D, AiHc-143/E, AiHc-144/F, AiHc-10/G, AiHc-145/H, **AiHc-146/I**, AiHc-147/J, AiHc-4/K, AiHc-15/L, AiHc-148/M, AiHc-25/N, and AiHc-149/O), Findspots 33-37 (AiHc-160, AiHc-161, and AiHc-162), and the Ashton Brewery site (AiHc-150) were all recommended for further investigation.

Christopher Dalton (2006: licence A-139-001-2006) conducted an archaeological assessment over 2004 and 2005 on the ***rare*** Charitable Research Reserve lands, formerly known as the Cruickston Charitable Research Reserve. One of the objectives during the conversion of the property to an educational preserve was to conduct an archaeological assessment as an inventory of archaeological material on the entire 370 ha property. The report noted that people have been finding artifacts on the property for hundreds of years. At the time, the property included lands on both sides of the Grand River, consisting mainly of agricultural fields. The northern-most field assessed by Dalton includes the current Study Area. The assessments in 2004 and 2005 consisted of pedestrian survey of the ploughed fields and test pit survey along the edges of the rivers at five metre intervals. The work identified 29 sites in the areas of test pit survey, including **AiHc-325** which the OASD locates within 50 m of the current Study Area within an agricultural field. Available information on site **AiHc-325** is limited; classifying it as a precontact site of unknown nature found through pedestrian survey and represented by and unknown number of flake (Dalton 2006: Table 1). A review of Dalton's (2006:9) site location mapping demonstrates the OASD information for site **AiHc-325** appears to be incorrect and places the site approximately 250 m north of the documented site location. Based on these observations, site **AiHc-325** is located more than 50 m from the current Study Area. Additional assessment was recommended for the 29 sites (including AiHc-325), and further test pitting was recommended in areas "slightly beyond the rivers edge" (Dalton 2006:7).

Golder (2018: PIF P364-0119-2017) conducted a Stage 1 archaeological assessment of the Dover Street Pumping Station immediately adjacent to the current Study Area on the east bank of the Speed River. The property inspection identified the entire 0.5 ha area as having been disturbed due to development of the adjacent subdivision, hydro station, pumping station, sewer infrastructure, and a culvert which empties into the Speed River.

1.3.3 Current Land Use and Field Conditions

The Stage 2 Study Area for the Blair Preston Pedestrian Bridge and Trail is approximately 540 m long and between 25 and 53 m wide (1.6 ha), and is located on the south side of Fountain Street South in the City of Cambridge and traverses the Speed River (Figures 1 and 2). The Study Area is composed of a mixture of active agricultural field and scrubland along the banks of the Speed River. A review of available Google satellite imagery shows that the Study Area has remained relatively unchanged since 2005. In 2013, observable tree removal took place along the east bank of the Speed River within the Study Area. It is unclear if these trees were clear-cut or grubbed out.

The Stage 2 survey for the Blair Preston Pedestrian Bridge and Trail was conducted on November 4-5 and 10, 2020 under the field direction of Alanna Martini (R1088).

1.3.4 Geography

A comprehensive summary of the geology and physiography of the Waterloo region is presented in the Stage 1 report (ASI 2019:10–11). To summarize, the Study Area is situated on the spillways of the Guelph Drumlin Field physiographic region of southern Ontario (Chapman and Putnam 1984:137–139). The Guelph Drumlin Field centers upon the City of Guelph and Guelph Township and occupies roughly 830 km^2. Within the Guelph Drumlin Field, there are approximately 300 drumlins of varying sizes. For the most part these hills are of the broad oval type with slopes less steep than those of the Peterborough drumlins and are not as closely grouped as those in some other areas. The till in these drumlins is loamy and calcareous and was derived mostly from dolostone of the Amabel Formation that can be found exposed below the Niagara Escarpment. 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 (Chapman and Putnam 1984:15).

The Study Area is located at the confluence of the Speed River and the Grand River, known locally as "the Junction". Several cold-water tributaries are also present near the confluence of the Speed and Grand, one of which is located within the Study Area. The Speed River flows through old spillway over its entire length and as a watercourse is representative of the late Pleistocene/early Holocene geography of southern Ontario (City of Cambridge 2016). The Speed River is unexpectedly shallow as it is partly floored by bedrock (Chapman and Putnam 1984: 98). It is a major tributary of the Grand River. The Grand River watershed drains an area of approximately 673,397 ha. Its main stream begins northeast of Dundalk at 526 m above sea level and flows for approximately 290 km to Lake Erie at Port Maitland (Chapman and Putnam 1984:95). The Grand River was an important transportation route and a critical resource extraction area for generations of Indigenous people. Historically, the Grand River has been utilized as a navigable waterway, as a power source (such power sites served as settlement nuclei), and above Brantford as a course for driving logs (Chapman and Putnam 1984:98). It is also the focus of the Haldimand Tract; Joseph Brant was awarded six miles (10 km) on either side of the river (Johnston 1964:35–38; Lytwyn 2005). The Grand River (and its tributaries the Nith, Conestogo, Speed and Eramosa Rivers) was designated as a Canadian Heritage River in 1994 for its cultural history and recreation (Canadian Heritage Rivers System 2016).

The Study Area exists on lands designated as part of the Blair-Bechtel-Cruickston Environmentally Sensitive Landscape, which includes the ***rare*** Charitable Research Reserve containing environmentally sensitive policy areas and provincially significant wetlands; however none are noted within the current Study Area (rare Charitable Research Reserve 2014; WSP 2018). The ***rare*** Charitable Research Reserve was founded in 2001 and is an urban land trust covering more than 364 hectares of lands at the confluence of the Grand and Speed Rivers (***rare*** Charitable Research Reserve 2014).

2.0 FIELD METHODS

The Stage 2 property assessment was conducted under the field direction of Alanna Martini (R1088) on November 4-5 and 10, 2020 in accordance with the *Ontario Heritage Act* and the S & G, Section 2. During all periods of field assessment, weather and lighting conditions permitted good visibility and were in accordance with the S & G, Section 2.1, Standard 3. Temperatures were above seasonal and ranged from 10-15ºC with overcast skies, providing excellent survey conditions. Photographs of all field

conditions were taken (Plates 1-6), and the location and direction of each photograph is mapped in Figure 2.

The Stage 2 Study Area includes 1.6 ha of actively farmed agricultural lands and scrubland along the banks of the Speed River, on the south side of Fountain Street South in the City of Cambridge. Prior to the initiation of the Stage 2 survey, the agricultural lands were prepared by the tenant farmer of ***rare*** Charitable Research Reserve. A tractor and mould-board plough were used to turn the soil over, and a disc attachment was used to break up the soils further. The field preparation methods used meet the requirements of S & G Section 2.1.1, Standards 1-5 for pedestrian survey. All standards were met; ploughing was deep enough to provide total topsoil exposure, but not deeper than previous ploughing and weathering was excellent, resulting in overall surface visibility greater than 80 % (Plate 3). Following S & G Section 2.1.1, Standards 6-8, pedestrian survey was conducted at one metre intervals and maintained over a 20 m radius when archaeological resources were encountered to determine whether the artifacts were isolated finds or part of a larger scatter. Since the area ploughed encompassed a larger area than the Study Area, several finds were located just outside of the Study Area margins. The location of all artifacts collected was recorded using a Samsung Galaxy S4 tablet running ESRI Collector equipped with a sub-metre Trimble Catalyst GPS (SD: Figures 2 and 3).

As per Section 2.1 of the S & G, all lands where ploughing was not possible were subject to test pit survey at 5 m intervals. According to Section 2.1.2(2) of the S & G, any undisturbed areas requiring test pit survey within 300 m of any feature of archaeological potential must be subject to systematic assessment at 5 m intervals. All test pits were excavated following the S & G Section 2.1.2 Standards 2-9. All test pits were excavated by hand to a minimum of 30 cm in diameter and into the first 5 cm of subsoil. Each test pit was and examined for stratigraphy, cultural features, and evidence of fill. Test pit fill was screened through 6 mm mesh to facilitate artifact recovery. If archaeological resources were encountered in quantities insufficient to make a recommendation of Stage 3 assessment, test pit intervals were intensified to a maximum of 2.5 m around the positive test pits to define site boundaries and a test unit was placed and excavated on top of the positive test pit following the S & G Section 2.1.3, Standard 2, Option A. Afterwards, all test pits were backfilled, and their locations were recorded on field maps. Any factors that precluded the excavation of test pits (e.g. excessive slope, drainage, exposed bedrock, previous disturbance) were noted, and the areas were mapped and photographed.

Approximately 16 % of the Study Area (0.25 ha) was documented as having no archaeological potential due to previous assessment (ASI 2019), and previous deep and pervasive disturbance associated with a sanitary main, water monitoring well, and gravel multi-use path (Plates 1-2; Table 2). The remaining 84% of the Study Area (1.3 ha) demonstrated archaeological potential and was subject to pedestrian and test pit surveys. Approximately 64 % of the Study Area (1.0 ha) comprised agricultural lands and was subject to pedestrian survey at 1 m intervals (Plate 3; Table 2). The remainder of the Study Area comprised scrublands on either side of the Speed River and was subject to test pit survey at 5 m intervals (Plates 2 and 4; Table 2).

Table 2: Stage 2 Survey Results

Survey Method	Area / % of Study Area	Description	Figure 2 Plates
Previously assessed; no archaeological potential	0.2 ha / 15 %	ASI 2019: Speed River, Fountain Street South ROW	-
Previous deep and pervasive disturbance; no archaeological potential	242 m^2 / 2 %	Multi-use trail and subsurface utilities on east bank of Speed River	1-2

Survey Method	Area / % of Study Area	Description	Figure 2 Plates
Pedestrian survey at 1 m intervals	1.0 ha / 64 %	Actively farmed agricultural field	3
Test pit survey at 5 m intervals	0.3 ha / 20 %	Scrubland on banks of Speed River	2, 4
Total	1.6 ha / 100 %		

Soils encountered within the agricultural field portion of the Study Area comprised sandy-loam with natural till (Plate 3).

Test pit profiles on the west side of the Speed River demonstrated intact A-horizon and are characterized by approximately 30-50cm of stony, very dark grayish brown (10YR-3/2) sandy-loam topsoil overlying a dark yellowish-brown (10YR 4/4) to dark grayish-brown (10YR 4/2) stony sand subsoil (Plate 5).

Test pit profiles on the east side of the Speed River demonstrated intact buried A-horizon and are characterized by approximately 35 cm of redeposited sand topsoil (10YR 3/2) very dense with stones, overlying 35 cm of a buried topsoil of stony black (10YR 2/1) sand, atop a densely stony yellowish-brown (10YR 5/8) sand subsoil (Plate 6).

3.0 RECORD OF FINDS

As a result of this assessment, nine precontact Indigenous findspots and six precontact Indigenous sites were identified and documented (SD: Figures 1-3). In addition, previously registered Site AiHc-146 was relocated and additional surface artifacts were recovered. Whenever finds encountered during Stage 2 survey were discovered within close proximity to one another they were grouped appropriately; any finds that were found less than 10 m apart were grouped together and any artifact greater than 10 m away from the nearest artifact was recorded as a findspot.

According to Section 7.6 of the S & G any information that pinpoints the location of an archaeological site (e.g., detailed assessment results mapping, tables of GPS coordinates for site locations) must not be included in the project report and should only be provided in the *SD: Detailed Site Location Information* document associated with this report. This allows the MHSTCI to exclude it from the Ontario Public Register of Archaeological Reports, if necessary. Archaeological site location information is considered by MHSTCI to be confidential and/or sensitive information that cannot be made public.

3.1 Unregistered Indigenous Findspots

The Stage 2 pedestrian and test pit surveys for the Blair Preston Pedestrian Bridge and Trail resulted in the identification, documentation, and collection of nine Indigenous lithic findspots. Findspots are defined as less than three artifacts collected in one location, and do not meet the requirements for registration into the OASD as defined by the S & G Section 7.12. All findspots except for Findspot P11 were encountered during pedestrian survey of the former agricultural fields; Findspot P11 was encountered during test pit survey. Test pit intervals surrounding Findspot P11 were intensified to a maximum of 2.5 m around the positive test pit to help define the site boundary and a test unit was placed and excavated on top of the

positive test pit following the S & G Section 2.1.3, Standard 2, Option A. No additional artifacts were encountered.

Findspots P2, P4, P11, P12, P13, P15, P16, P17, and P23 represent isolated, non-diagnostic findspots without continued cultural heritage value or interest (CHVI) as per S & G Section 2.2, Standard 1ai, and therefore do not require Stage 3 assessment. Table 3 provides a summary of these findspots by artifact type while a detailed artifact catalogue can be found in Appendix A.

Table 3: Summary of Recorded Precontact Indigenous Findspots by Artifact Type

Artifact Type	Findspot
Debitage	
Flake Fragment	P2 (1); P4 (1); P11 (1); P12 (1/2); P15 (1); P16 (1); P17 (1/2); P23 (1)
Secondary Knapping Flake	P13 (1)
Secondary Retouch Flake	P12 (1/2); P17 (1/2)

The nine precontact Indigenous lithic findspots identified include eight flake fragments, two secondary retouch flakes, and one secondary knapping flake manufactured from Onondaga (n=10) and Bois Blanc (n=1) chert varieties (Appendix A; Table 3).

The Study Area spans the Speed River and is located just northwest of its confluence with the Grand River. As such, evidence of precontact Indigenous activity from the Archaic period through the Woodland period was highly probable. The Grand River and its tributaries were important transportation routes and associated portage routes were well established in this area prior to European settlement. The presence of nine dispersed findspots across the 1.6 ha Study Area is evidence of past travel through this location for hunting, fishing or on route to another destination. These findspots represent ephemeral activity and/or casual losses. For example, activities such as tool refurbishment and general stone-working would have occurred on a regular basis during resource procurement activities. The dispersed nature of these findspots do not typically reflect loci of prolonged activity or occupation.

3.2 Registered Precontact Indigenous Sites

A total of six precontact Indigenous sites were identified and registered into the OASD following S & G Section 7.12. In addition, previously registered site AiHc-146 (ARA 1995) was relocated within the Study Area and additional artifacts related to the site were recovered. A precontact Indigenous site is distinguished from a findspot by either the quantity of material encountered (three or more artifacts within a 10 m radius) or by the presence of a temporally diagnostic artifact (e.g. a projectile point), while a historical Euro-Canadian site is defined by 10 or more 19th century artifacts found within a 10 m radius. Table 4 provides a summary of these sites while detailed artifact catalogues can be found in Appendices A and B.

Table 4: Summary of Registered Archaeological Sites

Field Designation	Borden #	Site Size N/S x E/W m	Artifacts Collected /Encountered	Artifact Type(s)	Temporal /Cultural Affiliation
P1	AiHc-513	30 x 30	23	Flake fragments, secondary knapping flake, secondary retouch flakes, shatter, projectile point	Late Archaic period
P3	AiHc-514	15 x 15	6	Flake fragments, secondary retouch flakes, projectile point	Late Archaic period
P5	AiHc-515	13 x 15	7	Flake fragments, secondary knapping flake, secondary retouch flakes, projectile point	Late Woodland period
P8	AiHc-516	20 x 45	14	Flake fragments, secondary knapping flakes, shatter, biface	Unknown
P14	AiHc-517	17 x 5	13	Secondary retouch flakes, flake fragment, secondary knapping flake, Indigenous ceramics	Woodland period
P18	AiHc-518	3 x 8	3	Flake fragments, non-diagnostic projectile point fragment	Early Archaic period
	AiHc-146	100 x 25	26	Flake fragments, secondary knapping flakes, secondary retouch flakes, projectile points	Late Archaic period

Registered sites requiring Stage 3 assessment

3.2.1 Site AiHc-513 (P1)

General Site Location: Site P1 is located within an agricultural field of the ***rare*** Charitable Research Reserve, within Lot 6, Broken Front Beasley Lower Block, City of Cambridge. For detailed site location information including GPS coordinates and detailed mapping, see Figures 2 and 3 of the accompanying *SD: Detailed Site Location Information* document.

Topography/Geography: Flat terrain within the Guelph Drumlin Field physiographic region.

Soil Type: Sandy loam ploughzone with natural till.

Features of Archaeological Potential: Proximity to watercourses (Grand River, Speed River), historic transportation routes (Fountain Street, Preston & Berlin Street Railway), proximity to early settlements (Blair, Preston), well-drained soils (Burford gravelly and cobbley loams), and previously registered archaeological sites (ASI 2019:14–15).

Site Type: Precontact Indigenous lithic scatter.

Field Conditions: Agricultural field.

Site Size and Density: Twenty-three artifacts in an area measuring approximately 30 m (north-south) by 30 m (east-west).

Assessment Method: Pedestrian survey 1 m intervals.

Assemblage Summary:	Twelve flake fragments, eight secondary retouch flakes, one secondary knapping flake, one piece of shatter, and one diagnostic projectile point; all manufactured from Onondaga and Lockport chert varieties (Appendix A). Four flake fragments (Cat. #L10, L12, L15, L17) demonstrate thermal alteration. The projectile point (Cat. #L22; Plate 7) is represented by a Late Archaic period Narrow Point (*ca.* 4500-3800 BP) manufactured from Onondaga chert, measuring 37 mm in length, 13 mm in width, and 7 mm in width.
Site Interpretation:	Late Archaic Indigenous lithic scatter (Ellis et al. 1990; Ellis 2013).
Recommendations:	Site P1 **meets** the diagnostic artifact requirements for Stage 3 assessment following S & G Section 2.2, Standard 1.a.i(1), and therefore requires further work.

3.2.2 Site AiHc-514 (P3)

General Site Location:	Site P3 is located within an agricultural field of the ***rare*** Charitable Research Reserve, within Lot 6, Broken Front Beasley Lower Block, City of Cambridge. For detailed site location information including GPS coordinates and detailed mapping, see Figures 2 and 3 of the accompanying *SD: Detailed Site Location Information* document.
Topography/Geography:	Flat terrain within the Guelph Drumlin Field physiographic region.
Soil Type:	Sandy loam ploughzone with natural till.
Features of Archaeological Potential:	Proximity to watercourses (Grand River, Speed River), historic transportation routes (Fountain Street, Preston & Berlin Street Railway), proximity to early settlements (Blair, Preston), well-drained soils (Burford gravelly and cobbley loams), and previously registered archaeological sites (ASI 2019:14–15).
Site Type:	Precontact Indigenous lithic scatter.
Field Conditions:	Agricultural field.
Site Size and Density:	Six artifacts in an area measuring approximately 15 m (north-south) by 15 m (east-west).
Assessment Method:	Pedestrian survey 1 m intervals.
Assemblage Summary:	Three flake fragments, two secondary retouch flakes, and one diagnostic projectile point fragment; all manufactured from Onondaga and Bois blanc chert varieties (Appendix A). One flake fragment (Cat. #L6) demonstrates thermal alteration. The projectile point (Cat. #L2; Plate 8) is represented by a Late Archaic period Perkiomen point base and partial blade fragment (*ca.* 3700-2700 BP) manufactured from Bois blanc chert, measuring 34 mm in length, 29 mm in width, and 6 mm in width.
Site Interpretation:	Late Archaic Indigenous lithic scatter (Ellis et al. 1990; Ellis 2013).
Recommendations:	Site P3 **meets** the diagnostic artifact requirements for Stage 3 assessment following S & G Section 2.2, Standard 1.a.i(1), and therefore requires further work.

3.2.3 Site AiHc-515 (P5)

General Site Location:	Site P5 is located within an agricultural field of the ***rare*** Charitable Research Reserve, within Lot 6, Broken Front Beasley Lower Block, City of Cambridge. For detailed site location information including GPS coordinates and detailed mapping, see Figure 3 of the accompanying *SD: Detailed Site Location Information* document.
Topography/Geography:	Flat terrain within the Guelph Drumlin Field physiographic region.
Soil Type:	Sandy loam ploughzone with natural till.
Features of Archaeological Potential:	Proximity to watercourses (Grand River, Speed River), historic transportation routes (Fountain Street, Preston & Berlin Street Railway), proximity to early settlements (Blair, Preston), well-drained soils (Burford gravelly and cobbley loams), and previously registered archaeological sites (ASI 2019:14–15).
Site Type:	Precontact Indigenous lithic scatter.
Field Conditions:	Agricultural field.
Site Size and Density:	Seven artifacts in an area measuring approximately 13 m (north-south) by 15 m (east-west).
Assessment Method:	Pedestrian survey 1 m intervals.
Assemblage Summary:	Three flake fragments, two secondary retouch flakes, one secondary knapping flake, and one diagnostic projectile point fragment; all manufactured from Onondaga and Selkirk chert varieties (Appendix A). No artifacts demonstrate thermal alteration. The projectile point (Cat. #L6; Plate 9) is represented by a Late Woodland period Triangular point fragment missing its tip (*ca.* 1200-400 BP) manufactured from Onondaga chert, measuring 18 mm in length, 15 mm in width, and 3 mm in width.
Site Interpretation:	Late Woodland Indigenous lithic scatter (Fox 1990; Williamson 2013).
Recommendations:	Site P5 **meets** the diagnostic artifact requirements for Stage 3 assessment following S & G Section 2.2, Standard 1.a.i(1), and therefore requires further work.

3.2.4 Site AiHc-516 (P8)

General Site Location:	Site P8 is located within an agricultural field of the ***rare*** Charitable Research Reserve, within Lot 6, Broken Front Beasley Lower Block, City of Cambridge. For detailed site location information including GPS coordinates and detailed mapping, see Figure 2 of the accompanying *SD: Detailed Site Location Information* document.
Topography/Geography:	Flat terrain within the Guelph Drumlin Field physiographic region.
Soil Type:	Sandy loam ploughzone with natural till.

Features of Archaeological Potential:	Proximity to watercourses (Grand River, Speed River), historic transportation routes (Fountain Street, Preston & Berlin Street Railway), proximity to early settlements (Blair, Preston), well-drained soils (Burford gravelly and cobbley loams), and previously registered archaeological sites (ASI 2019:14–15).
Site Type:	Precontact Indigenous lithic scatter.
Field Conditions:	Agricultural field.
Site Size and Density:	Fourteen artifacts in an area measuring approximately 20 m (north-south) by 45 m (east-west).
Assessment Method:	Pedestrian survey 1 m intervals.
Assemblage Summary:	Nine flake fragments, three secondary knapping flakes, one piece of shatter, and one biface fragment; all manufactured from Onondaga, Lockport, and Quartzite chert varieties (Appendix A). One flake fragment (Cat. #L4) demonstrates thermal alteration. The biface (Cat. #L3; Plate 10) is represented by a semi-refined tip fragment manufactured from Onondaga chert, measuring 28 mm in length, 17 mm in width, and 7 mm in width.
Site Interpretation:	Non-diagnostic precontact Indigenous lithic scatter.
Recommendations:	Site P8 **does not meet** the diagnostic or artifact density requirements for Stage 3 assessment following S & G Section 2.2, Standard 1.a.i.(1, 3), and therefore does not require further work.

3.2.5 Site AiHc-517 (P14)

General Site Location:	Site P14 is located within an agricultural field of the ***rare*** Charitable Research Reserve, within Lot 6, Broken Front Beasley Lower Block, City of Cambridge. For detailed site location information including GPS coordinates and detailed mapping, see Figure 3 of the accompanying *SD: Detailed Site Location Information* document.
Topography/Geography:	Flat terrain within the Guelph Drumlin Field physiographic region.
Soil Type:	Buried sandy A-horizon dense with naturally occurring cobbles, atop sandy subsoil dense with naturally occurring cobbles. The overlying redeposited sand topsoil was also dense with stones, but absent of artifacts.
Features of Archaeological Potential:	Proximity to watercourses (Grand River, Speed River), historic transportation routes (Fountain Street, Preston & Berlin Street Railway), proximity to early settlements (Blair, Preston), well-drained soils (Burford gravelly and cobbley loams), and previously registered archaeological sites (ASI 2019:14–15).
Site Type:	Precontact Indigenous lithic scatter.
Field Conditions:	Bank of Speed River.

Site Size and Density:	Fourteen artifacts from four positive test pits in an area measuring approximately 17 m (north-south) by 5 m (east-west).
Assessment Method:	Test pit survey at 5 m intervals.
Assemblage Summary:	Four secondary retouch flakes, one secondary knapping flake, one flake fragment (all manufactured from Onondaga chert; Plate 11), and eight Indigenous ceramic fragments (Appendices A and B). One secondary retouch flake (Cat. #L1) demonstrates thermal alteration. The eight Indigenous ceramic fragments (*ca.* 1050-300 BP) are smaller than 18 mm and displayed excessive exterior exfoliation and are classified as unanalyzable (Appendix B; Plate 12).
Site Interpretation:	Woodland period Indigenous lithic scatter (Fox 1990; Spence et al. 1990; Williamson 2013).
Recommendations:	Site P14 **meets** the requirements for Stage 3 assessment following S & G Section 2.2, Standards 1.a.ii and 1.b.i, and therefore requires further work. In addition, ASI makes the preliminary determination that site P14 has sufficient CHVI to warrant Stage 4 mitigative excavation as per S & G 3.4, 1.e.

3.2.6 Site AiHc-518 (P18)

General Site Location:	Site P18 is located within an agricultural field of the ***rare*** Charitable Research Reserve, within Lot 6, Broken Front Beasley Lower Block, City of Cambridge. For detailed site location information including GPS coordinates and detailed mapping, see Figures 2 and 3 of the accompanying *SD: Detailed Site Location Information* document.
Topography/Geography:	Flat terrain within the Guelph Drumlin Field physiographic region.
Soil Type:	Sandy loam ploughzone with natural till.
Features of Archaeological Potential:	Proximity to watercourses (Grand River, Speed River), historic transportation routes (Fountain Street, Preston & Berlin Street Railway), proximity to early settlements (Blair, Preston), well-drained soils (Burford gravelly and cobbley loams), and previously registered archaeological sites (ASI 2019:14–15).
Site Type:	Precontact Indigenous lithic scatter.
Field Conditions:	Agricultural field.
Site Size and Density:	Three artifacts in an area measuring approximately 3 m (north-south) by 8 m (east-west).
Assessment Method:	Pedestrian survey 1 m intervals.
Assemblage Summary:	Two flake fragments and one non-diagnostic projectile point fragment; all manufactured from Onondaga chert (Appendix A). One flake fragment (Cat. #L1) and the projectile point fragment (Cat. #L3) demonstrate thermal alteration. The projectile point is represented by a partial base and blade fragment of a Kirk Corner-notched Early Archaic Nettling

point (*ca.* 9500-8900 BP) manufactured from Onondaga chert, measuring 23 mm in length, 21 mm in width, and 4 mm in width (Cat. #L3; Plate 13).

Site Interpretation: Early Archaic Indigenous lithic scatter.

Recommendations: Site P18 **meets** the requirements for Stage 3 assessment as per S & G Section 2.2, Standard 1.b.iii, and therefore requires further work.

3.2.7 Site AiHc-146

General Site Location: Previously registered site AiHc-146 (ARA 1995) is located within an agricultural field of the ***rare*** Charitable Research Reserve, within Lot 6, Broken Front Beasley Lower Block, City of Cambridge. For detailed site location information including GPS coordinates and detailed mapping, see Figure 2 of the accompanying *SD: Detailed Site Location Information* document.

Topography/Geography: Flat terrain within the Guelph Drumlin Field physiographic region.

Soil Type: Sandy loam ploughzone with natural till.

Features of Archaeological Potential: Proximity to watercourses (Grand River, Speed River), historic transportation routes (Fountain Street, Preston & Berlin Street Railway), proximity to early settlements (Blair, Preston), well-drained soils (Burford gravelly and cobbley loams), and previously registered archaeological sites (ASI 2019:14–15).

Site Type: Precontact Indigenous lithic scatter.

Field Conditions: Agricultural field.

Site Size and Density: Twenty-six artifacts in an area measuring approximately 100 m (north-south) by 25 m (east-west).

Assessment Method: Pedestrian survey 1 m intervals.

Assemblage Summary: Site AiHc-146 was first identified by ARA in 1995 during pedestrian survey. At the time of survey, over 100 lithic artifacts were documented within an area 1 hectare in size.

ASI relocated site AiHc-146 and documented additional surface finds comprising 19 flake fragments, three secondary knapping flakes, two secondary retouch flakes, and two complete diagnostic projectile points; manufactured from Onondaga, Lockport, and Bois blanc chert varieties (Appendix A). Four flake fragments (Cat. #L12, L16, L17, L21) demonstrate thermal alteration. The first projectile point (Cat. #L3; Plate 14) is represented by a Late Archaic period Innes point (*ca.* 3300-2900 BP) manufactured from Lockport chert, measuring 38 mm in length, 19 mm in width, and 5 mm in width. The second projectile point (Cat. #L4; Plate 14) is represented by a Late Archaic period Narrow Point (*ca.* 4500-3800 BP) manufactured from Lockport chert, measuring 44 mm in length, 22 mm in width, and 8 mm in width.

Site Interpretation: Late Archaic Indigenous lithic scatter (Ellis et al. 1990; Ellis 2013).

Recommendations: Based on ARA's (1995) previous recommendations and ASI current findings, Site AiHc-146 **meets** the diagnostic and artifact density requirements for Stage 3 assessment following S & G Section 2.2, Standard 1.a.i, and therefore requires further work.

3.3 Documentary and Material Record

The documentation related to this archaeological assessment will be curated by ASI until such a time that arrangements for their ultimate transfer to Her Majesty the Queen in right of Ontario, or other public institution, can be made to the satisfaction of the project owner(s), the MHSTCI, and any other legitimate interest groups.

Table 5 provides an inventory and location of the documentary and material record for the project in accordance with the S & G, Sections 6.7 and 7.8.2.3.

Table 5: Inventory of Documentary and Material Record

Document/Material	Location	Comments
Written Field Notes, Annotated Field Maps, GPS Logs, etc.	Archaeological Services Inc., 528 Bathurst Street, Toronto, ON M5S 2P9	Field notes, GPS data [digital]
Field Photography (Digital)	As above	Stored on ASI network servers [18 files]
Research/Analysis/Reporting Materials (Various Formats)	As above	Hard copy and/or digital files stored on ASI network servers [6 files]
Artifacts	As above	Sites/findspots sealed in individual plastic bags measuring 13 cm x 21 cm and stored within one sealed plastic bag measuring 123cm x 30cm

4.0 ANALYSIS AND CONCLUSIONS

ASI was contracted by R.J. Burnside & Associates Ltd., on behalf of the City of Cambridge, to conduct a Stage 2 Archaeological Assessment as part of the Blair Preston Pedestrian Bridge and Trail project in the City of Cambridge, Ontario (Figure 1). The project involves the development of a trail and pedestrian bridge spanning the Speed River to connect the communities of Blair and Preston, through lands owned by ***rare*** Charitable Research Reserve.

ASI (2019: PIF P1066-0097-2019) previously completed a Stage 1 archaeological assessment as part of the Municipal Class EA for the Blair Preston Pedestrian Bridge and Trail. The Stage 1 background study determined that 43 previously registered sites were located within one kilometre of the Study Area; three of which were located within the Study Area, and one located within 100 m. A property inspection determined that while some portions of the Study Area were severely sloped and permanently low and wet, the balance of the Study Area demonstrated archaeological potential and would require Stage 2 assessment.

The Stage 2 property survey was conducted under the field direction of Alanna Martini (R1088) on November 4-5 and 10, 2020 in accordance with the *Ontario Heritage Act* and the S & G. Approximately 16 % of the Study Area (0.25 ha) was documented as having no archaeological potential due to permanently low and wet conditions of the Speed River, and previous deep and pervasive disturbance associated with a sanitary main, water monitoring well, and gravel multi-use path (Plates 1-2; Table 2). The remaining 84 % of the Study Area (1.3 ha) demonstrated archaeological potential and was subject to pedestrian and test pit surveys. Approximately 64 % of the Study Area (1.0 ha) comprised agricultural lands and was subject to pedestrian survey at 1 m intervals (Plate 3; Table 2). The remainder of the Study Area comprised scrublands on either side of the Speed River and was subject to test pit survey at 5 m intervals (Plates 2 and 4; Table 2).

During the course of the Stage 2 assessment, nine precontact Indigenous findspots (P2, P4, P11, P12, P13, P15, P16, P17, and P23) and six precontact Indigenous sites were encountered (P1/AiHc-513, P3/AiHc-514, P5/AiHc-515, P8/AiHc-516, P14/AiHc-517, and P18/AiHc-518), and previously registered Site AiHc-146 was relocated and reassessed (SD: Figures 1-3).

The nine findspots encountered (P2, P4, P11, P12, P13, P15, P16, P17, and P23; Table 3) consist of no more than two non-diagnostic lithic artifacts and therefore do not meet the requirements for registry into the OASD (three or more non-diagnostic artifacts, or one temporally diagnostic artifact), nor for Stage 3 site-specific assessment following S & G Section 2.2, Standard 1.a.i and Section 7.12. Due to the diffuse and non-diagnostic nature of these finds, they are classified as isolated non-diagnostic findspots with no further cultural heritage value or interest, and do not require further archaeological assessment.

The six newly identified precontact Indigenous sites each contain three or more lithic artifacts or a diagnostic artifact in combination with at least two non-diagnostic artifacts, and therefore meet the requirements for registry into the OASD following S & G Section 7.12: P1 (AiHc-513), P3 (AiHc-514), P5 (AiHc-515), P8 (AiHc-516), P14 (AiHc-517), and P18 (AiHc-518). Of the seven registered precontact Indigenous sites, including previously registered site AiHc-146, six exhibit cultural heritage value and meet the requirements for Stage 3 site-specific assessment as per S & G Section 2.2, Standard 1.a.i, and therefore require further work: P1 (AiHc-513), P3 (AiHc-514), P5 (AiHc-515), P14 (AiHc-517), P18 (AiHc-518) and previously registered site AiHc-146.

P1 (AiHc-513) is a Late Archaic Indigenous lithic scatter found during pedestrian survey at one metre intervals (SD: Figures 2-3). It measures 30 m by 30 m in size and comprises 12 flake fragments, eight secondary retouch flakes, one secondary knapping flake, one piece of shatter, and one diagnostic projectile point; all manufactured from Onondaga and Lockport chert varieties (Appendix A). Four flake fragments (Cat. #L10, L12, L15, L17) demonstrate thermal alteration. The projectile point (Cat. #L22; Plate 7) is represented by a Late Archaic period Narrow Point (*ca.* 4500-3800 BP) manufactured from Onondaga chert, measuring 37 mm in length, 13 mm in width, and 7 mm in width. Site P1 meets the diagnostic artifact requirements for Stage 3 assessment following S & G Section 2.2, Standard 1.a.i(1), and therefore requires further work.

P3 (AiHc-514) is a Late Archaic Indigenous lithic scatter found during pedestrian survey at one metre intervals (SD: Figures2-3). It measures 15 m by 15 m and comprises three flake fragments, two secondary retouch flakes, and one diagnostic projectile point fragment; all manufactured from Onondaga and Bois blanc chert varieties (Appendix A). One flake fragment (Cat. #L6) demonstrates thermal alteration. The projectile point (Cat. #L2; Plate 8) is represented by a Late Archaic period Perkiomen point base and partial blade fragment (*ca.* 3700-2700 BP) manufactured from Bois blanc chert, measuring 34 mm in

length, 29 mm in width, and 6 mm in width. Site P3 meets the diagnostic artifact requirements for Stage 3 assessment following S & G Section 2.2, Standard 1.a.i(1), and therefore requires further work.

P5 (AiHc-515) is a Late Woodland Indigenous lithic scatter found during pedestrian survey at one metre intervals (SD: Figure 3). It measures 13 m by 15 m and comprises three flake fragments, two secondary retouch flakes, one secondary knapping flake, and one diagnostic projectile point fragment; all manufactured from Onondaga and Selkirk chert varieties (Appendix A). No artifacts demonstrate thermal alteration. The projectile point (Cat. #L6; Plate 9) is represented by a Late Woodland period Triangular point fragment missing its tip (*ca.* 1200-400 BP) manufactured from Onondaga chert, measuring 18 mm in length, 15 mm in width, and 3 mm in width. Site P5 meets the diagnostic artifact requirements for Stage 3 assessment following S & G Section 2.2, Standard 1.a.i(1), and therefore requires further work.

P14 (AiHc-517) is a Woodland period Indigenous lithic scatter found during test pit survey at five metre intervals (SD: Figure 3). Four positive test pits were encountered in an area measuring 17 m by 5 m. The artifact assemblage comprises four secondary retouch flakes, one secondary knapping flake, one flake fragment (all manufactured from Onondaga chert; Plate 11), and eight Indigenous ceramic fragments (Appendices A and B). One secondary retouch flake (Cat. #L1) demonstrates thermal alteration. The eight Indigenous ceramic fragments are smaller than 18 mm and displayed excessive exterior exfoliation and are classified as unanalyzable, and therefore precludes an exact chronological date (Appendix B; Plate 12). Site P14 meets the requirements for Stage 3 assessment following S & G Section 2.2, Standards 1.a.ii and 1.b.i, and therefore requires further work. In addition, ASI makes the preliminary determination that site P14 has sufficient CHVI to warrant Stage 4 mitigative excavation as per S & G 3.4, 1.e.

P18 (AiHc-518) is an Early Archaic Indigenous lithic scatter found during pedestrian survey at one metre intervals (SD: Figures 2-3). It measures 3 m by 8 m and comprises two flake fragments and one non-diagnostic projectile point fragment; all manufactured from Onondaga chert (Appendix A). One flake fragment (Cat. #L1) and the projectile point fragment (Cat. #L3) demonstrate thermal alteration. The projectile point is represented by a partial base and blade fragment of a Kirk Corner-notched Early Archaic Nettling point (*ca.* 9500-8900 BP) manufactured from Onondaga chert, measuring 23 mm in length, 21 mm in width, and 4 mm in width (Cat. #L3; Plate 13). Site P18 meets the requirements for Stage 3 assessment as per S & G Section 2.2, Standard 1.b.iii, and therefore requires further work.

Previously registered site AiHc-146 was first identified by ARA in 1995 during pedestrian survey. At the time of ARA's survey over 100 lithic artifacts were documented within an area one hectare in size. ASI relocated site AiHc-146 during pedestrian survey at one metre intervals and determined it to be a Late Archaic Indigenous lithic scatter (SD: Figure 2). The artifact scatter collected by ASI measures 100 m by 25 m and comprises 19 flake fragments, three secondary knapping flakes, two secondary retouch flakes, and two complete diagnostic projectile points; manufactured from Onondaga, Lockport, and Bois blanc chert varieties (Appendix A). Four flake fragments (Cat. #L12, L16, L17, L21) demonstrate thermal alteration. The first projectile point (Cat. #L3; Plate 14) is represented by a Late Archaic period Innes point (*ca.* 3300-2900 BP) manufactured from Lockport chert, measuring 38 mm in length, 19 mm in width, and 5 mm in width. The second projectile point (Cat. #L4; Plate 14) is represented by a Late Archaic period Narrow Point (*ca.* 4500-3800 BP) manufactured from Lockport chert, measuring 44 mm in length, 22 mm in width, and 8 mm in width. Based on ARA's (1995) previous recommendations and ASI current findings, site AiHc-146 meets the diagnostic and artifact density requirements for Stage 3 assessment following S & G Section 2.2, Standard 1.a.i, and therefore requires further work.

The Study Area is located within Block 2 of the Haldimand Tract and in close proximity to the Grand and Speed Rivers. The Grand River and its tributaries were important transportation routes and associated

portage routes were well established in this area prior to European settlement. The presence of dispersed findspots across the Study Area is common for lands of the Haldimand Tract; often representing habitual activities conducted during resource procurement, such as tool refurbishment and general stone-working. While the dispersed nature of these findspots does not reflect loci of prolonged activity or occupation, the more substantial Indigenous sites identified as part of this assessment, in conjunction with the plethora of previously registered sites surrounding the Study Area (ARA 1995; ASI 2006; Dalton 2006; ASI 2020), supports that the Haldimand Tract has been occupied by Indigenous populations from the Archaic period through the Woodland period.

5.0 RECOMMENDATIONS

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

1. Findspots P2, P4, P11, P12, P13, P15, P16, P17, and P23 represent isolated, non-diagnostic finds without further CHVI as per S & G Section 2.2, Standard 1ai. As such, they do not require Stage 3 assessment and no further archaeological assessment is recommended for these findspots;

2. Non-diagnostic precontact Indigenous site P8 (AiHc-516) is a diffuse/ephemeral site with low artifact density. It does not meet the diagnostic or artifact density requirements for Stage 3 assessment following S & G Section 2.2, Standard 1.a.i.(1, 3), and therefore does not require further work;

3. Late Archaic Indigenous sites P1 (AiHc-513) and P3 (AiHc-514), and Late Woodland site P5 (AiHc-515) all exhibit CHVI as per S & G Section 2.2, Standard 1.a.i, and therefore require further work. Stage 3 site-specific assessment is recommended in order to clarify the nature and extent of the cultural deposit, and to aid in a Stage 4 mitigation strategy if one is required.

    a. Following S & G Table 3.1 for small precontact sites with undetermined cultural heritage value, the Stage 3 archaeological assessment should commence with the creation of a recording grid on a fixed datum, the position of which has been recorded using a GPS. Then, a controlled surface collection must be conducted to precisely define the nature and extent of the site. This work will require that the site area be re-ploughed and allowed to weather for a least one heavy rainfall prior to commencing this work. The location of each artifact should be mapped with the aid of a tape measure and transit, total station, or sub-metre GPS, and a surface map produced for the sites.

    b. The site will be excavated by hand, placing one metre square units in an established five metre grid across the site with additional units amounting to 20% of the site grid total. These will be placed strategically in areas of interest around units of high artifact counts or other significant areas of the site. The test units should be excavated five cm into the sterile subsoil and soil fills screened through six mm wire mesh to facilitate artifact recovery. The sterile subsoil should be trowelled and all soil profiles examined for undisturbed cultural deposits.

4. Early Archaic Indigenous site P18 (AiHc-518) exhibits CHVI as per S & G Section 2.2, Standard 1.b.iii and therefore requires further work. Stage 3 assessment is

recommended in order to clarify the nature and extent of the cultural deposits, and to aid in the determination of a Stage 4 mitigation strategy, if one is required.

a. Following S & G Table 3.1 for small precontact sites with undetermined cultural heritage value, the Stage 3 archaeological assessment should commence with the creation of a recording grid on a fixed datum, the position of which has been recorded using a GPS. Then, a controlled surface collection must be conducted to precisely define the nature and extent of the site. This work may require that the site area be re-ploughed and allowed to weather for a least one heavy rainfall prior to commencing this work. The location of each artifact should be mapped with the aid of a tape measure and transit, total station, or sub-metre GPS, and a surface map produced for the sites.

b. The site will be excavated by hand, placing one metre square units in an established five metre grid across the site with additional units amounting to 20% of the site grid total. These will be placed strategically in areas of interest around units of high artifact counts or other significant areas of the site. The test units should be excavated five cm into the sterile subsoil and soil fills screened through six mm wire mesh to facilitate artifact recovery. For confirmed single component Early Archaic sites, a sample of units (at least 20 % of the total number of units in sandy soil and at least 10 % of units in heavy soil) should be screened using three mm wire mesh. The sterile subsoil should be trowelled and all soil profiles examined for undisturbed cultural deposits.

5. Woodland period Indigenous site P14 (AiHc-517) exhibits CHVI as per S & G Section 2.2, Standard 1.a.i, and therefore requires further work. Stage 3 site-specific assessment is recommended in order to clarify the nature and extent of the cultural deposit. In addition, ASI makes the preliminary determination that site P14 has sufficient CHVI to warrant Stage 4 mitigative excavation as per S & G 3.4, 1.e.

a. Following S & G Table 3.1 for small precontact sites with undetermined cultural heritage value, the Stage 3 archaeological assessment should commence with the creation of a recording grid on a fixed datum, the position of which has been recorded using a GPS.

b. The site will be excavated by hand, placing one metre square units in an established five metre grid across the site with additional units amounting to 20% of the site grid total. These will be placed strategically in areas of interest around units of high artifact counts or other significant areas of the site. The test units should be excavated five cm into the sterile subsoil and soil fills screened through six mm wire mesh to facilitate artifact recovery. The sterile subsoil should be trowelled and all soil profiles examined for undisturbed cultural deposits.

6. Previously registered site AiHc-146 is a large Late Archaic plough-disturbed site with CHVI as per S & G Section 2.2, Standard 1.a.i, and therefore requires further work. Stage 3 site-specific assessment is recommended in order to clarify the nature and extent of the cultural deposit, and to aid in a Stage 4 mitigation strategy if one is required.

a. Following S & G Table 3.1 for large plough-disturbed lithic scatters, the Stage 3 archaeological assessment should commence with the creation of a recording grid on a fixed datum, the position of which has been recorded using a GPS. Then, a controlled

surface collection must be conducted to precisely define the nature and extent of the site. This work will require that the site area be re-ploughed and allowed to weather for a least one heavy rainfall prior to commencing this work. The location of each artifact should be mapped with the aid of a tape measure and transit, total station, or sub-metre GPS, and a surface map produced for the sites.

b. A series of one metre by one metre units will then be excavated across multiple grids over identified loci of artifact concentrations at five metre intervals within an established grid to determine the nature and extent of the cultural deposits. An additional 20% of the total initial grid unit total will be excavated between identified loci to document areas of lower concentrations. Lastly, 10% of total initial grid unit total will be excavated on the periphery of the surface scatter to determine the site extent. The test units should be excavated five cm into the sterile subsoil and soil fills screened through six mm wire mesh to facilitate artifact recovery. The sterile subsoil should be troweled, and all soil profiles examined for undisturbed cultural deposits.

7. The remainder of the Blair Preston Pedestrian Bridge and Trail Study Area does not require further archaeological assessment; and

8. Should the proposed work extend beyond the current Study Area, or should changes to the project design or temporary workspace requirements result in the inclusion of previously un-surveyed lands, these lands should be subject to a Stage 2 archaeological assessment.

NOTWITHSTANDING the results and recommendations presented in this study, ASI notes that no archaeological assessment, no matter how thorough or carefully completed, can necessarily predict, account for, or identify every form of isolated or deeply buried archaeological deposit. In the event that archaeological remains are found during subsequent construction activities, the consultant archaeologist, approval authority, and the Archaeology Programs Unit of the MHSTCI should be immediately notified.

6.0 ADVICE ON COMPLIANCE WITH LEGISLATION

ASI also advises compliance with the following legislation:

- This report is submitted to the Minister of Heritage, Sport, Tourism and Culture Industries as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, RSO 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, preservation and protection of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Heritage, Sport, Tourism and Culture Industries, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

- It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act.*

- Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the *Ontario Heritage Act*.

- The *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 requires that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Government and Consumer Services.

- Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48(1) of the *Ontario Heritage Act* and may not be altered, nor may artifacts be removed from them, except by a person holding an archaeological license.

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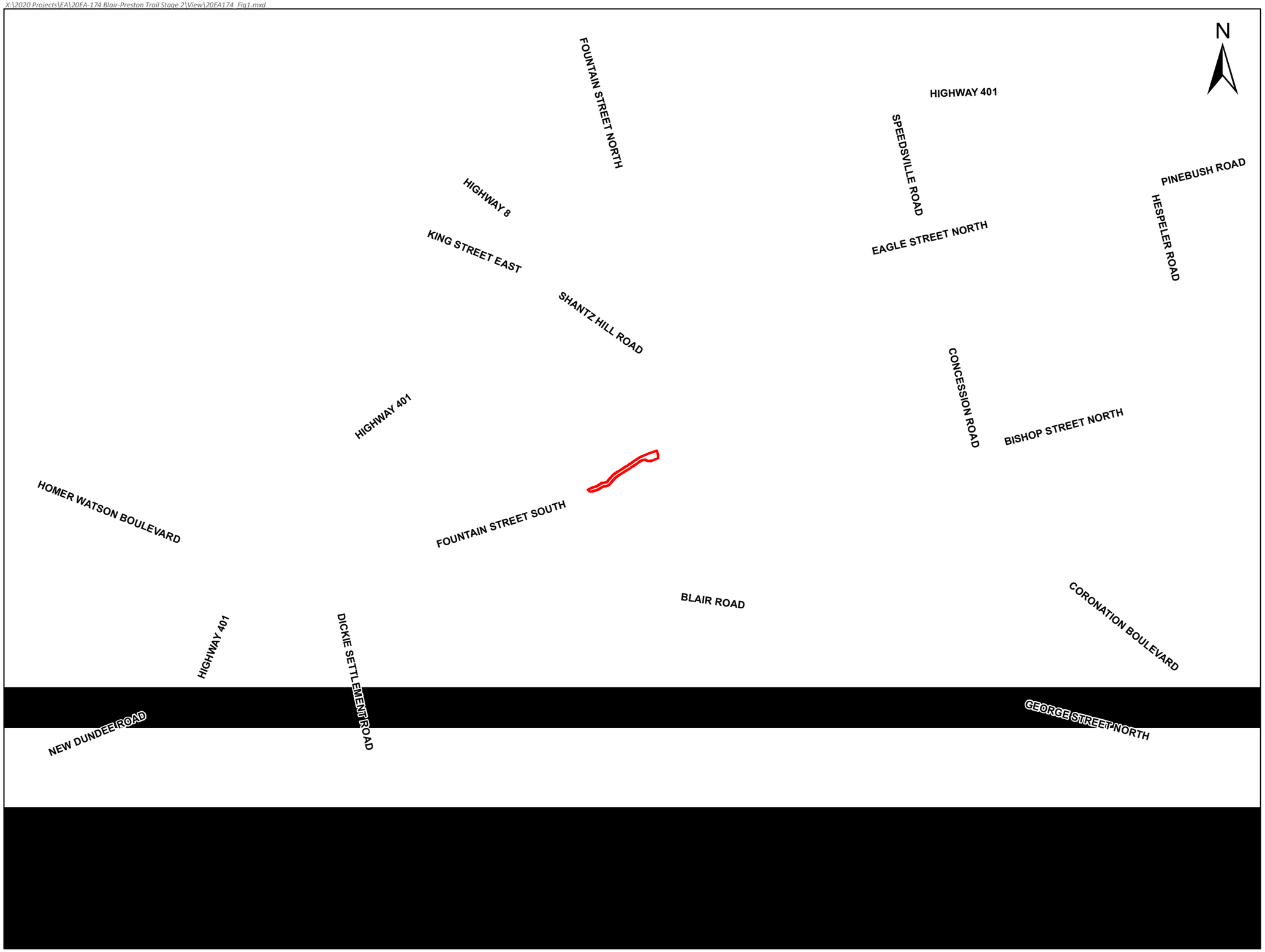
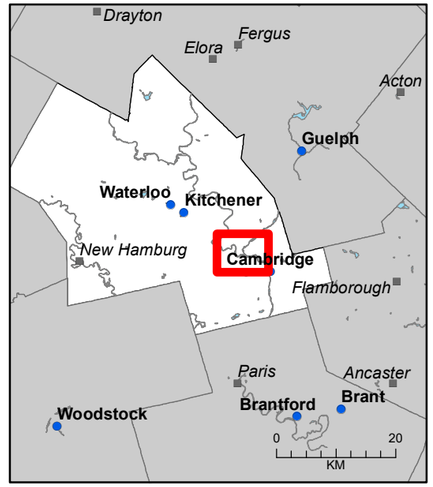
8.0 FIGURES

X:\2020 Projects\EA\20EA-174 Blair-Preston Trail Stage 2\View\20EA174_Fig1.mxd





STUDY AREA

Sources:
OpenStreetMap

Projection: NAD 1983 UTM Zone 17N

Scale: 1:25,000

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ASI PROJECT NO.: 20EA-174
DATE: 2020-09-23

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Figure 1: Location of the Blair Preston Pedestrian Bridge and Trail Study Area, City of Cambridge

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PRESTON PKWY

FOUNTAIN STREET SOUTH

DOVER STREET SOUTH

ASI 2019

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STUDY AREA
TEST PIT PHOTO
PHOTO LOCATION AND DIRECTION

PREVIOUSLY DISTURBED - NO POTENTIAL
PREVIOUSLY ASSESSED (ASI 2019)
PEDESTRIAN SURVEY - 1m INTERVALS
TEST PIT SURVEY - 5m INTERVALS

MANHOLE (SANITARY)
MONITORING WELL

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

Projection: WGS 1984 Web Mercator Auxiliary Sphere
Scale: 1:2,000
Page Size: 11 x 17

0 100
Metres

ASI PROJECT NO.: 20EA-174
DATE: 2021-03-17
DRAWN BY: A.C.
FILE: 20EA174_Fig2

Figure 2: Stage 2 Assessment Results for the Blair Preston Pedestrian Bridge and Trail, City of Cambridge

9.0 PLATES

Plate 1: Manhole cover of sanitary sewer main located within the Study Area; previously disturbed, no potential

Plate 2: Test pit survey at 5 m intervals in progress adjacent to Speed River; water monitoring well present within Study Area

Plate 3: Pedestrian survey at 1 m intervals in progress

Plate 4: Test pit survey at 5 m intervals in progress

Plate 5: Representative test pit profile demonstrating intact A-horizon above subsoil

Plate 6: Representative test pit profile demonstrating buried A-horizon below redeposited soils adjacent to Speed River

Plate 7: Representative artifacts from site P1 (AiHc-513) from left to right: one Late Archaic Narrow Point (Cat. #L22), one secondary retouch flake (Cat. #L9), and two flake fragments (Cat. #L17 and #L20)

Plate 8: Representative artifacts from site P3 (AiHc-514) from left to right: a Late Archaic Perkiomen point (Cat. #L2), one secondary retouch flake (Cat. #L5), and one flake fragment (Cat. #L6)

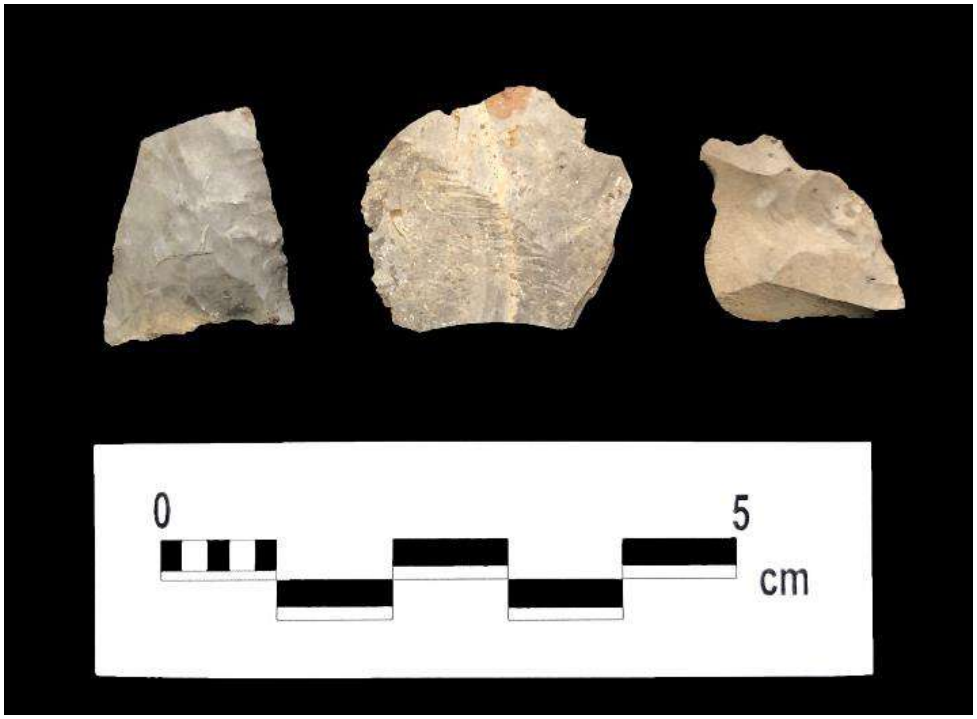

Plate 9: Representative artifacts from site P5 (AiHc-515) from left to right: one Late Woodland Triangular point (Cat. #L6), one flake fragment (Cat. #L2), and one secondary knapping flake (Cat. #L3)

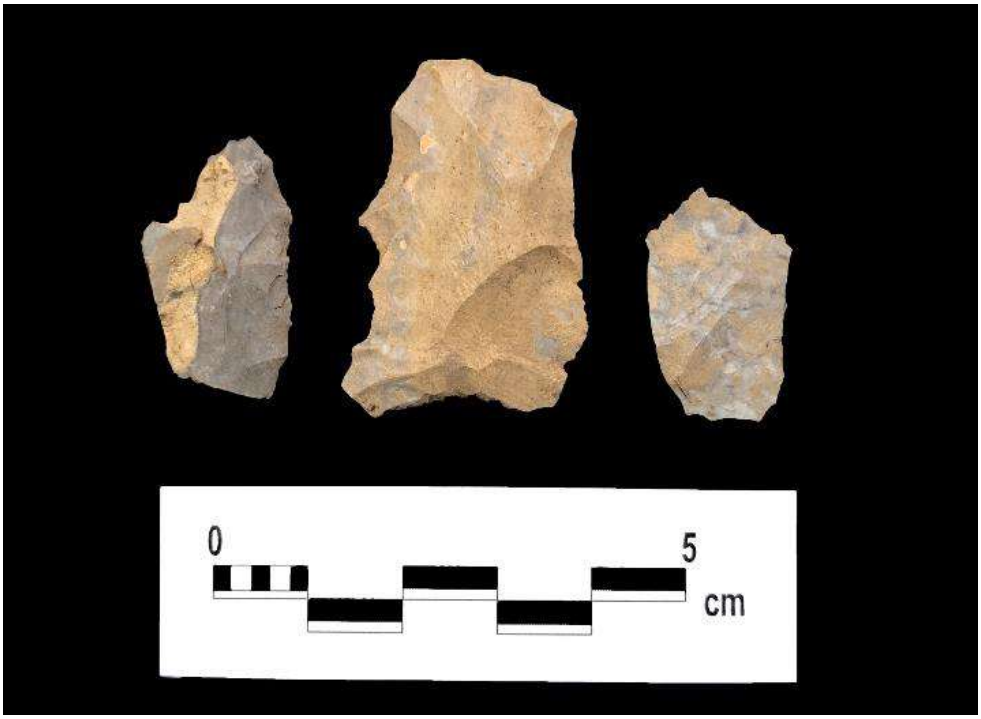

Plate 10: Representative artifacts from site P8 (AiHc-516) from left to right: one biface fragment (Cat. #L3), one secondary knapping flake (Cat. #L2), and one flake fragment (Cat. #L4)

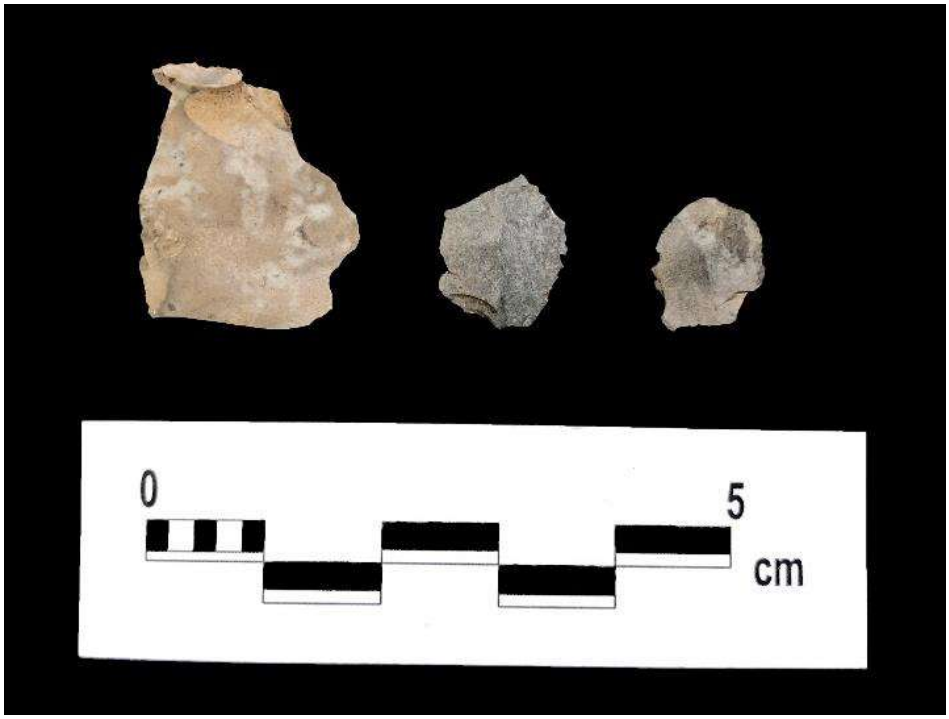

Plate 11: Representative artifacts from site P14 (AiHc-517) from left to right: one secondary knapping flake (Cat. #L2), one flake fragment (Cat. #L4), and one secondary retouch flake (Cat. #L1)

Plate 12: Unanalyzable Indigenous ceramic fragment (Cat. #P2) representative of the ceramic assemblage for Site P14 (AiHc-517).

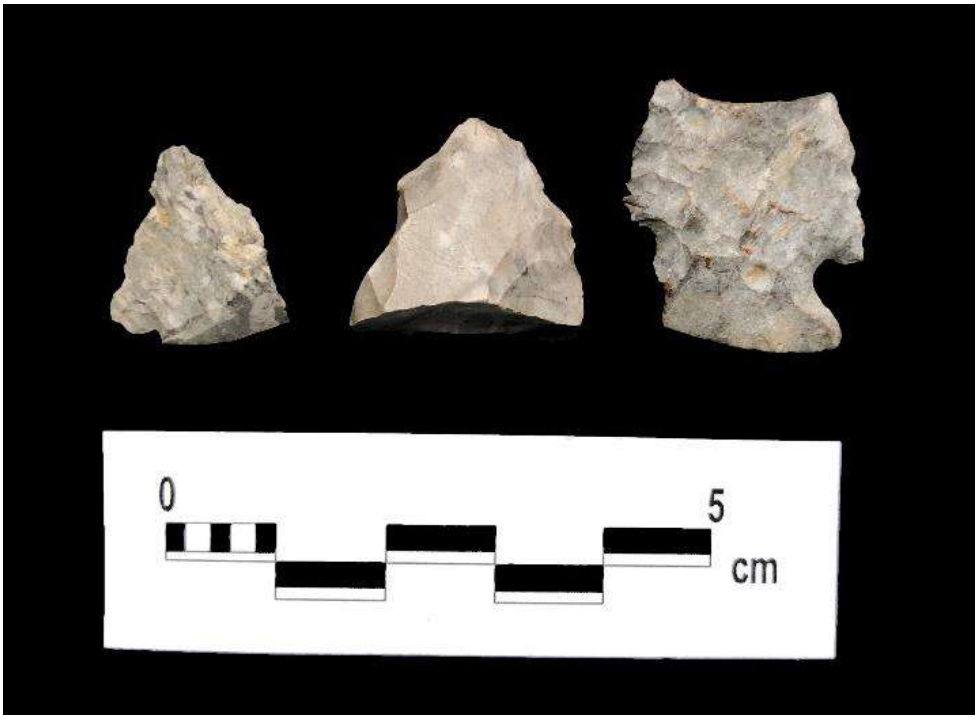

Plate 13: Representative artifacts from site P18 (AiHc-518), from left to right: two flake fragments (Cat. #L1 and #L2) and one Early Archaic Kirk-corner notched Nettling point (Cat. #L3)

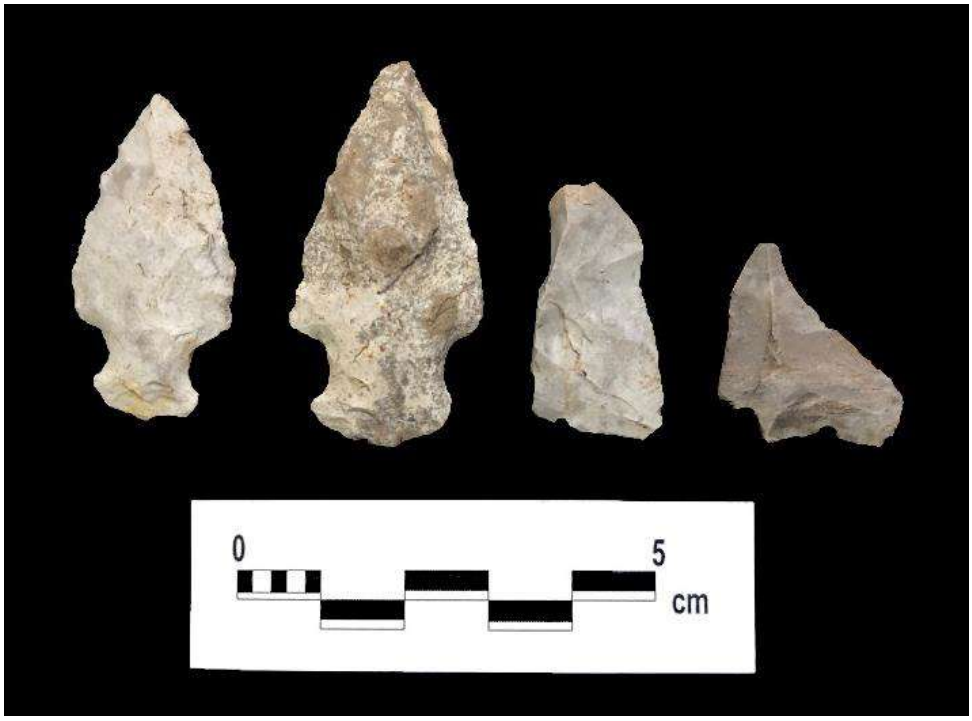

Plate 14: Representative artifacts from site AiHc-146, from left to right: one Late Archaic Innes point (Cat. #L3), one Late Archaic Narrow point (Cat. #L4), one secondary knapping flake (Cat. #L6), and one secondary retouch flake (Cat. #L8)

10.0 APPENDIX A: LITHIC ARTIFACT CATALOGUE

Lithic Catalogue: All Sites

Cat #	Context	Type	Stratum	Qty	Material	TA	Notes
AiHc-146							
L1	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L2	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L3	Surface	Projectile Point	Ploughzone	1	Lockport Chert	0	Innes (Late Archaic Period [ca. 3300 BP - 2900 BP]); complete; L 38 mm W 19 mm T 5 mm
L4	Surface	Projectile Point	Ploughzone	1	Lockport Chert	0	Narrow Point (Late Archaic Period [ca. 4500 BP - 3800 BP]); complete; L 44 mm W 22 mm T 8 mm
L5	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L6	Surface	Secondary Knapping Flake	Ploughzone	1	Bois Blanc Chert	0	
L7	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L8	Surface	Secondary Knapping Flake	Ploughzone	1	Onondaga Chert	0	
L9	Surface	Secondary Retouch Flake	Ploughzone	1	Onondaga Chert	0	
L10	Surface	Secondary Knapping Flake	Ploughzone	1	Onondaga Chert	0	bending initiation
L11	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L12	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	1	
L13	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L14	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L15	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	pronounced retouch along distal edge
L16	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	1	
L17	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	1	
L18	Surface	Flake Fragment	Ploughzone	1	Lockport Chert	0	
L19	Surface	Secondary Retouch Flake	Ploughzone	1	Onondaga Chert	0	
L20	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	lateral edge retouch
L21	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	1	
L22	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L23	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L24	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L25	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L26	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
				26		**4**	
AiHc-513							
L1	Surface	Secondary Retouch Flake	Ploughzone	1	Onondaga Chert	0	
L2	Surface	Secondary Retouch Flake	Ploughzone	1	Lockport Chert	0	
L3	Surface	Secondary Retouch Flake	Ploughzone	1	Onondaga Chert	0	
L4	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L5	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L6	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	

Cat #	Context	Type	Stratum	Qty	Material	TA	Notes
L7	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L8	Surface	Secondary Retouch Flake	Ploughzone	1	Onondaga Chert	0	
L9	Surface	Secondary Retouch Flake	Ploughzone	1	Onondaga Chert	0	
L10	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	1	
L11	Surface	Secondary Retouch Flake	Ploughzone	1	Onondaga Chert	0	
L12	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	1	
L13	Surface	Flake Fragment	Ploughzone	1	Lockport Chert	0	
L14	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L15	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	1	
L16	Surface	Secondary Retouch Flake	Ploughzone	1	Onondaga Chert	0	
L17	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	1	
L18	Surface	Secondary Knapping Flake	Ploughzone	1	Onondaga Chert	0	
L19	Surface	Secondary Retouch Flake	Ploughzone	1	Onondaga Chert	0	
L20	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	distal edge retouch
L21	Surface	Flake Fragment	Ploughzone	1	Lockport Chert	0	
L22	Surface	Projectile Point	Ploughzone	1	Onondaga Chert	0	Narrow Point (Late Archaic Period [ca. 4500 BP - 3800 BP]); L 37 mm W 13 mm T 7 mm
L23	Surface	Shatter	Ploughzone	1	Onondaga Chert	0	
				23		**4**	

AiHc-514

L1	Surface	Flake Fragment	Ploughzone	1	Bois Blanc Chert	0	
L2	Surface	Projectile Point	Ploughzone	1	Bois Blanc Chert	0	Perkiomen (Late Archaic Period [ca. 3700 BP - 2700 BP]); fragment- base and partial blade; L 34 mm W 29 mm T 6 mm
L3	Surface	Secondary Retouch Flake	Ploughzone	1	Onondaga Chert	0	
L4	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L5	Surface	Secondary Retouch Flake	Ploughzone	1	Onondaga Chert	0	
L6	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	1	
				6		**1**	

AiHc-515

L1	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L2	Surface	Flake Fragment	Ploughzone	1	Selkirk Chert	0	
L3	Surface	Secondary Knapping Flake	Ploughzone	1	Onondaga Chert	0	
L4	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L5	Surface	Secondary Retouch Flake	Ploughzone	1	Onondaga Chert	0	
L6	Surface	Projectile Point	Ploughzone	1	Onondaga Chert	0	Triangular (Late Woodland Period [ca. 1200 BP - 400 BP]); fragment; missing tip; L 18 mm W 15 mm T 3 mm
L7	Surface	Secondary Retouch Flake	Ploughzone	1	Onondaga Chert	0	

Cat #	Context	Type	Stratum	Qty	Material	TA	Notes
				7		**0**	
AiHc-516							
L1	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L2	Surface	Secondary Knapping Flake	Ploughzone	1	Onondaga Chert	0	distal edge retouch
L3	Surface	Biface	Ploughzone	1	Onondaga Chert	0	tip fragment; semi-refined; L 28 mm W 17 mm T 7 mm
L4	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	1	
L5	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L6	Surface	Shatter	Ploughzone	1	Lockport Chert	0	
L7	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L8	Surface	Secondary Knapping Flake	Ploughzone	1	Onondaga Chert	0	
L9	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L10	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L11	Surface	Flake Fragment	Ploughzone	1	Quartzite	0	
L12	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L13	Surface	Secondary Knapping Flake	Ploughzone	1	Onondaga Chert	0	bending initiation
L14	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
				14		**1**	
AiHc-517							
L1	Test Pit 1	Secondary Retouch Flake	Buried A-horizon	1	Onondaga Chert	1	
L2	Test Pit 2	Secondary Knapping Flake	Buried A-horizon	1	Onondaga Chert	0	bending initiation
L3	Test Pit 2	Secondary Retouch Flake	Buried A-horizon	1	Onondaga Chert	0	
L4	Test Pit 3	Flake Fragment	Buried A-horizon	1	Onondaga Chert	0	
L5	Test Pit 3	Secondary Retouch Flake	Buried A-horizon	2	Onondaga Chert	0	
				6		**1**	
AiHc-518							
L1	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	1	
L2	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L3	Surface	Projectile Point	Ploughzone	1	Onondaga Chert	1	Nettling (Early Archaic Period [ca. 9500 BP - 8900 BP]); kirk-corner notched; fragment; partial base and blade; L 23 mm W 21 mm T 4 mm
				3		**2**	

Cat #	Context	Type	Stratum	Qty	Material	TA	Notes
P2							
L1	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
				1		**0**	
P4							
L1	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
				1		**0**	
P11							
L1	Test Pit 1	Flake Fragment	Buried A-horizon	1	Bois Blanc Chert	0	
				1		**0**	
P12							
L1	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L2	Surface	Secondary Retouch Flake	Ploughzone	1	Onondaga Chert	0	
				2		**0**	
P13							
L1	Surface	Secondary Knapping Flake	Ploughzone	1	Onondaga Chert	0	
				1		**0**	
P15							
L1	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
				1		**0**	
P16							
L1	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
				1		**0**	
P17							
L1	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	
L2	Surface	Secondary Retouch Flake	Ploughzone	1	Onondaga Chert	0	
				2		**0**	
P23							
L1	Surface	Flake Fragment	Ploughzone	1	Onondaga Chert	0	

Cat #	Context	Type	Stratum	Qty	Material	TA	Notes
				1		0	

11.0 APPENDIX B: INDIGENOUS CERAMIC ARTIFACT CATALOGUE

Stage 2 Indigenous Ceramics Catalogue

P14 (AiHc-517)

Cat #	Operation	Context	Type	Portion	Qty	Comments
P1	TPS	Test Pit 2 Buried A-horizon	Unanalyzable Sherd	Fragmentary Sherd	4	NOTES: excessive exterior exfoliation; < 18 mm in size; unanalyzable
P2	TPS	Test Pit 4 Buried A-horizon	Unanalyzable Sherd	Fragmentary Sherd	1	NOTES: excessive exterior exfoliation; < 18 mm in size; unanalyzable
P3	TPS	Test Pit 3 Buried A-horizon	Unanalyzable Sherd	Fragmentary Sherd	3	NOTES: excessive exterior exfoliation; < 18 mm in size; unanalyzable

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix H
Geotechnical Report

REPORT ON

PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED BLAIR PRESTON TRAIL AND PEDESTRIAN BRIDGE
CITY OF CAMBRIDGE, ONTARIO

PREPARED FOR:

R.J. Burnside & Associates Limited

Project No. 19-155-300
Date: November 25, 2020

DS CONSULTANTS LTD.
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Vaughan, Ontario, L4H 0K8
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www.dsconsultants.ca

Table of Contents

1. INTRODUCTION

DS Consultants Limited (DS) was retained by R.J. Burnside & Associates Limited to undertake a preliminary geotechnical investigation for the proposed pedestrian bridge and trail in Blair/Preston in the City of Cambridge, Ontario.

It is understood that the preliminary geotechnical investigation is required as part of a Class EA process for a new trail and proposed pedestrian bridge across Preston Flats crossing the Speed River in the City of Cambridge.

The purpose of this preliminary geotechnical investigation was to determine the subsurface conditions at six (6) borehole locations and from the findings at the boreholes make preliminary geotechnical recommendations for the design of the new bridge and trail.

This investigation deals with geotechnical foundation issues only. Environmental and hydrogeological investigations, and slope stability assessment are beyond the scope of work of this investigation.

This report is provided on the basis of the terms of reference presented above and on the assumption that the design will be in accordance with applicable codes and standards. If there are any changes in the design features relevant to the geotechnical analyses, or if any questions arise concerning the geotechnical aspects of the codes and standards, this office should be contacted to review the design. It may then be necessary to carry out additional borings and reporting before the recommendations can cater to the changed design.

The site investigation and recommendations follow generally accepted practice for geotechnical consultants in Ontario. The format and contents are guided by client specific needs and economics and do not conform to generalized standards for services. Laboratory testing for most part follows ASTM or CSA Standards or modifications of these standards that have become standard practice.

This report has been prepared for R.J. Burnside & Associates Limited and its designers. Use of this report by third party without DS consent is prohibited.

2. FIELD AND LABORATORY WORK

Six boreholes (BH20-1 through BH20-6, see **Drawing 1** for borehole locations) were drilled at the subject site to depths of 2 to 8.7 m below ground surface.

The boreholes were drilled with coring and solid stem continuous flight augers equipment by a drilling sub-contractor under the direction and supervision of DS personnel. Samples were retrieved at regular intervals with a 50 mm O.D. split-barrel sampler driven with a hammer weighing 624 N and dropping 760

mm in accordance with the Standard Penetration Test (SPT) method. Dynamic Cone Penetration (DCPT) tests were also performed in BH20-5 and in BH20-6 to depths of 7.9 m and 4.6 m, respectively.

The soil samples were logged in the field and returned to the DS laboratory for detailed examination by the project engineer and for laboratory testing.

As well as visual examination in the laboratory, all soil samples from geotechnical boreholes were tested for moisture contents. Grain size analyses of three (3) selected soil samples were conducted and the results are presented in **Appendix A**.

Water level observations were made during and upon completion of drilling and in the monitoring well installed in BH20-6 for long-term groundwater monitoring. The surface elevations at the borehole locations were surveyed by DS staff, using a differential GPS unit and were referenced to a geodetic datum.

3. SITE AND SUBSURFACE CONDITIONS

The borehole location plan is shown on **Drawing 1**. General notes on sample description are provided on **Drawing 1A**. The subsurface conditions in the boreholes are presented in the individual borehole logs presented on **Drawings 2 to 7**.

3.1 Soil Conditions

The soils encountered in the boreholes consisted of surficial topsoil overlying silty sand and sand and gravel deposits.

Topsoil: In the boreholes, a 100 to 200 mm thick layer of topsoil was encountered at the surface. The thickness of the topsoil in each borehole is shown in the borehole log. It should be noted that the thickness of the topsoil explored at the borehole locations may not be representative for the site and should not be relied on to calculate the amount of topsoil at the site.

Fill: Fill material consisting of silty sand, gravel and organics was contacted at BH20-5 extending to a depth of 1.5 m below grade. The fill material was loose to compact based on the SPT 'N' values of 5 and 23 blows per 300mm penetration.

Silty Sand: Below the topsoil, compact to loose silty sand deposits were encountered at BH20-1 through BH20-4 extending to depths ranging from 0.8 m to 2 m below grade. SPT 'N' values measured in the silty sand ranged from 8 to 17 blows per 300 mm penetration.

Sand and Gravel Deposits: Below the silty sand in BH20-1 to BH20-3, or fill in BH20-5, or topsoil in BH20-6, silty sand and gravel, or sandy gravel deposits were encountered, extending to the termination depths of the boreholes. The granular deposits contained frequent cobble and boulder sizes. The sand and gravel deposits were found in compact to very dense state, with measured SPT 'N' values ranging from

16 to greater than 50 blows per 300mm penetration. In BH20-5, the sand below a depth of 4.6 m was compact.

Dynamic cone penetration (DCPT) tests were also carried out in Borehole BH20-5 from surface to cone refusal at 7.9 m below grade, and in BH20-6 from surface to cone refusal at 4.6 m below grade. The DCPT blow counts ranged from 3 to greater than 100 blows per 300mm penetration, suggesting the soil was in a loose to very dense state.

Grain size analyses of three samples (BH20-5/SS4, BH20-5/SS6, and BH20-6/SS6) were conducted and the results are presented in **Appendix A**, with the following fractions:

Clay:	2 to 5%
Silt:	8 to 14%
Sand:	34 to 79%
Gravel:	2 to 56%

3.2 Groundwater Conditions

Short-term groundwater levels measured during drilling of the boreholes were found at depth of 1.2 to 2.0 m below ground surface in BH20-5 and BH20-6, respectively.

Groundwater level measured in the monitoring well installed in BH20-6 for long-term groundwater monitoring was at 1.9 m below grade (El. 268.4 m) on October 21, 2020.

It should be noted that the groundwater levels can vary and are subject to seasonal fluctuations in response to major weather events. The groundwater at the bridge site will essentially fluctuate at the same level as the water level in the river.

4. DISCUSSION AND RECOMMENDATIONS

In the following sections, the subsurface conditions are interpreted as they relate to the design and construction of the proposed pedestrian bridge and trail. Comments about construction are intended for the guidance of the designer to establish constructibility.

The construction methods described in this report must not be misconstrued as being specifications or direct recommendations to the contractors, or as being the only suitable methods. Prospective contractors should evaluate all of the factual information, obtain additional subsurface information as they might deem necessary and should select their construction methods, sequence and equipment based on their own experience in similar ground conditions. Readers of this report are also reminded that the conditions are known only at the borehole locations and conditions may vary significantly between boreholes.

4.1 Foundations

Based on the borehole information, compact to very dense sand and gravel or sandy gravel deposits were found below depth of 1.5 m in BH20-5 and below 0.1 m in BH20-6. The granular deposits contain frequent cobble and boulder sizes and are saturated and below groundwater. Therefore, drilled caissons are not suitable for supporting the structure, due to soil caving and heaving problems associated with caisson installation in granular soils below groundwater. Driven piles are not recommended due to obstruction problems associated with boulders and cobbles.

Based on the borehole information, the proposed pedestrian bridge can be supported by micropiles.

4.1.1 Micropiles

A micropile is constructed by drilling a hole, grouting the hole, and placing reinforcement. Micropiles are installed by methods that cause minimal disturbance to the adjacent structures. They can be installed in access restrictive environments in most soil types, with minimal vibrations and noise. The special drilling and grouting methods used in micropile installation allow for high grout/ground bond values along grout/ground interface. The grout transfers the load through friction from the reinforcement to the ground in the micropile bond zone in a manner similar to that of ground anchors. Due to small pile diameter (typically 150 to 300 mm), end bearing contribution in micropiles is generally neglected in design. The grout/ground bond strength achieved is influenced primarily by the ground type and grouting method used, i.e. pressure grouting or gravity feed.

A skin friction value of 100 kPa at SLS and 135 kPa at ULS in the compact to very dense sands and sandy gravels can be used to assess the capacity of micropiles in compression. The capacity of piles must be confirmed by a load test in the presence of DS Consultants Ltd. The skin friction between the micropiles and the riverbed level must be ignored.

Horizontal loads to the foundations can be supported by batter piles.

A specialty contractor must be retained to design and construct the micropiles. The specialty contractor should determine the length and size of the piles, based on the design loads, the borehole information and their installation method/procedure.

It should be noted that the soils at the site contain frequent cobbles and boulders. Coring of the boulders/cobbles or relocations of some piles may be required during the construction of the piles.

Field pile load testing will be required to confirm the design bearing capacity. The test piles must be loaded to at least 1.67 times its design bearing value at ULS. In order to ignore the group effect, the center-to-centre distance between adjacent micropiles should be at least 3 times its diameter.

The installation and load testing of the test micropile must be monitored by a qualified geotechnical engineer.

4.1.2 Other Comments on Foundations

Large obstructions such as cobbles and boulders are anticipated at the site. If buried obstructions are encountered during the installation of piles, relocation of some piles may be required. Provisions must be made in the foundation installation contract for the removal of possible obstructions and/or relocation of piles.

All pile caps exposed to seasonal freezing conditions must have at least 1.4m of soil cover or its thermal equivalent for frost protection.

Erosion and scour protection should be provided for the abutments and foundations of the bridge. Proper erosion and scour protection should also be provided along the sides of the watercourse near the bridge structures.

The erosion and scour protection should be designed by a specialist river engineer/scientist who is familiar with the site conditions.

It should also be noted that the recommended foundation type and bearing capacities based on the borehole information are for design stage only. The investigation and comments are necessarily on-going as new information of the underground conditions becomes available. For example, more specific information is available with respect to conditions between boreholes when foundation construction is underway. The interpretation between boreholes and the recommendations of this report must therefore be checked through field inspections provided by DS Consultants Limited to validate the information for use during the construction stage.

4.2 Earth Pressures and Retaining Structures

Backfilling behind bridge abutments and any retaining (wing) walls should consist of granular materials in accordance with the applicable Standards. Free draining backfill materials, weep-holes, etc. should be provided in order to prevent hydrostatic pressure build-up.

Computation of earth pressures acting against bridge abutments, retaining walls and any wing walls should be in accordance with the Canadian Highway Bridge Design Code, (CHBDC) S6-06. For design purposes, the following properties can be assumed for backfill.

Compacted Granular 'A' or Granular 'B' Type II

Angle of Internal Friction ϕ=35° (unfactored)
Unit weight = 22 kN/m^3
Coefficient of Lateral Earth Pressure:

Level Backfill	Backfill Sloping at 3H:1V	Backfill Sloping at 2H:1V
K_a=0.27	K_a=0.34	K_a=0.40
K_b=0.35	K_b=0.44	K_b=0.50

K_o=0.43	K_o=0.56	K_o=0.62
K*=0.45	K*=0.60	K*=0.66

Compacted Granular 'B' Type I

Angle of Internal Friction ϕ=32° (unfactored)
Unit Weight = 21 kN/m^3
Coefficient of Lateral Earth Pressure:

Level Backfill	Backfill Sloping at 3H:1V	Backfill Sloping at 2H:1V
K_a=0.31	K_a=0.39	K_a=0.47
K_b=0.39	K_b=0.49	K_b=0.57
K_o=0.47	K_o=0.62	K_o=0.69
K*=0.54	K*=0.68	K*=0.78

Note: K_a is the coefficient of active earth pressure

K_b is the backfill earth pressure coefficient for an unrestrained structure including compaction efforts

K_o is the coefficient of earth pressure at rest

K* is the earth pressure coefficient for a soil loading a fully restrained structure and includes compaction effects

These values are based on the assumption that the backfill behind the retaining structures is free-draining granular material and adequate drainage is provided.

The earth pressure coefficient to be adopted will depend on whether the retaining structure is restrained or some movement can occur such that the active state of earth pressure can develop. The effect of compaction should also be taken into account in the selection of the appropriate earth pressure coefficients. The use of vibratory compaction equipment behind the abutments and the retaining walls should be restricted in size.

4.3 Excavations and Groundwater Control

Excavations can be carried out with heavy hydraulic backhoe. Groundwater table at the site will essentially fluctuate with water level in the adjacent river.

Positive dewatering will be required prior to any excavation below groundwater table, otherwise it will result into unstable base and flowing sides. A contractor specializing in dewatering should be retained to design the dewatering systems. Water must be lowered to 1.0m below the lowest excavation level.

Dewatering within enclosed sheeting / cofferdam may be required to assist in excavations below groundwater table.

All excavations must be carried out in accordance with the most recent Occupational Health and Safety Act (OHSA). In accordance with OHSA, the fill material and native soils at the site can be classified as Type 3 Soil above groundwater table and as Type 4 soil below the water table.

Possible large obstructions such as boulders are also anticipated in the sand and gravel deposits. Provisions must be made in the excavation contract for the removal of possible boulders, obstructions in the fill material.

4.4 Trail Pavements

It is understood that trails will be constructed in the area. Recommendations for the pavement structure of the trails are as follows:

50 mm Asphalt Concrete, over
150 mm Granular 'A' Base

The Granular 'A' base must be compacted to 100 percent of Standard Proctor Maximum Dry Density (SPMDD).

The subgrade must be stripped of topsoil or other unsuitable material. The top 300 mm of the subgrade must be compacted to at least 98 percent of SPMDD. Prior to placing the Granular 'A' base material, the subgrade must be inspected by the geotechnical engineer.

5. GENERAL COMMENTS AND LIMITATIONS OF REPORT

DS Consultants Ltd (DS) should be retained for a general review of the final design and specifications to verify that this report has been properly interpreted and implemented. If not accorded the privilege of making this review, DS will assume no responsibility for interpretation of the recommendations in the report.

This report is intended solely for the Client named. The material in it reflects our best judgment in light of the information available to DS at the time of preparation. Unless otherwise agreed in writing by DS, it shall not be used to express or imply warranty as to the fitness of the property for a particular purpose. No portion of this report may be used as a separate entity, it is written to be read in its entirety.

The conclusions and recommendations given in this report are based on information determined at the test hole locations. The information contained herein in no way reflects on the environment aspects of the project, unless otherwise stated. Subsurface and groundwater conditions between and beyond the test holes may differ from those encountered at the test hole locations, and conditions may become apparent during construction, which could not be detected or anticipated at the time of the site

investigation. The benchmark and elevations used in this report are primarily to establish relative elevation differences between the test hole locations and should not be used for other purposes, such as grading, excavating, planning, development, etc.

The design recommendations given in this report are applicable only to the project described in the text and then only if constructed substantially in accordance with the details stated in this report.

The comments made in this report on potential construction problems and possible methods are intended only for the guidance of the designer. The number of test holes may not be sufficient to determine all the factors that may affect construction methods and costs. For example, the thickness of surficial topsoil or fill layers may vary markedly and unpredictably. The contractors bidding on this project or undertaking the construction should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the subsurface conditions may affect their work. This work has been undertaken in accordance with normally accepted geotechnical engineering practices.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. DS accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. We accept no responsibility for any decisions made or actions taken as a result of this report unless we are specifically advised of and participate in such action, in which case our responsibility will be as agreed to at that time.

We trust that the information contained in this report is satisfactory. Should you have any questions, please do not hesitate to contact this office.

DS CONSULTANTS LTD.

Eva Papp, P.Eng.

Shabbir Bandukwala, M.Eng. P.Eng.

Fanyu Zhu, Ph.D., P.Eng.

Drawings

LEGEND

- Borehole Location
- Monitoring Well Location

0 50 100 m

DS CONSULTANTS LTD.
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Cambridge, ON, N3C 4N4
Telephone: 519.260.9393
www.dsconsultants.ca

Project: Geotechnical Investigation
Blair-Preston Trail, Fountain Road S, Cambridge ON

Title: **BOREHOLE LOCATION PLAN**

Client: RJ Burnside & Associates Ltd.

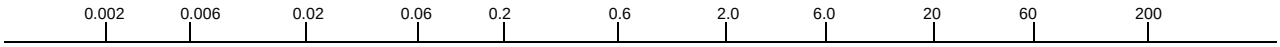
Size:	Approved By:	Drawn By:	Date:
8.5 x 11	EP	TT	October 2020
Rev.	**Scale:**	**Project No:**	**Figure No.**
	AS SHOWN	19-155-300	1

Drawing 1A: Notes on Soil Sample Descriptions

1. All sample descriptions included in this report generally follow the Unified Soil Classification. Laboratory grain size analyses provided by SPL also follow the same system. Different classification systems may be used by others, such as the system by the International Society for Soil Mechanics and Foundation Engineering (ISSMFE). Please note that, with the exception of those samples where a grain size analysis and/or Atterberg Limits testing have been made, all samples are classified visually. Visual classification is not sufficiently accurate to provide exact grain sizing or precise differentiation between size classification systems.

ISSMFE SOIL CLASSIFICATION

CLAY	SILT			SAND			GRAVEL			COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE		



EQUIVALENT GRAIN DIAMETER IN MILLIMETRES

CLAY (PLASTIC) TO	FINE	MEDIUM	CRS.	FINE	COARSE
SILT (NONPLASTIC)	SAND			GRAVEL	

UNIFIED SOIL CLASSIFICATION

2. Fill: Where fill is designated on the borehole log it is defined as indicated by the sample recovered during the boring process. The reader is cautioned that fills are heterogeneous in nature and variable in density or degree of compaction. The borehole description may therefore not be applicable as a general description of site fill materials. All fills should be expected to contain obstruction such as wood, large concrete pieces or subsurface basements, floors, tanks, etc., none of these may have been encountered in the boreholes. Since boreholes cannot accurately define the contents of the fill, test pits are recommended to provide supplementary information. Despite the use of test pits, the heterogeneous nature of fill will leave some ambiguity as to the exact composition of the fill. Most fills contain pockets, seams, or layers of organically contaminated soil. This organic material can result in the generation of methane gas and/or significant ongoing and future settlements. Fill at this site may have been monitored for the presence of methane gas and, if so, the results are given on the borehole logs. The monitoring process does not indicate the volume of gas that can be potentially generated nor does it pinpoint the source of the gas. These readings are to advise of the presence of gas only, and a detailed study is recommended for sites where any explosive gas/methane is detected. Some fill material may be contaminated by toxic/hazardous waste that renders it unacceptable for deposition in any but designated land fill sites; unless specifically stated the fill on this site has not been tested for contaminants that may be considered toxic or hazardous. This testing and a potential hazard study can be undertaken if requested. In most residential/commercial areas undergoing reconstruction, buried oil tanks are common and are generally not detected in a conventional preliminary geotechnical site investigation.

3. Till: The term till on the borehole logs indicates that the material originates from a geological process associated with glaciation. Because of this geological process the till must be considered heterogeneous in composition and as such may contain pockets and/or seams of material such as sand, gravel, silt or clay. Till often contains cobbles (60 to 200 mm) or boulders (over 200 mm). Contractors may therefore encounter cobbles and boulders during excavation, even if they are not indicated by the borings. It should be appreciated that normal sampling equipment cannot differentiate the size or type of any obstruction. Because of the horizontal and vertical variability of till, the sample description may be applicable to a very limited zone; caution is therefore essential when dealing with sensitive excavations or dewatering programs in till materials.

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LOG OF BOREHOLE BH20-1

PROJECT: Geotechnical Investigation
CLIENT: R.J. Burnside & Associates Limited
PROJECT LOCATION: Blair-Preston Trail, Fountain St S, Cambridge ON
DATUM: Geodetic
BOREHOLE LOCATION: See Borehole Location Plan, Drawing 1 N 4804267.539 E 550564.632

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150 mm
Date: Oct/05/2020

REF. NO.: 19-155-300
ENCL NO.: 2

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
271.8											
0.0 / 271.7	**TOPSOIL:** 150 mm										
0.2 / 271.1	**SILTY SAND:** brown, moist, compact		1	SS	17				○		
0.8	**SILTY SAND AND GRAVEL:** brown, moist, dense		2	SS	36		271		○		
270.0	very dense below 1.5 m depth		3	SS	64				○		
1.8 / 269.8	**SAND AND GRAVEL:** brown, moist, very dense						270				
2.0	**END OF BOREHOLE:** Notes: Open and dry on completion.										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG GINT LOGS.GPJ DS.GDT 11/25/20

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LOG OF BOREHOLE BH20-2

PROJECT: Geotechnical Investigation
CLIENT: R.J. Burnside & Associates Limited
PROJECT LOCATION: Blair-Preston Trail, Fountain St S, Cambridge ON
DATUM: Geodetic
BOREHOLE LOCATION: See Borehole Location Plan, Drawing 1 N 4804316.207 E 550664.2

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150 mm
Date: Oct/05/2020

REF. NO.: 19-155-300
ENCL NO.: 3

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
272.2											
0.0 272.0	**TOPSOIL:** 200 mm						272				
0.2 271.4	**SILTY SAND:** brown, moist, loose		1	SS	8			○			
0.8	**SAND AND GRAVEL:** brown, moist, compact		2	SS	16		271	○			
	dense below 1.5 m depth		3	SS	39			○			
270.2 2.0	**END OF BOREHOLE:** Notes: Open and dry on completion.										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG GINT LOGS.GPJ DS.GDT 11/25/20

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LOG OF BOREHOLE BH20-3

PROJECT: Geotechnical Investigation
CLIENT: R.J. Burnside & Associates Limited
PROJECT LOCATION: Blair-Preston Trail, Fountain St S, Cambridge ON
DATUM: Geodetic
BOREHOLE LOCATION: See Borehole Location Plan, Drawing 1 N 4804382.198 E 550742.498

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150 mm
Date: Oct/05/2020

REF. NO.: 19-155-300
ENCL NO.: 4

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
271.1											
0.0	**TOPSOIL:** 170 mm						271				
270.9											
0.2	**SILTY SAND:** trace gravel, brown, moist, compact		1	SS	10				○		
270.3											
0.8	**SAND AND GRAVEL:** some silt, grey, moist, compact		2	SS	20		270		○		
	dense below 1.5 m depth		3	SS	32				○		
269.1											
2.0	**END OF BOREHOLE:** Notes: Open and dry on completion.										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG GINT LOGS.GPJ DS.GDT 11/25/20

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LOG OF BOREHOLE BH20-4

PROJECT: Geotechnical Investigation
CLIENT: R.J. Burnside & Associates Limited
PROJECT LOCATION: Blair-Preston Trail, Fountain St S, Cambridge ON
DATUM: Geodetic
BOREHOLE LOCATION: See Borehole Location Plan, Drawing 1 N 4804441.581 E 550830.245

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150 mm
Date: Oct/05/2020

REF. NO.: 19-155-300
ENCL NO.: 5

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
271.4												
0.0	**TOPSOIL:** 200 mm											
271.2												
0.2	**SILTY SAND:** brown, moist, compact		1	SS	12		271		○			
	some gravel		2	SS	16				○			auger grinding
	loose below 1.5 m depth		3	SS	8		270		○			
269.4												
2.0	**END OF BOREHOLE:** Notes: Open and dry on completion.											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG GINT LOGS.GPJ DS.GDT 11/25/20

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LOG OF BOREHOLE BH20-5

PROJECT: Geotechnical Investigation
CLIENT: R.J. Burnside & Associates Limited
PROJECT LOCATION: Blair-Preston Trail, Fountain St S, Cambridge ON
DATUM: Geodetic
BOREHOLE LOCATION: See Borehole Location Plan, Drawing 1 N 4804470.005 E 550952.596

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150 mm
Date: Oct/06/2020

REF. NO.: 19-155-300
ENCL NO.: 6

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
270.3 / 0.0	**TOPSOIL:** 200 mm					
270.1 / 0.2	**FILL:** silty sand, gravel, organics, brown, moist, loose to compact	1	SS	5		
		2	SS	23	▽	
268.7 / 1.5	**SAND AND GRAVEL:** some silt, trace clay, frequent cobble and boulder sizes, grey, wet, dense to very dense	3	SS	41		wet spoon
		4	SS	58		wet spoon 46 40 11 3
		5	SS	61		wet spoon
265.7 / 4.6	**SAND:** some silt, trace clay, trace gravel, brown, wet, compact	6	SS	12		auger grinding; wet spoon 2 79 14 5
264.8 / 5.5	auger refusal at 5.5 m depth dcpt continued below 5.5 m depth					
	CONE REFUSAL AT 7.9 m DEPTH: Notes: 1) Water level at 1.2 m depth on completion					

W. L. 269.1 m
Oct 06, 2020

DYNAMIC CONE PENETRATION RESISTANCE PLOT
SHEAR STRENGTH (kPa)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE
PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG GINT LOGS.GPJ DS.GDT 11/25/20

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LOG OF BOREHOLE BH20-6

PROJECT: Geotechnical Investigation
CLIENT: R.J. Burnside & Associates Limited
PROJECT LOCATION: Blair-Preston Trail, Fountain St S, Cambridge ON
DATUM: Geodetic
BOREHOLE LOCATION: See Borehole Location Plan, Drawing 1 N 4804488.486 E 551001.063

DRILLING DATA
Method: Coring
Diameter: 300 mm
Date: Oct/19/2020

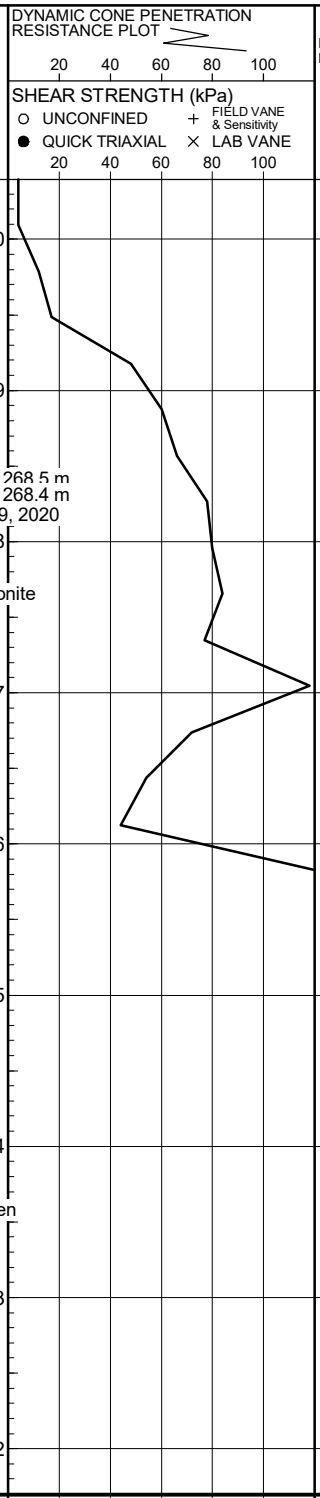
REF. NO.: 19-155-300
ENCL NO.: 7

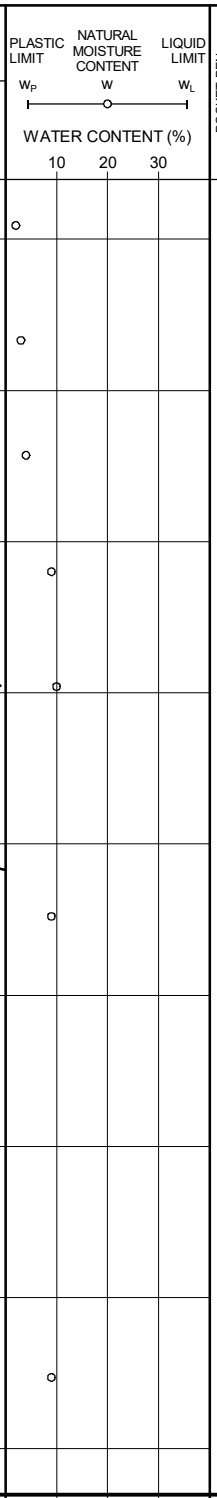
ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	GR	SA	SI	CL
270.4 / 0.0	**TOPSOIL:** 100 mm							
270.3 / 0.1	**SANDY GRAVEL:** some cobbles, trace silt, trace clay, brown, moist, compact	1	SS	23				
	dense below 0.8 m depth	2	SS	36				
	very moist, compact below 1.5 m depth	3	SS	29				
	wet and very dense below 2.3 m depth	4	SS	50/120mm				
		5	SS	65				
	grey below 4.6 m depth	6	SS	102	56	34	8	2
		7	SS	50/120mm				
262.8 / 7.6	**SAND AND GRAVEL:** some boulders, grey, wet, very dense	8	SS	50/120mm				
261.7 / 8.7	**REFUSAL AT 8.7 m DEPTH:**							

Notes:
1) 50 mm diameter monitoring well installed on completion

Date: Water level (mbgs):
19 Oct 2020 2.0
21 Oct 2020 1.9

W. L. 268.5 m
W. L. 268.4 m
Oct 19, 2020
Bentonite
Sand
Screen





POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)
METHANE AND GRAIN SIZE DISTRIBUTION (%)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

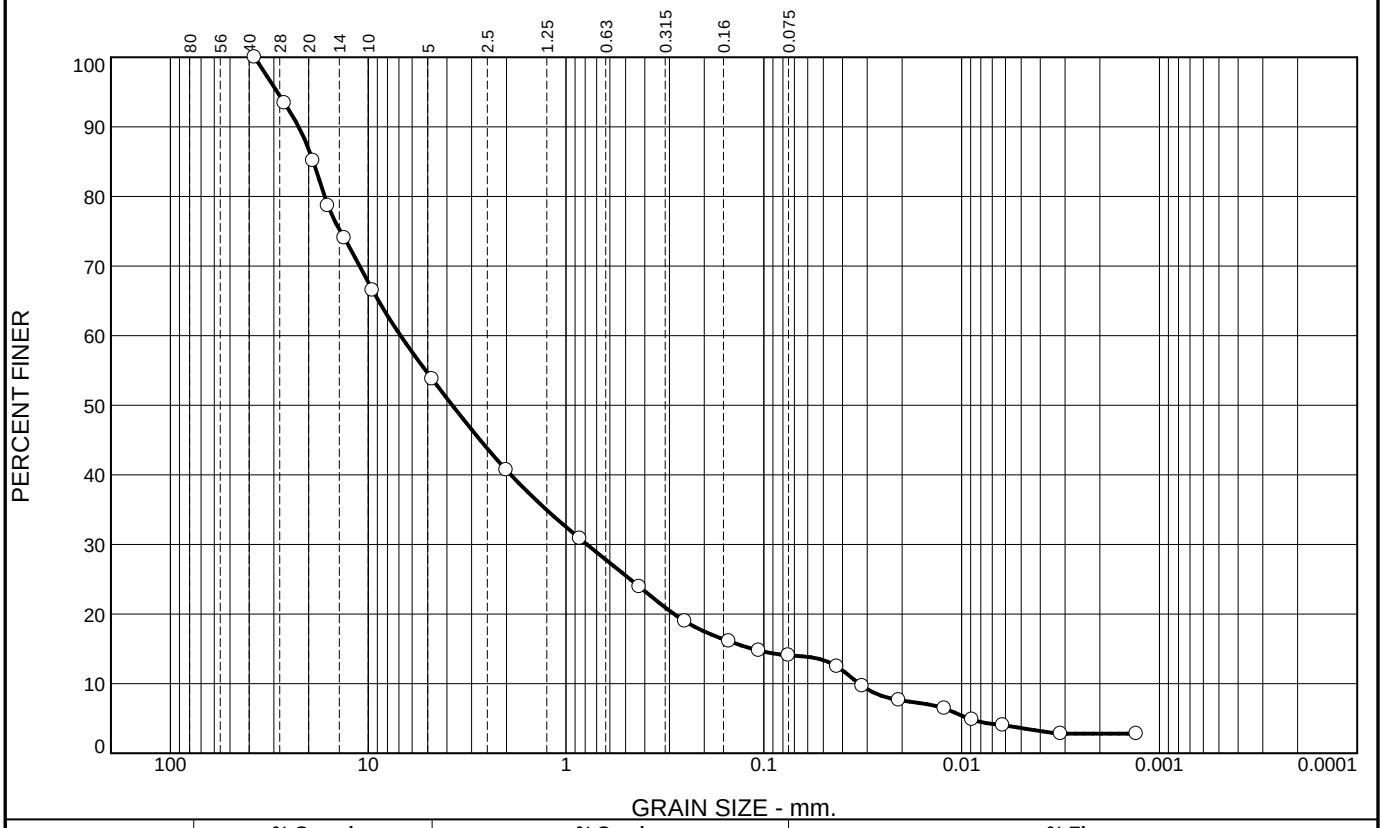
GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG GINT LOGS.GPJ DS.GDT 11/25/20

Appendix A

Grain Size Analysis Results

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	14.8	31.4	13.1	16.8	9.8	11.3	2.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
37.5mm	100.0		
26.5mm	93.4		
19mm	85.1		
16mm	78.7		
13.2mm	74.0		
9.5mm	66.5		
4.75mm	53.8		
2mm	40.7		
0.85mm	30.8		
0.425mm	23.9		
0.25mm	19.0		
0.15mm	16.1		
0.106mm	14.8		
0.075mm	14.1		
0.0427 mm.	12.5		
0.0317 mm.	9.7		
0.0208 mm.	7.6		
0.0122 mm.	6.4		
0.0088 mm.	4.8		
0.0062 mm.	4.0		
0.0032 mm.	2.8		
0.0013 mm.	2.8		

* (no specification provided)

Soil Description

Sandy gravel, some silt,trace clay

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 22.4737 D_{85}= 18.9304 D_{60}= 6.8640
D_{50}= 3.7562 D_{30}= 0.7828 D_{15}= 0.1139
D_{10}= 0.0330 C_u= 208.11 C_c= 2.71

Classification

USCS= AASHTO=

Remarks

Sampled by Tyler T.
F.M.=4.53

Location: BH 20-5 (SS4)
Sample Number: CAM-1009

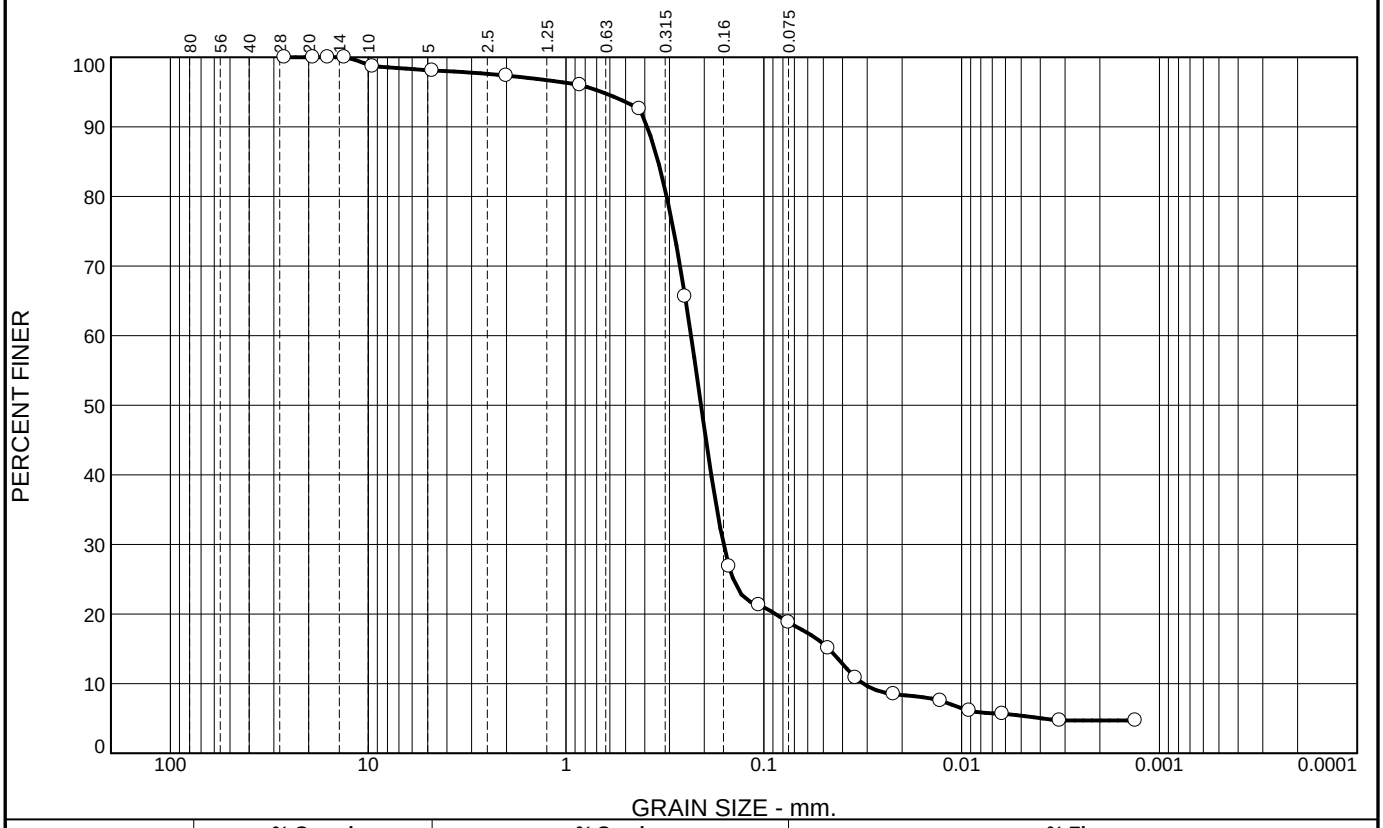
Date: Oct. 05,2020

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

Client: R. J. Burnside and Associates Limited
Project: Blair Peston Trail

Project No: 19-155-300

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.9	0.7	4.8	73.8	14.1	4.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
26.5mm	100.0		
19.0mm	100.0		
16.0mm	100.0		
13.2mm	100.0		
9.5mm	98.7		
4.75mm	98.1		
2.0mm	97.4		
0.85mm	96.0		
0.425mm	92.6		
0.25mm	65.6		
0.15mm	26.8		
0.106mm	21.3		
0.075mm	18.8		
0.0473 mm.	15.1		
0.0344 mm.	10.9		
0.0221 mm.	8.5		
0.0128 mm.	7.6		
0.0091 mm.	6.1		
0.0062 mm.	5.7		
0.0032 mm.	4.7		
0.0013 mm.	4.7		

* (no specification provided)

Soil Description

Sand some silt, trace clay ,trace gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3885 D_{85}= 0.3421 D_{60}= 0.2333
D_{50}= 0.2078 D_{30}= 0.1597 D_{15}= 0.0468
D_{10}= 0.0314 C_u= 7.43 C_c= 3.48

Classification

USCS= AASHTO=

Remarks

Sampled by Tyler T.
F.M.=1.09

Location: BH 20-5 (SS6)
Sample Number: CAM-1008

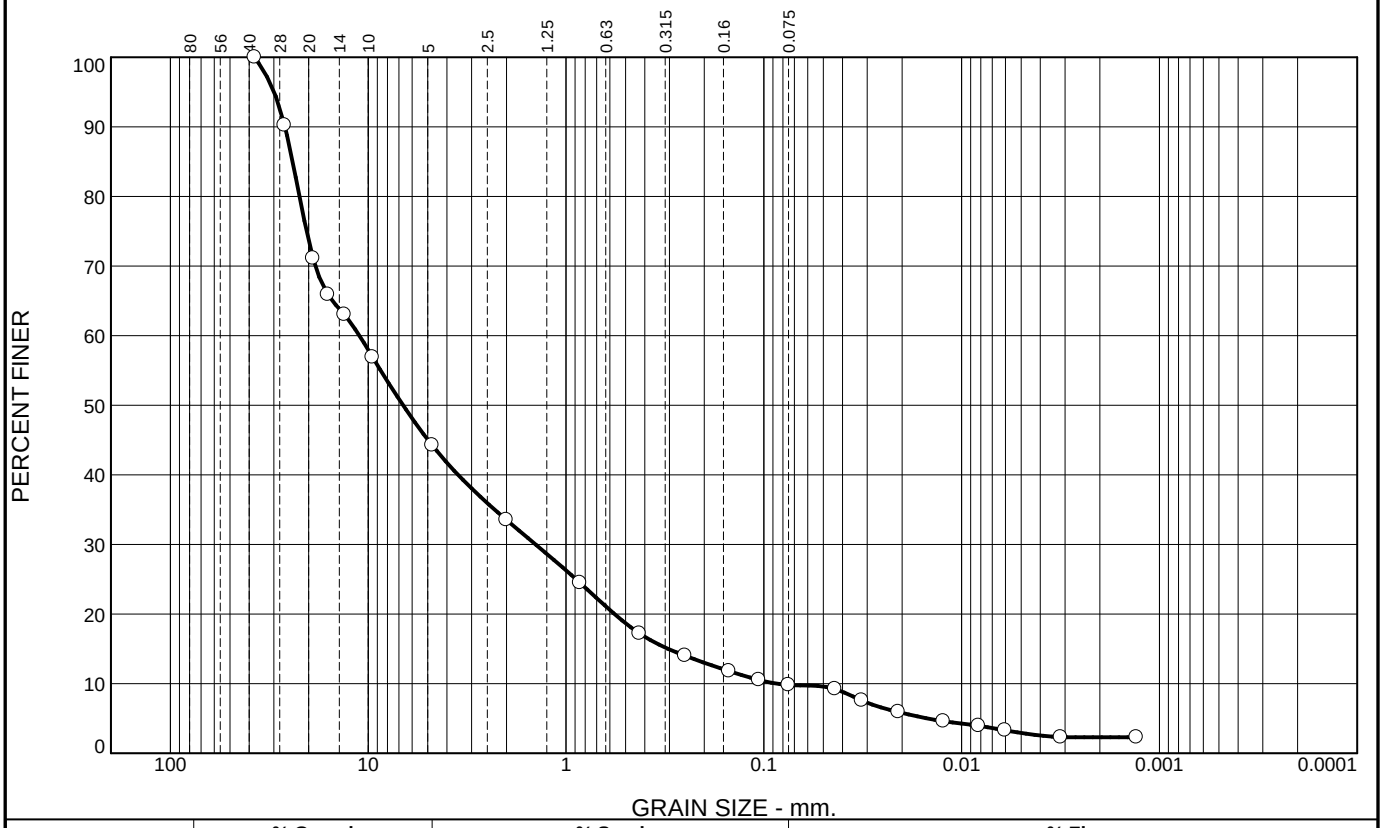
Date: Oct. 05,2020

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology
CCIL

Client: R. J. Burnside and Associates Limited
Project: Blair Peston Trail

Project No: 19-155-300

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	28.8	26.9	10.8	16.3	7.4	7.5	2.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
37.5mm	100.0		
26.5mm	90.2		
19.0mm	71.1		
16.0mm	65.9		
13.2mm	63.0		
9.5mm	56.9		
4.75mm	44.3		
2.0mm	33.5		
0.85mm	24.5		
0.425mm	17.2		
0.25mm	14.0		
0.15mm	11.8		
0.106mm	10.5		
0.075mm	9.8		
0.0436 mm.	9.2		
0.0320 mm.	7.6		
0.0209 mm.	5.9		
0.0124 mm.	4.6		
0.0082 mm.	4.0		
0.0060 mm.	3.3		
0.0032 mm.	2.3		
0.0013 mm.	2.3		

* (no specification provided)

Soil Description

Sandy gravel,trace silt,trace clay

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 26.3696 D_{85}= 24.1191 D_{60}= 11.0764
D_{50}= 6.6625 D_{30}= 1.4246 D_{15}= 0.3043
D_{10}= 0.0857 C_u= 129.25 C_c= 2.14

Classification

USCS= AASHTO=

Remarks

Sampled by Tyler T.
F.M.=5.17

Location: BH 20-6 (SS6)
Sample Number: CAM-1010

Date: Oct. 05,2020

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology
CCIL

Client: R. J. Burnside and Associates Limited
Project: Blair Peston Trail

Project No: 19-155-300

BURNSIDE

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Appendix I
Notice of Commencement and Contact List

NOTICE OF STUDY COMMENCEMENT
SCHEDULE B MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

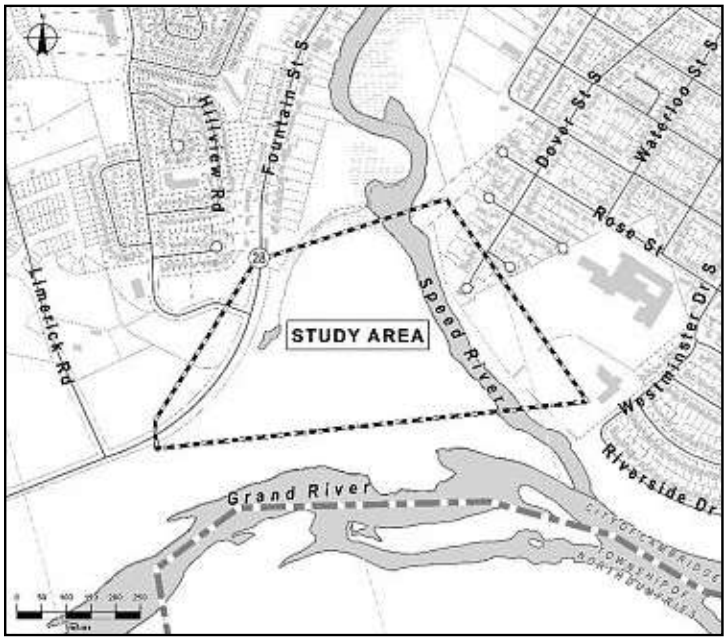
BURNSIDE

Blair-Preston Pedestrian Bridge & Trail

The Study

The City of Cambridge is undertaking a Municipal Class Environmental Assessment to study a future pedestrian bridge and trail to connect the communities of Blair and Preston. Routes are being considered through lands owned by the rare Charitable Research Reserve. The new off-road link will connect the B. McMullen Linear Trail to the existing multi-use trail on Fountain Street via a bridge over the Speed River. The bridge and trail will provide a major off-road connection to downtown Preston as well as a connection to the 401 pedestrian bridge linking Kitchener and the Doon area. The need for an off-road route through this area was identified in the City of Cambridge's Trails Master Plan (2010) and the Region of Waterloo's Active Transportation Master Plan (2014).

The approximate extent of the Study Area is shown on the map to the right.



The Process

Pedestrian bridges require study under the Municipal Class Environmental Assessment (MCEA) process, as per the *Ontario Environmental Assessment Act*. The MCEA will meet the requirements for "Schedule B" projects. A series of technical studies (including ecological, archaeological and floodplain investigations) will be completed and used to evaluate various alternative bridge locations and associated trail routing. An option to "do nothing" will also be considered. Agencies, stakeholders, Indigenous communities and public will be consulted throughout the study.

At the conclusion of the study, a preferred alternative will be selected and a Project File Report will be prepared for public review.

Input Invited

Consultation is important to this Study. The City invites public input and will consider all opinions as part of the decisions that are made. To find out more about project announcements and other information please visit the project website: www.cambridge.ca/BlairPreston. To automatically receive project updates as they are posted, click 'subscribe' at the bottom of the page. To provide comment, request additional information or to be added to the Project Contact List to receive future Notices, please contact either of the following Project Team members:

Shane Taylor
City of Cambridge
50 Dickson Street, P.O. Box 669
Cambridge, ON N1R 5W8
T: 519-740-4681 x 4567
E: TaylorS@cambridge.ca

Tricia Radburn
R. J. Burnside & Associates Limited
292 Speedvale Avenue West Unit 20
Guelph, Ontario N1H 1C4
T: 226-486-1778
E: Tricia.Radburn@rjburnside.com

Project and notice information will be made accessible upon request in accordance with the Accessibility Standard for Information and Communication under the *Accessibility for Ontarians with Disabilities Act, 2005*.

Information will be collected accordance with the *Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record.

This Notice was first Issued on Thursday, April 23, 2020.

If you require information in an accessible format or accommodation to access municipal services please contact accessibility@cambridge.ca
General contact numbers: (519)-623-1340 TTY (519)-623-6691

Blair-Preston Trail EA Agency and Stakeholder Contact List											
Agency/ Organization	**Title**	**First Name**	**Last Name**	**Position**	**Email**	**Sent Notice of Commencement**	**Sent Notice of PIC**	**Sent Draft Technical Report**	**Sent Draft EA Report**	**Removed From Mailing List**	**Comments Received**
Ministry of Infrastructure - The Transit Oriented Communities and Agency Oversight DivisionThe Transit Oriented Communities and Agency Oversight Division		Mirrun	Zaveri	Assistant Deputy Minister	mirrun.zaveri@ontario.ca	Y	Y				
Infrastructure Ontario	Mr.	Alex	Lye	Environmental Specialist	alex.lye@cisl.ca	Y	Y			No longer with Ministry	
Infrastructure Ontario		Lisa	Myslicki	Environmental Advisor	lisa.myslicki@infrastructureontario.ca	Y	Y				
Ministry of Agriculture, Food and Rural Affairs Dufferin County	Mr.	David	Marriot	District Planner, Western Ontario	david.marriott@ontario.ca	Y	Y				
Ministry of the Environment, Conservation and Parks Environmental Assessment and Permissions Branch		**Notice of Completion Only**			MEA.NOTICES.EAAB@ontario.ca						
Ministry of the Environment, Conservation and Parks West- Central Region					eanotification.wcregion@ontario.ca	Y	Y				
Ministry of the Environment, Conservation and Parks West- Central Region	Ms.	Barbara	Slattery	Environmental Resource Planner & EA Coordinator	barbara.slattery@ontario.ca.	Y	Y			No longer with Ministry	200501_Email from Barbara Slattery including standard response to Notice of Commencement with list of Minsitry expectations for EA. Refer to Appendix J.
Ministry of the Environment, Conservation and Parks West- Central Region		Shamus	Snell	A/ Management Biologist, Species at Risk Branch	shamus.snell@ontario.ca; SAROntario@ontario.ca						201104_Email responding to Burnside request for species at risk records. Refer to Appendix J.
Ministry of Municipal Affairs and Housing Western Municipal Service Office	Mr.	Erick	Boyd	Manager Community Planning and Development	erick.boyd@ontario.ca	Y	Y				
Ministry of Municipal Affairs and Housing Western Municipal Service Office	Mr.	Scott	Oliver	Manager Community Planning and Development	scott.oliver@ontario.ca	Y				No longer with Ministry	200423_Email. Email failed, Scott Oliver no longer with ministry.
Ministry of Municipal Affairs Ontario Growth Secretariat	Ms.	Hayley	Berlin	Manager, Growth Policy	hayley.berlin@ontario.ca	Y	Y				

Ministry of Natural Resources and Forestry Guelph (Southern Region)		Karina	Černiavskaja	District Planner	Karina.Cerniavskaja@ontario.ca; MNRF.Ayl.Planners@ontario.ca						201124_Email. Email from Planning Contact for Guelph and Aylmer District Offices. Circulate all planning related files within Guelph and Aylmer geographies to MNRF.Ayl.Planners@ontario.ca or Karina.Cerniavskaja@ontario.ca. Natural heritage information requests circulated to appropriate District Management Biologists. Endangered Species Act, including Species at Risk in Ontario inquiries should be circulated to SAROntario@ontario.ca to reach the MECP. 201123_Email. Karina Cerniavskaja acknowledged receipt of notice and noted that staff **have not** completed a natural heritage screening or other resource values, at this time. It was noted that the Proponent responsibility is to be aware of and comply with all relevant federal or provincial legislation, municipal by-laws or other agency approvals. See attached information guide to identifying and assessing natural features and resources as required. Natural Heritage and Endangered Species Act; Petroleum Wells and Oil, Gas and Salt Resource Act; Public Lands Act and Lakes and Rivers Improvement Act. Refer to Appendix J.
Ministry of Natural Resources and Forestry Guelph (Southern Region)	Ms.	Tammy	Verhaeghe	District Manager	tammy.verhaeghe@ontario.ca	Y	Y			No longer in planner position.	
Ministry of Citizenship and Multiculturalism (MCM).	Ms.	Karla	Barboza	Team Lead - Heritage (Acting)	karla.barboza@ontario.ca	Y	Y				
Ministry of Citizenship and Multiculturalism (MCM).	Mr.	Dan	Minkin	Heritage Planner	Dan.minkin@ontario.ca	Y	Y				
Ministry of Heritage, Sport, Tourism, Culture, and Industry	Ms.	Katherine	Kirzati	Heritage Planner	katherine.kirzati@ontario.ca	Y	Y			No longer with Ministry	200515_Email+Letter. Katherine Kirzati acknowledged receipt of the NOCm, and sent letter with MHSTCI's interest relates to mandate of conserving Ontario's cultural heritage. Refer to Appendix J.
City of Cambridge	Mr.	Doug	Craig	Mayor	mayor@cambridge.ca	Y	Y				
City of Cambridge	Mr.	Mike	Mann	City Councillor	mannm@cambridge.ca	Y	Y				
City of Cambridge	Ms.	Donna	Reid	City Councillor	reidd@cambridge.ca	Y	Y				
City of Cambridge	Mr.	David	Calder		calderd@cambridge.ca	Y	Y				
City of Cambridge	Ms.	Danielle	Manton		mantond@cambridge.ca	Y	Y				
City of Cambridge	Mr.	James	Etienne		etiennej@cambridge.ca	Y	Y				
City of Cambridge	Mr.	Mike	Parsons		parsonsm@cambridge.ca	Y	Y				
City of Cambridge	Mr.	Brian	Geerts		geertsb@cambridge.ca	Y	Y				
City of Cambridge	Mr.	Jeff	Willmer	Chief Administrative Officer	willmerj@cambridge.ca	Y	Y				
City of Cambridge	Mr.	George	Forhan	Director, Realty & Corporate Property Services	forhang@cambridge.ca	Y	Y				
City of Cambridge	Mr.	Hardy	Bromberg	Deputy City Manager, Development and Infrastructure	brombergh@cambridge.ca	Y	Y				
City of Cambridge	Ms.	Shannon	Noonan		noonans@cambridge.ca	Y	Y				

City of Cambridge	Ms.	Elaine	Brunn Shaw	City Planner, Development and Infrastructure Department	brunnshawe@cambridge.ca	Y	Y				
City of Cambridge	Mr.	Paul	Kan		kanp@cambridge.ca	Y	Y				
City of Cambridge Cambridge Accessibility Advisory Committee	Ms.	Vanessa	Lopak	Accessibility and Diversity Supervisor	lopakv@cambridge.ca	Y	Y				
Cambridge Cycling and Trails Advisory Committee	Ms.	Lisa	Chominiec	Sustainable Transportation Coordinator	chominiecl@cambridge.ca	Y	Y				
Cambridge Municipal Heritage Committee	Ms.	Karin	Stieg-Drobig		StiegDrobigK@cambridge.ca;	Y	Y				
Cambridge Municipal Heritage Committee	Mr.	John	Calhoun	Sr. Planner	calhounj@cambridge.ca	Y	Y				200423_Email. John Calhourn requested to be kept on the Project Contact List and to add Karin Stieg-Drobig (StiegDrobigK@cambridge.ca), so that the Municipal Heritage Advisory Committee (MHAC) and the City's Senior Planner-Heritage can be involved in this study, given the Blair HCD and Grand River National Heritage River status (and other heritage resources which may be in the study area).
City of Cambridge	Ms.	Laura	Waldie	Heritage Planner	waldiel@cambridge.ca	Y	Y				
City of Cambridge	Ms.	Kathy	Padgett	Environmental Planner	padgettk@cambridge.ca	Y	Y	Sent Terms of Reference for Natural Environment Report, Draft Natural Environment Report.			
Regional Municipality of Waterloo	Ms.	Bridget	Coady	Cultural Heritage Principle Planner	BCoady@regionofwaterloo.ca	Y	Y	Sent Stage 1 Archaeological Assessment			190913_Email. An email from Bridget Coady to Marcos Kroker suggested recommendations of the report titled: Stage 1 Archaeological Assessment, Blair Preston Pedestrian Bridge and Trial Construction (ARA, June 7, 2019) states that there are several areas within the Study Area which require a Stage 2 Archaeological Assessment, prior to site alteration and construction. Regional Cultural Heritage staff would like the opportunity to review the Stage 2 Archaeological Assessment as well as the ministry acknowledged letter of the Stage 1 and 2 Archaeological Assessments, when they are available, before providing any further comments.
Regional Municipality of Waterloo	Ms.	Kate	Hagerman	Cultural Heritage Specialist, Heritage Planning Advisory Committee	khagerman@regionofwaterloo.ca	Y	Y				
Regional Municipality of Waterloo	Mr.	Matthew	O'Neil		moneil@regionofwaterloo.ca	Y	Y				
Regional Municipality of Waterloo	Ms.	Paula	Sawicki	Manager, Strategic Transportation Planning, Planning, Housing & Community Services	psawicki@regionofwaterloo.ca	Y	Y				
											201113_Email. Kevan Marshall noted that a direct path through "back" of school property may help encourage use and provide a more direct and comfortable school travel option to/ from pedestrian bridge. It was noted though it might be beyond the scope, and also school administration STSWR planner, and the board could provide more/ better input.

Regional Municipality of Waterloo	Mr.	Kevan	Marshall	Principal Planner	KMarshall@regionofwaterloo.ca	Y	Y				201112_Email. Kevan Marshall noted the following: (1) Proposed connection would benefit those in Preston neighbourhood area heading towards Conestoga College: (a) could access Route 61 at corner of Preston Parkway and Fountain Street and (b) neighbourhood would also continue to be served by a local route as part of future Cambridge network redesign (2) While the proposed connection does not have a major impact on access to Stage 2 ION for Preston Heights residents, the pedestrian bridge will become a more comfortable and enjoyable means of accessing the station area for some residents, and aligns well with City and Region strategies to develop opportunities for enhanced placemaking in/around the central transit corridor (3) Alternative 2 and 3 will likely lead to cut-through across the bends in the trail; if Alternative 1 is pursued, explore opportunities for enhancing direct connections to the sidewalk on Dover Street (which has illumination and may be the preferred path of travel outside of prime daylight hours), and potentially Preston Heights through the field for a dedicated path.
Regional Municipality of Waterloo	Mr.	Kornel	Mucsi	Manager, Transportation Planning Transportation and Environmental Services	kmucsi@regionofwaterloo.ca	Y	Y				
Regional Municipality of Waterloo	Mr.	Steve	van De Keere	Director, Transportation	SvanDeKeere@regionofwaterloo.ca	Y	Y				
Regional Municipality of Waterloo	Mr.	Blair	Allen	Supervisor of Transit Development	ballen@regionofwaterloo.ca	Y	Y				
Region of Waterloo Ecological Environmental Advisory Committee		Jane	Gurney	Planner	jgurney@regionofwaterloo.ca	Y	Y	Sent Terms of Reference for Natural Environment Report, Natural Environment Report	Y		Various contact to comment on draft documents and review responses to comments.
Union Gas Limited	Ms.	Shirley	Brunditt	Lands Department	ontugllandsing@uniongas.com	Y				Email bounced back.	
Hydro One Networks Inc.					SecondaryLandUse@HydroOne.com	Y	Y				201117_Email. Hydro One responded that a preliminary assessment, confirms there are no existing Hydro One Transmission assets in subject area, and to be advised that this is only a preliminary assessment based on current information. 200506_Email+Letter. Hydro One responded that a preliminary assessment, confirms there are no existing Hydro One Transmission assets in subject area, and to be advised that this is only a preliminary assessment based on current information.
Enbridge Pipelines Inc.		Alison	Love	Enbridge Pipelines Inc.							
Enbridge Pipelines Inc.					notifications@enbridge.com; mark-ups@enbridge.com	Y					
Enbridge Pipelines Inc.	Ms.	Ann	Newman	Crossing Co-ordinator	ann.newman@enbridge.com	Y	Y			No longer contact	
Enbridge Gas Distribution Inc.		Jim	Arnott	Enbridge Gas Distribution Inc.	jim.arnott@enbridge.com	Y	Y				
Enbridge Gas Distribution Inc.		Jamie	Rochford	Sr. Advisor, Construction Project Management, GTA East	jamie.rochford@enbridge.com	Y	Y				
Enbridge Gas Distribution Inc.	Mr.	Vince	Cina	Supervisor, Planning and Design	vince.cina@enbridge.com	Y	Y				
Bell Canada, Municipal Operations Centre	Mr.	John	Lachapelle	Planner and Manager, Right-of-Way Control Centre	rowcentre@bell.ca	Y	Y				
Rogers Cable		Darryl	Dimitroff	Rogers Cable		Y					

Rogers Communications	Ms.	Agatha	La Donne	Planning Coordinator		Y					
Trans Canada Corporation MHBC Planning, Urban Design & Landscape Architecture	Ms.	Darlene	Presley	Plannng Co-ordinator, EA contact	dpresley@mhbcplan.com	Y	Y				
Trans-Northern Pipelines Inc.		Cliff	Lee	45 Vogell Road	clee@tnpi.ca	Y	Y				
Trans-Northern Pipelines Inc.	Mr.	Satish	Korpal	Coordinator, Crossings and Facilities	skorpal@tnpi.ca	Y				No longer correct contact	
Zayo					Utility.Circulations@zayo.com	Y	Y				201119_Email. Zayo responded that there are no existing plants in the area indicated in your submission; no markup and no objection.
Grand River Conservation Authority	Mr.	John	Brum	Planner	jbrum@grandriver.ca	Y	Y	Sent Terms of Reference for Natural Environment, Hydraulic Modeling Report and Natural Environment Report	Y		Various meetings and correspondence. Refer to Appendix J.
Region of Waterloo Public Health		Carol	Popovix			Y					
Region of Waterloo Public Health	Dr.	Hsiu- Li	Wang	EA contact		Y					
Waterloo Regional Police Service		Superintendent	Hassner	Chief of Police	Michael.Hassner@wrps.on.ca	Y	Y				
Cambridge Fire Department	Ms.	Louise	Clarke	Chief Communications Officer	clarkel@cambridge.ca	Y	Y				
Cambridge Fire Department		Neil	Main	Fire Chief		Y					
Paramedic Services						Y					
Waterloo Region District School Board	Mr.	Shawn	Callon	Planner	shawn_callon@wrdsb.on.ca	Y	Y			Email bounced back.	
Student Transportation Services of Waterloo Region	Ms.	Leslie	Maxwell	School Travel Planner	leslie_maxwell@stswr.ca	Y	Y			Position replaced by Jennifer Passy	
Waterloo Catholic District School Board		Jennifer	Passy	Manager Planning	jennifer.passy@wcdsb.ca	Y	Y				
Waterloo Catholic District School Board	Ms.	Lindsay	Ford	Manager of Planning	lindsay.ford@wcdsb.ca	Y				No longer with WCDSB	
Preston High School	Ms.	Paula	Bender	Principal	paula_bender@wrdsb.ca	Y	Y				
St. Joseph Catholic Elementary School	Ms.	Ben	McKinnon	Principal	Ben.McKinnon@wcdsb.ca	Y	Y				
RARE Charitable Research Reserve	Ms.	Kim	Robichaud	Administrative Coordinator	kim.robichaud@raresites.org	Y	Y				
RARE Charitable Research Reserve	Mr.	Tom	Woodcock	Planning Ecologist	tom.woodcock@raresites.org	Y	Y	Sent Terms of Reference for Natural Environment, Natural Environment Report, Stage 1 and 2 Archaeological Assessments	Y		Various meetings and correspondence. Refer to Appendix N.
Blair Road Neighbourhood Association					info@blairroad.org	Y	Y				

Blair-Preston Trail EA Indigenous Community Contact List								
Agency/ Organization	**First Name**	**Last Name**	**Email**	**Sent Notice of Commencement**	**Sent Notice of PIC**	**Sent Draft EA Report**	**Removed From Mailing List**	**Comments Received**
Haudenosaunee Development Institute	Raechelle (Janice)	Williams	janicewilliams@hdi.land			Y		A meeting was held and various email corresponce was received. Refer to Appendix Q
Haudenosaunee Development Institute	Aaron	Detlor	aarondetlor@gmail.com			Y		
Haudenosaunee Confederacy	Hohahes Leroy	Hill	jocko@sixnationsns.com;	Y	Y			
Haudenosaunee Development Institute	Misty	Hill	hdi2@bellnet.ca		Y			
Haudenosaunee Confederacy	Todd	Williams	williams.todde@gmail.com		Y			
Métis Nation of Ontario			consultations@metisnation.org	Y	Y			200423_Email. Automatic response received. The Métis Nation of Ontario's LRC Branch acknowledges your information notice. The MNO reserves the right to request additional information, meetings & consultations in respect of the project should the MNO deem it to be necessary.
Métis Nation of Ontario	Bonnie	Bartlett	BonnieB@metisnation.org	Y			Request to be removed from list	
Mississaugas of the Credit First Nation			MCFN.Consultation@mncfn.ca; DOCA.Admin@mncfn.ca	Y	Y			A meeting was held and various correspondence received. Refer to Appendix O.
Mississaugas of the Credit First Nation	Abby	LaForme	abby.laforme@mncfn.ca					
Mississaugas of the Credit First Nation	R.Stacey	LaForme	stacey.laforme@mncfn.com	Y	Y			
Mississaugas of the Credit First Nation	Fawn	Sault	fawn.sault@mncfn.ca	Y	Y	Y	No longer with DOCA	
Mississaugas of the Credit First Nation	Adrian	Blake	Adrian.Blake@mncfn.ca			Y		
Mississaugas of the Credit First Nation	Megan	Devries	megan.devries@mncfn.ca	Y	Y	Y	No longer with MCFN	
Mississaugas of the Credit First Nation	Peter	Epler	Peter.Epler@mncfn.ca		Y		No longer with MCFN	

Six Nations of the Grand River	Peter	Graham	LRCS@sixnations.ca					Various meetings were held and correspondence received. Refer to Appendix P.
Six Nations of the Grand River	Lonny	Bomberry	lonnybomberry@sixnations.ca	Y	Y			
Six Nations of the Grand River	Dawn	LaForme	dlaforme@sixnations.ca	Y	Y			
Six Nations of the Grand River	Mark	Hill	markhill@sixnations.ca	Y	Y			
Six Nations of the Grand River	Tanya	Hill-Montour	tanyahill-montour@sixnations.ca					
Six Nations of the Grand River	Lauren	Jones	laurenjones@sixnations.ca					
Six Nations of the Grand River	Robbin	Vanstone	rvanstone@sixnations.ca		Y	Y	No longer in consultation position	
Six Nations of the Grand River	Joanne	Thomas		Y			Passed Away	
Six Nations of the Grand River	Fran	Henry	franhenry@sixnations.ca	Y			No longer in position	

Blair-Preston Trail EA Resident and Stakeholder Contact List						
Agency/ Organization	**Sent Notice of Commencement**	**Sent Notice of PIC**	**Sent Draft EA Report**	**Removed From Mailing List**	**Comments Received**	**Response Given**
Resident-1	Y	Y			200426_Email. Resident noted the Blair-Preston bridge map and commented that it would make the most sense to extend Fountain Street South from the point where study area boundary crosses the street on the left, go across the river and join up with Eagle on the other side. The suggestion was also made that the road could have a trail as part of it (as the Fountain Street South Bridge over the Grand has) with the trail turning right to join up with the Linear Trail, and this alternative would accomplish the same purpose and go a long way to alleviating the traffic/ accident mess that is the Shantz-Fountain-King series of intersections. The Resident requested to be kept on the Project Contact List.	200427_Email. The City requested clarification of what was being suggested, and asked for the suggestion to be elaborated. Staff offererd a phone number if it is easier to discuss on the phone. 200427_Email. Burnside responded that comments will be consider in the preparation of EA; and contact information will be added to Project Contact List.
Resident-2		Y			200425_Email. Resident noted seeing the NOCm in the Cambridge Times, and was pleased to see that the project is moving forward with a bridge and trail that will connect McMullen Trail with Blair Trail. The Resident questioned the location of the connection since it requires the trail users to leave what is a trail in a 'natural environment' and engage a trail adjacent to a busy road and backtrack all the way back to the beginning of the trail where they will also need to engage a long stretch of a very narrow trail along side Blair Road. It was noted that from an amenities perspective, the location of the connection would be much better if it connected Linear Trail to the Walter Bean Grand River Trail, which would be a 'nature to nature' connection and would be a much more direct connection to either Blair or downtown Galt. The Resident noted that this would be the prefer trail improvement, and requested some feedback.	200427_Email. The City responded with thanks for interest and noted that contact information will be added to Project Contact List. City staff and CCTAC reviewed the options. The challenge of this area is the high level of sensitive natural environment and documented provincially and federally regulated SAR habitat throughout, that make crossing anywhere very difficult to mitigate. The location identified as the Study Area meets the criteria set out in 2010 TMP, and is a strong active transportation connection linking Preston to Blair Village as well as the Doon area of Kitchener via the Highway 401 pedestrian overpass at the end of Morningside Drive. It also provides a safer and more direct connection for students residing in Preston Heights neighbourhood to access Preston High School (PHS) when travelling by foot, which was an item of concern discussed with CCTAC by the former principal at PHS, and supported by the Waterloo Region District School Board. Rare Charitable Research Reserve owns all of the lands south of the Grand River / north of Blair Road, from the east limits of the Blair Village to the western limits of West Galt, and they are not supportive of any new City trails/pedestrian bridges in those highly sensitive, protected natural areas. The only location on their lands they are open to consider a new trail/bridge is within the Study Area shown in the NOCm, because it is the least environmentally impactful area under consideration.
Resident-3	Y	Y			201102_Email. Resident expressed appreciation for information sent, and noted looking forward to providing input. Resident noted when clicking on the 'Complete Form' button, it did not go to any page, so if an alternate link to the form could be sent. 200423_Email. Resident requested to be added to the Project Contact List.	201102_Email. The City responded that the Resident must register as a user with the Engage platform; then fill in forms. The City look forward to receiving feedback.
Resident-4	Y	Y			200424_Email. Resident requested to be added to the Project Contact List. The Resident LOVE(s) the idea of having a bridge to access rare from Preston, and wishes to show support in any way possible.	200427_Email. The City responded with thanks for interest and noted that contact information will be added to Project Contact List.
Resident-5	Y	Y			200423_Email. Resident requested to be added to the Project Contact List.	200427_Email. The City responded with thanks for interest and noted that contact information will be added to Project Contact List.
Preston Resident	Y	Y			201227_Email. Resident notes a preference for Option #2. The Resident lives near Beck Street, and feel that Option #2 provides good access to the bridge for people in that area and in the Chopin Street area.	210104_Email. S. Taylor thanked the Resident for feedback, and ensured comments will be added to Project File Report.

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Appendix J
Agency Consultation

Ontario

Ministry of the Environment, Conservation and Parks

Environmental Assessment Branch

1st Floor
135 St. Clair Avenue W
Toronto ON M4V 1P5
Tel.: 416 314-8001
Fax.: 416 314-8452

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Direction des évaluations environnementales

Rez-de-chaussée
135, avenue St. Clair Ouest
Toronto ON M4V 1P5
Tél. : 416 314-8001
Téléc. : 416 314-8452

905-521-7864

May 1, 2020

Ms. T. Radburn
R.J. Burnside & Associates

Mr. S. Taylor
City of Cambridge

Re: Blair-Preston Pedestrian Bridge and Trail
City of Cambridge
Schedule "B" Class EA
Response to Notice of Commencement

This letter is in response to the Notice of Commencement for the above noted project. The Ministry of the Environment, Conservation and Parks (MECP) acknowledges that the City of Cambridge has indicated that its study is following the process for Schedule "B" projects as provided for by the MEA Class EA. It is understood that the purpose of this study is to identify the optimal location for a pedestrian bridge and trail to connect the communities of Blair and Preston. As stated in the Notice,

> "Routes are being considered through lands owned by the rare Charitable Research Reserve. The new off-road link will connect the B. McMullen Linear Trail to the existing multi-use trail on Fountain Street via a bridge over the Speed River. The bridge and trail will provide a major off-road connection to downtown Preston as well as a connection to the 401 pedestrian bridge linking Kitchener and the Doon area."

The need for the project has been identified through both the City and the Region's master planning processes

It is our expectation that as part of the study process, the following will be considered in the identification of impacts and necessary mitigation:

- Climate change adaptation and mitigation
- Identification of, and mitigation relating to Species at Risk
- Identification of required permits and approvals to enable the implementation of each alternative

The Crown has a legal duty to consult Aboriginal communities when it has knowledge, real or constructive, of the existence or potential existence of an Aboriginal or treaty right and contemplates conduct that may adversely impact that right. Before the Township may proceed with this project, the Crown must ensure that its duty to consult has been fulfilled, where such a duty is triggered. Although the duty to consult with Aboriginal peoples is a duty of the Crown, the Crown may delegate procedural aspects of consultation to project proponents while retaining oversight of the process.

Your proposed project may have the potential to affect Aboriginal or treaty rights protected under section 35 of Canada's *Constitution Act 1982*. Where the Crown's duty to consult is triggered in relation to your proposed project**, the MECP is delegating the procedural aspects of rights-based consultation to you through this letter.** The Crown intends to rely on the delegated consultation process in discharging its duty to consult and maintains the right to participate in the consultation process as it sees fit.

Based on information you have provided to date and the Crown`s preliminary assessment you are required to consult with the following communities who have been identified as potentially affected by your proposed project.

Six Nations of the Grand River Territory **1695 Chiefswood Road** **P.O. Box 5000** **Ohsweken, ON N0A 1M0**	Chief Mark Hill Tel: (519)445-220 **markhill@sixnations.ca** and/or Fran Henry franhenry@sixnations.ca Lonny Bomberry, Lands and Resources Director at lonnybomberry@sixnations.ca
Haudenosaunee Confederacy Chiefs Council **2634 6th Line Road** **R.R. #2** **Ohsweken, ON N0A 1M0**	Hohahes Leroy Hill, Secretary jocko@sixnations.ca
Mississaugas of the Credit First Nation **2789 Mississauga Road**	Fawn Sault Consultation Manager Email: Fawn.Sault@newcreditfirstnation.com

RR #6
Hagersville, ON N0A 1H0

Steps that you may need to take in relation to Aboriginal consultation for your proposed project are outlined in the "Code of Practice for Consultation in Ontario's Environmental Assessment Process" which can be found at the following link:
https://www.ontario.ca/document/consultation-ontarios-environmental-assessment-process

Additional information related to Ontario's *Environmental Assessment Act* is available online at: www.ontario.ca/environmentalassessments
You must contact the Director of Environmental Assessment and Permissions Branch (Director) under the following circumstances subsequent initial discussions with the communities identified by MECP:

- Aboriginal or treaty rights impacts are identified to you by the communities;
- You have reason to believe that your proposed project may adversely affect an Aboriginal or treaty right;
- Consultation has reached an impasse;
- A Part II Order request or elevation request is expected.

The Director can be notified either by email, fax or mail using the information provided below:

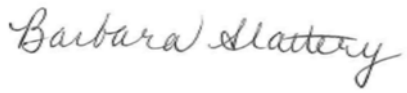
Email:	enviropermissions@ontario.ca Subject: Potential Duty to Consult
Fax:	416-314-8452
Address:	Environmental Assessment and Permissions Branch 135 St. Clair Avenue West, 1st Floor Toronto, ON, M4V 1P5

The MECP will then assess the extent of any Crown duty to consult for the circumstances and will consider whether additional steps should be taken, including what role the Region of Waterloo will be asked to play should additional steps and activities be required.
As of July 1st 2018, a standardized form is to be used by anyone who believes that the environmental assessment process was incomplete, incorrect in that it failed to follow the required process. The required form can be found on the Forms Repository website (http://www.forms.ssb.gov.on.ca/) by searching "Part II Order" or "012-2206E (the form ID number). Once completed, the form is then to be sent to both the Minister and Director of the Environmental Assessment and Permissions Branch. Their addresses are:
Minister
Ministry of the Environment, Conservation and Parks
777 Bay Street, 5th floor
Toronto, ON M7A 2J3
Minister.mecp@ontario.ca

Director, Environmental Assessment and Permissions Branch
Ministry of the Environment, Conservation and Parks
135 St. Clair Ave. West, 1st Floor
Toronto, ON M4V 1P5
enviropermissions@ontario.ca

Please ensure that the new process for submitted Part II Order requests is included in the Notice of Completion. Should you have any questions or require clarification relating to the MECP mandate or EA process, please contact me at Barbara.slattery@ontario.ca

With best regards,



EA/Planning Coordinator

A PROPONENT'S INTRODUCTION TO THE DELEGATION OF PROCEDURAL ASPECTS OF CONSULTATION WITH ABORIGINAL COMMUNITIES

DEFINITIONS

The following definitions are specific to this document and may not apply in other contexts:

Aboriginal communities – the First Nation or Métis communities identified by the Crown for the purpose of consultation.

Consultation – the Crown's legal obligation to consult when the Crown has knowledge of an established or asserted Aboriginal or treaty right and contemplates conduct that might adversely impact that right. This is the type of consultation required pursuant to s. 35 of the *Constitution Act, 1982*. Note that this definition does not include consultation with Aboriginal communities for other reasons, such as regulatory requirements.

Crown – the Ontario Crown, acting through a particular ministry or ministries.

Procedural aspects of consultation – those portions of consultation related to the process of consultation, such as notifying an Aboriginal community about a project, providing information about the potential impacts of a project, responding to concerns raised by an Aboriginal community and proposing changes to the project to avoid negative impacts.

Proponent – the person or entity that wants to undertake a project and requires an Ontario Crown decision or approval for the project.

I. PURPOSE

The Crown has a legal duty to consult Aboriginal communities when it has knowledge of an existing or asserted Aboriginal or treaty right and contemplates conduct that may adversely impact that right. In outlining a framework for the duty to consult, the Supreme Court of Canada has stated that the Crown may delegate procedural aspects of consultation to third parties. This document provides general information about the Ontario Crown's approach to delegation of the procedural aspects of consultation to proponents.

This document is not intended to instruct a proponent about an individual project, and it does not constitute legal advice.

II. WHY IS IT NECESSARY TO CONSULT WITH ABORIGINAL COMMUNITIES?

The objective of the modern law of Aboriginal and treaty rights is the *reconciliation* of Aboriginal peoples and non-Aboriginal peoples and their respective rights, claims and interests. Consultation is an important component of the reconciliation process.

The Crown has a legal duty to consult Aboriginal communities when it has knowledge of an existing or asserted Aboriginal or treaty right and contemplates conduct that might adversely impact that right. For example, the Crown's duty to consult is triggered when it considers issuing a permit, authorization or approval for a project which has the potential to adversely impact an Aboriginal right, such as the right to hunt, fish, or trap in a particular area.

The scope of consultation required in particular circumstances ranges across a spectrum depending on both the nature of the asserted or established right and the seriousness of the potential adverse impacts on that right.

Depending on the particular circumstances, the Crown may also need to take steps to accommodate the potentially impacted Aboriginal or treaty right. For example, the Crown may be required to avoid or minimize the potential adverse impacts of the project.

III. THE CROWN'S ROLE AND RESPONSIBILITIES IN THE DELEGATED CONSULTATION PROCESS

The Crown has the responsibility for ensuring that the duty to consult, and accommodate where appropriate, is met. However, the Crown may delegate the procedural aspects of consultation to a proponent.

There are different ways in which the Crown may delegate the procedural aspects of consultation to a proponent, including through a letter, a memorandum of understanding, legislation, regulation, policy and codes of practice.

If the Crown decides to delegate procedural aspects of consultation, the Crown will generally:

- Ensure that the delegation of procedural aspects of consultation and the responsibilities of the proponent are clearly communicated to the proponent;
- Identify which Aboriginal communities must be consulted;
- Provide contact information for the Aboriginal communities;
- Revise, as necessary, the list of Aboriginal communities to be consulted as new information becomes available and is assessed by the Crown;
- Assess the scope of consultation owed to the Aboriginal communities;

- Maintain appropriate oversight of the actions taken by the proponent in fulfilling the procedural aspects of consultation;
- Assess the adequacy of consultation that is undertaken and any accommodation that may be required;
- Provide a contact within any responsible ministry in case issues arise that require direction from the Crown; and
- Participate in the consultation process as necessary and as determined by the Crown.

IV. THE PROPONENT'S ROLE AND RESPONSIBILITIES IN THE DELEGATED CONSULTATION PROCESS

Where aspects of the consultation process have been delegated to a proponent, the Crown, in meeting its duty to consult, will rely on the proponent's consultation activities and documentation of those activities. The consultation process informs the Crown's decision of whether or not to approve a proposed project or activity.

A proponent's role and responsibilities will vary depending on a variety of factors including the extent of consultation required in the circumstance and the procedural aspects of consultation the Crown has delegated to it. Proponents are often in a better position than the Crown to discuss a project and its potential impacts with Aboriginal communities and to determine ways to avoid or minimize the adverse impacts of a project.

A proponent can raise issues or questions with the Crown at any time during the consultation process. If issues or concerns arise during the consultation that cannot be addressed by the proponent, the proponent should contact the Crown.

a) What might a proponent be required to do in carrying out the procedural aspects of consultation?

Where the Crown delegates procedural aspects of consultation, it is often the proponent's responsibility to provide notice of the proposed project to the identified Aboriginal communities. The notice should indicate that the Crown has delegated the procedural aspects of consultation to the proponent and should include the following information:

- a description of the proposed project or activity;
- mapping;
- proposed timelines;
- details regarding anticipated environmental and other impacts;
- details regarding opportunities to comment; and
- any changes to the proposed project that have been made for seasonal conditions or other factors, where relevant.

Proponents should provide enough information and time to allow Aboriginal communities to provide meaningful feedback regarding the potential impacts of the project. Depending on the nature of consultation required for a project, a proponent also may be required to:

- provide the Crown with copies of any consultation plans prepared and an opportunity to review and comment;
- ensure that any necessary follow-up discussions with Aboriginal communities take place in a timely manner, including to confirm receipt of information, share and update information and to address questions or concerns that may arise;
- as appropriate, discuss with Aboriginal communities potential mitigation measures and/or changes to the project in response to concerns raised by Aboriginal communities;
- use language that is accessible and not overly technical, and translate material into Aboriginal languages where requested or appropriate;
- bear the reasonable costs associated with the consultation process such as, but not limited to, meeting hall rental, meal costs, document translation(s), or to address technical & capacity issues;
- provide the Crown with all the details about potential impacts on established or asserted Aboriginal or treaty rights, how these concerns have been considered and addressed by the proponent and the Aboriginal communities and any steps taken to mitigate the potential impacts;
- provide the Crown with complete and accurate documentation from these meetings and communications; and
- notify the Crown immediately if an Aboriginal community not identified by the Crown approaches the proponent seeking consultation opportunities.

b) What documentation and reporting does the Crown need from the proponent?

Proponents should keep records of all communications with the Aboriginal communities involved in the consultation process and any information provided to these Aboriginal communities.

As the Crown is required to assess the adequacy of consultation, it needs documentation to satisfy itself that the proponent has fulfilled the procedural aspects of consultation delegated to it. The documentation required would typically include:

- the date of meetings, the agendas, any materials distributed, those in attendance and copies of any minutes prepared;
- the description of the proposed project that was shared at the meeting;
- any and all concerns or other feedback provided by the communities;
- any information that was shared by a community in relation to its asserted or established Aboriginal or treaty rights and any potential adverse impacts of the proposed activity, approval or disposition on such rights;

- any proposed project changes or mitigation measures that were discussed, and feedback from Aboriginal communities about the proposed changes and measures;
- any commitments made by the proponent in response to any concerns raised, and feedback from Aboriginal communities on those commitments;
- copies of correspondence to or from Aboriginal communities, and any materials distributed electronically or by mail;
- information regarding any financial assistance provided by the proponent to enable participation by Aboriginal communities in the consultation;
- periodic consultation progress reports or copies of meeting notes if requested by the Crown;
- a summary of how the delegated aspects of consultation were carried out and the results; and
- a summary of issues raised by the Aboriginal communities, how the issues were addressed and any outstanding issues.

In certain circumstances, the Crown may share and discuss the proponent's consultation record with an Aboriginal community to ensure that it is an accurate reflection of the consultation process.

c) Will the Crown require a proponent to provide information about its commercial arrangements with Aboriginal communities?

The Crown may require a proponent to share information about aspects of commercial arrangements between the proponent and Aboriginal communities where the arrangements:

- include elements that are directed at mitigating or otherwise addressing impacts of the project;
- include securing an Aboriginal community's support for the project; or
- may potentially affect the obligations of the Crown to the Aboriginal communities.

The proponent should make every reasonable effort to exempt the Crown from confidentiality provisions in commercial arrangements with Aboriginal communities to the extent necessary to allow this information to be shared with the Crown.

The Crown cannot guarantee that information shared with the Crown will remain confidential. Confidential commercial information should not be provided to the Crown as part of the consultation record if it is not relevant to the duty to consult or otherwise required to be submitted to the Crown as part of the regulatory process.

V. WHAT ARE THE ROLES AND RESPONSIBILITIES OF ABORIGINAL COMMUNITIES' IN THE CONSULTATION PROCESS?

Like the Crown, Aboriginal communities are expected to engage in consultation in good faith. This includes:

- responding to the consultation notice;
- engaging in the proposed consultation process;
- providing relevant information;
- clearly articulating the potential impacts of the proposed project on Aboriginal or treaty rights; and
- discussing ways to mitigate any adverse impacts.

Some Aboriginal communities have developed tools, such as consultation protocols, policies or processes that provide guidance on how they would prefer to be consulted. Although not legally binding, proponents are encouraged to respect these community processes where it is reasonable to do so. Please note that there is no obligation for a proponent to pay a fee to an Aboriginal community in order to enter into a consultation process.

To ensure that the Crown is aware of existing community consultation protocols, proponents should contact the relevant Crown ministry when presented with a consultation protocol by an Aboriginal community or anyone purporting to be a representative of an Aboriginal community.

VI. WHAT IF MORE THAN ONE PROVINCIAL CROWN MINISTRY IS INVOLVED IN APPROVING A PROPONENT'S PROJECT?

Depending on the project and the required permits or approvals, one or more ministries may delegate procedural aspects of the Crown's duty to consult to the proponent. The proponent may contact individual ministries for guidance related to the delegation of procedural aspects of consultation for ministry-specific permits/approvals required for the project in question. Proponents are encouraged to seek input from all involved Crown ministries sooner rather than later.

Sylvia Waters

From: Tricia Radburn
Sent: Monday, November 16, 2020 2:35 PM
To: Sylvia Waters
Subject: FW: MECP SARB Review: Information Request Blair-Preston Trail
Attachments: 043765 Study Area.pdf

From: Snell, Shamus (MECP) <Shamus.Snell@ontario.ca>
Sent: Wednesday, November 04, 2020 9:17 AM
To: Tricia Radburn <Tricia.Radburn@rjburnside.com>
Cc: 300043765 Blair Preston Trail EA <300043765blairprestontrailea@rjburnside.com>
Subject: MECP SARB Review: Information Request Blair-Preston Trail

Hi Tricia,

The Species at Risk Branch (SARB) of the Ministry of the Environment, Conservation and Parks (MECP) has conducted review of Preston Flats study area (attached) and the areas adjacent to it and did not detected any additional Species at Risk (SAR) occurrences that were not already identified in the email below. In addition, SARB has confirmed the presence of those SAR listed in the attached request.

It is worth noting that a number of the SAR species especially birds have numinous occurrence records which occur within the within the study area. It would be highly recommended that additional species specific survey be conducted to better inform habitat usage within the study area.

While this review represents MECP's best currently available information, it is important to note that a lack of information for a area does not mean that SAR or their habitat are not present. There are many areas where the Government of Ontario does not currently have information, especially in areas where surveys have not been performed.

It is the responsibility of the proponent to ensure that SAR are not killed, harmed, or harassed, and that their habitat is not damaged or destroyed through future activities to be carried out on the site. If the future activities can not avoid impacting protected species and their habitats then the proponent will need to apply for an authorization under the Endangered Species Act.

The Natural Heritage Information Center can provide location specific information when a need to know has been demonstrated and by completing data sensitivity training and obtaining a Sensitive Data User Licence. For more information on this please visit their website at: www.ontario.ca/page/get-natural-heritage-information. In addition, this training and licence is often required for SARB to provide specific location mapping of SAR occurrences.

Regards,

Shamus Snell
A/ Management Biologist
Species at Risk Branch
Ministry of the Environment, Conservation and Parks
Email: shamus.snell@ontario.ca

From: Tricia Radburn <Tricia.Radburn@rjburnside.com>
Sent: November 3, 2020 9:05 AM
To: Snell, Shamus (MECP) <Shamus.Snell@ontario.ca>
Cc: 300043765 Blair Preston Trail EA <300043765blairprestontrailea@rjburnside.com>
Subject: RE: 043765 Blair-Preston Trail EA MECP SAR Information Request

Shamus, we are in the process of finalizing the EA, however, if you have any records or comment on SAR associated with this site, we would appreciate your input.

Kind Regards,

BURNSIDE
Tricia Radburn, MCIP, RPP
Senior Environmental Planner

R.J. Burnside & Associates Limited
292 Speedvale Ave. W, Unit 20 Guelph ON
Office: 800-265-9662 Direct: 226-486-1778 www.rjburnside.com

From: Snell, Shamus (MECP) <Shamus.Snell@ontario.ca>
Sent: Tuesday, October 20, 2020 9:00 AM
To: Nadine Price <Nadine.Price@rjburnside.com>
Cc: Tricia Radburn <Tricia.Radburn@rjburnside.com>
Subject: RE: 043765 Blair-Preston Trail EA MECP SAR Information Request

Hi Nadine,

Due to a high volume of requests received during the transition of the Endangered Species Act from the Ministry of Natural Resources and Forest (MNRF) to the Ministry of Environment, Conservation and Parks (MECP) some requests which came into our office during that time may not have been followed up on. While I see that the timelines for this request have passed I would still like to reach out to you and check to see if the original request is still potentially active or if the project has in fact been completed.

My apologies if no one from our office has reached out to you sooner regarding this request.

Regards,

Shamus Snell
A/ Management Biologist
Species at Risk Branch
Ministry of the Environment, Conservation and Parks
Email: shamus.snell@ontario.ca

From: Nadine Price <Nadine.Price@rjburnside.com>
Sent: January 10, 2020 3:02 PM
To: Species at Risk (MECP) <SAROntario@ontario.ca>
Cc: Tricia Radburn <Tricia.Radburn@rjburnside.com>
Subject: 043765 Blair-Preston Trail EA MECP SAR Information Request

Good afternoon,

I am writing to request Species at Risk Information for our Blair-Preston Trail EA project in Cambridge; the study area includes lands from the Linear Park near Preston High School to the west, the shoreline on the Speed River where the pedestrian bridge is proposed, and *rare*- owned lands east of Fountain Street. I have attached a map to this email.

More specifically, we are requesting the following information:

- Locations, observation, dates and any other relevant information about terrestrial and aquatic SAR that is not included in the list below – if possible, please provide the UTM's/accuracy codes.
- Locally rare species lists or species records known from the study area and adjacent lands.

Our search of the NHIC, OBBA, eBird, DFO and ORAA databases on July 9, 2019 yielded the follow Species at Risk:

Birds
- Bald Eagle
- Bank Swallow
- Barn Swallow
- Bobolink
- Canada Warbler
- Chimney Swift
- Eastern Meadowlark
- Eastern Wood-pewee
- Golden Eagle
- Golden-winged Warbler
- Horned Grebe
- Peregrine Falcon
- Rusty Blackbird
- Wood Thrush

Fish
- Silver Shiner

Molluscs
- Wavy-rayed Lampmussel

Plants
- American Chestnut

Reptiles and Amphibians
- Blanding's Turtle
- Eastern Milksnake (SARA listed only)
- Eastern Ribbonsnake
- Jefferson Salamander
- Midland Painted Turtle (COSEWIC listed only)
- Queensnake
- Snapping Turtle
- Western Chorus Frog

If you are able to respond by January 24, 2020, it would be greatly appreciated. Please do not hesitate to contact me at 289-545-1070 or 647-461-4359 if you have any questions or concerns.

Sincerely,

Nadine

Ministry of Heritage, Sport, Tourism, and Culture Industries

Programs and Services Branch
401 Bay Street, Suite 1700
Toronto, ON M7A 0A7
Tel: 416.314.7643

Ministère des Industries du Patrimoine, du Sport, du Tourisme et de la Culture

Direction des programmes et des services
401, rue Bay, Bureau 1700
Toronto, ON M7A 0A7
Tél: 416.314.7643

Ontario

May 15, 2020 EMAIL ONLY

Shane Taylor
City of Cambridge
50 Dickson Street, P.O. Box 669
Cambridge, N1R 5W8
TaylorS@cambridge.ca

MHSTCI File	**:**	**0010542**
Proponent	**:**	**City of Cambridge**
Subject	**:**	**Notice of Study Commencement**
Project	**:**	**Blair-Preston Pedestrian Bridge & Trail**
Location	**:**	**City of Cambridge**

Dear Shane Taylor:

Thank you for providing the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) with the Notice of Study Commencement for the above-referenced project. MHSTCI's interest in this Environmental Assessment (EA) project relates to its mandate of conserving Ontario's cultural heritage, which includes:

- Archaeological resources, including land and marine;
- Built heritage resources, including bridges and monuments; and,
- Cultural heritage landscapes.

Under the EA process, the proponent is required to determine a project's potential impact on cultural heritage resources.

Project Summary
The City of Cambridge is undertaking a Municipal Class Environmental Assessment to study a future pedestrian bridge and trail to connect the communities of Blair and Preston. The new off-road link will connect the B. McMullen Linear Trail to the existing multi-use trail on Fountain Street via a bridge over the Speed River. The MCEA will meet the requirements for "Schedule B" projects.

Identifying Cultural Heritage Resources
While some cultural heritage resources may have already been formally identified, others may be identified through screening and evaluation. Indigenous communities may have knowledge that can contribute to the identification of cultural heritage resources, and we suggest that any engagement with Indigenous communities includes a discussion about known or potential cultural heritage resources that are of value to these communities. Municipal Heritage Committees, historical societies and other local heritage organizations may also have knowledge that contributes to the identification of cultural heritage resources.

Archaeological Resources

The *Criteria for Evaluating Archaeological Potential* and *Criteria for Evaluating Marine Archaeological Potential* checklist is used to determine if an archaeological assessment is needed. We understand that an archaeologist licenced under the OHA has been retained, who will complete the necessary archaeological assessment work and will be responsible for submitting the reports directly to MHSTCI for review. This EA project may impact archaeological resources and should be screened using the MHSTCI

Built Heritage and Cultural Heritage Landscapes

The MHSTCI *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes* should be completed to help determine whether this EA project may impact cultural heritage resources. If potential or known heritage resources exist, MHSTCI recommends that a Heritage Impact Assessment (HIA), prepared by a qualified consultant, should be completed to assess potential project impacts. Our Ministry's *Info Sheet #5: Heritage Impact Assessments and Conservation Plans* outlines the scope of HIAs. Please send the HIA to MHSTCI for review, and make it available to local organizations or individuals who have expressed interest in review.

A Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment will be undertaken for the entire study area to inform if resources can be avoided and if technical cultural heritage studies will be needed. This report should;

1. Identify existing baseline cultural heritage conditions within the study area. The report will include a historical summary of the development of the study area and will identify all known or potential built heritage resources and cultural heritage landscapes in the study area. MHSTCI has developed screening criteria that may assist with this exercise: Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes.

2. Identify preliminary project-specific impacts on the known and potential built heritage resources and cultural heritage landscapes that have been identified. The report should include a description of anticipated impact to each known or potential built heritage resources or cultural heritage landscape that has been identified.

3. Propose and recommend measures to avoid or mitigate potential negative impacts to known or potential cultural heritage resources. The proposed mitigation measures are to inform the next steps of project planning and design.

Technical cultural heritage studies are to be undertaken by a qualified person who has expertise, recent experience, and knowledge relevant to the type of cultural heritage resources being considered and the nature of the activity being proposed.

The findings of the above-mentioned studies should be summarized as part of the project file report's discussion of existing conditions, preliminary impact assessment and future commitments

Please notify MHSTCI if archaeological resources are impacted by EA project work. All activities impacting archaeological resources must cease immediately, and a licensed archaeologist is required to carry out an archaeological assessment in accordance with the *Ontario Heritage Act* and the *Standards and Guidelines for Consultant Archaeologists*.

If human remains are encountered, all activities must cease immediately and the local police as well as the Registrar, Burials of the Ministry of Government and Consumer Services (416-326-8800) must be contacted. In situations where human remains are associated with archaeological resources, MHSTCI should also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the *Ontario Heritage Act*.

Environmental Assessment Reporting

All technical cultural heritage studies and their recommendations are to be addressed and incorporated into EA projects. Please advise MHSTCI whether any technical cultural heritage studies will be completed for this EA project, and provide them to MHSTCI before issuing a Notice of Completion or commencing any work on the site. If screening has identified no known or potential cultural heritage resources, or no impacts to these resources, please include the completed checklists and supporting documentation in the EA report or file.

Thank you for consulting MHSTCI on this project and please continue to do so throughout the EA process. If you have any questions or require clarification, do not hesitate to contact me.

Sincerely,

Joseph Harvey
On behalf of

Katherine Kirzati
Heritage Planner
Heritage Planning Unit
Katherine.Kirzati@Ontario.ca

Copied to: Tricia Radburn, R. J. Burnside & Associates Limited

Sylvia Waters

From: John Calhoun <calhounj@cambridge.ca>
Sent: Thursday, April 23, 2020 10:35 AM
To: Sylvia Waters
Cc: April Souwand; Karin Stieg-Drobig
Subject: RE: 43765-Agency-Notice of Commencement MCEA-Blair-Preston Pedestrian Bridge & Trail, City of Cambridge

Hello Sylvia – Thanks for including me in the circulation.

Please keep me on the list, and add Karin Stieg-Drobig (StiegDrobigK@cambridge.ca), so that the Municipal Heritage Advisory Committee (MHAC) and the City's Sr. Planner-Heritage can be involved in this study, given the Blair HCD and Grand River National Heritage River status (and other heritage resources which may be in the study area).

John R. Calhoun, AICP
Sr. Planner – Heritage, City of Cambridge, Ontario
calhounj@cambridge.ca 519-623-1340 x 4540
50 Dickson St – PO Box 669, Cambridge ON N1R 5W8

From: Sylvia Waters [mailto:Sylvia.Waters@rjburnside.com]
Sent: April 23, 2020 9:12 AM
To: mirrun.zaveri@ontario.ca; alex.lye@cisl.ca; lisa.myslicki@infrastructureontario.ca; carol.neumann@ontario.ca; eanotification.wcregion@ontario.ca; Slattery, Barbara (MECP); scott.oliver@ontario.ca; hayley.berlin@ontario.ca; tammy.verhaeghe@ontario.ca; karla.barboza@ontario.ca; Mayor; Mike Mann; Donna Reid; David Calder; Danielle Manton; James Etienne; Mike Parsons; Brian Geerts; willmerj@cambridge.ca; forhang@cambridge.ca; Hardy Bromberg; Shannon Noonan; Elaine Brunn Shaw; Paul Kan; Vanessa Lopak; Lisa Chominiec; John Calhoun; Laura Waldie; Kathy Padgett; BCoady@regionofwaterloo.ca; khagerman@regionofwaterloo.ca; psawicki@regionofwaterloo.ca; SvanDeKeere@regionofwaterloo.ca; ballen@regionofwaterloo.ca; jgurney@regionofwaterloo.ca; ontugllandsing@uniongas.com; SecondaryLandUse@HydroOne.com; ann.newman@enbridge.com; jim.arnott@enbridge.com; jamie.rochford@enbridge.com; vince.cina@enbridge.com; rowcentre@bell.ca; dpresley@mhbcplan.com; skorpal@tnpi.ca; Utility.Circulations@zayo.com; jbrum@grandriver.ca; Michael.Hassner@wrps.on.ca; Louise Clarke; shawn_callon@wrdsb.on.ca; lindsay.ford@wcdsb.ca; paula_bender@wrdsb.ca; Ben.McKinnon@wcdsb.ca; kim.robichaud@raresites.org; tom.woodcock@raresites.org; leslie_maxwell@stswr.ca; info@blairroad.org
Cc: Shane Taylor; MKroker@regionofwaterloo.ca
Subject: 43765-Agency-Notice of Commencement MCEA-Blair-Preston Pedestrian Bridge & Trail, City of Cambridge

Notice of Commencement, Blair-Preston Pedestrian Bridge & Trail, Municipal Class Environmental Assessment. On behalf of City of Cambridge, please see attached Notice.

RE: Initial Meeting re: Blair-Preston Trail

Tricia Radburn <Tricia.Radburn@rjburnside.com>
Wed 2019-06-12 12:52 PM

To: Tony Zammit <tzammit@grandriver.ca>

Thanks Tony. We appreciate your comments and will make those edits.

BURNSIDE

Tricia Radburn, M.Sc.(PI), MCIP, RPP
Senior Environmental Planner

R.J. Burnside & Associates Limited
292 Speedvale Ave. Unit 20, Guelph, ON N1H 1C4
Office: 800-265-9662 Direct: 226-486-1778
www.rjburnside.com

From: Tony Zammit <tzammit@grandriver.ca>
Sent: Wednesday, June 12, 2019 12:39 PM
To: Tricia Radburn <Tricia.Radburn@rjburnside.com>
Cc: John Brum <jbrum@grandriver.ca>
Subject: RE: Initial Meeting re: Blair-Preston Trail

Hello Tricia,

My apologies for the delay in getting comments to you. I did in fact receive an email from Peter on April 23rd and probably did not issue any comments because I felt the terms of reference were generally acceptable. However, I would like to offer the following comments at this time.

With respect to Table 4-2 (Existing Natural Heritage Features), please note that the Speed River is classified as warm water fish habitat. Although the unnamed tributary is currently classified as cold water fish habitat owing to its temperature regime, it is unclear/unlikely that cold water fish species are present given the intermittent flow regime.

With respect to Table 5-1 (Proposed Field Study Methodology), it is requested that aquatic habitat along the Speed River also be characterized using rapid assessment methods since this is where the watercourse crossing will occur. We agree there is no need for fish or mussel sampling and suggest that the background information will be sufficient to identify development constraints and construction timing windows (in the event that in water work is required).

On page 15, it is requested that the second bullet regarding the impact assessment be revised to clearly indicate that appropriate buffers and related erosion and sediment control measures shall be implemented to protect the evaluated (PSW) and unevaluated wetlands, the Speed River, and the unnamed tributary.

Recommended

With respect to Section 4.1 (Avifauna), it is recommended that supplemental data be obtained from eBird. Accordingly, 213 avian species have been recorded along the Linear Trail and 189 species have been observed at or near the Confluence of the Speed and Grand Rivers. Much of this data has been vetted for quality control purposes.

Thanks,

Tony

Anthony E. Zammit, M.E.S.|Watershed Ecologist
Grand River Conservation Authority
400 Clyde Road, Box 729, Cambridge, Ontario N1R 5W6
Tel: 519-621-2763 x2246 | Mobile: 519-240-0714
tzammit@grandriver.ca | www.grandriver.ca

From: Tricia Radburn <Tricia.Radburn@rjburnside.com>
Sent: Monday, June 10, 2019 2:41 PM
To: John Brum <jbrum@grandriver.ca>; Tony Zammit <tzammit@grandriver.ca>
Subject: RE: Initial Meeting re: Blair-Preston Trail

John and Tony,

I believe there may be some confusion with the TOR and it may have gotten lost in the shuffle over the last month or so. I have attached it for your reference. Tony, as indicated at the meeting with rare, the intent of our work is to provide a level of analysis appropriate for an EA level assessment. There is an intent to follow the EA with a more detailed EIS. As such, it is expected that more detailed fieldwork may occur at the EIS stage.

Please feel free to contact me if you have any questions.

Kind Regards,

BURNSIDE

Tricia Radburn, M.Sc.(Pl), MCIP, RPP
Senior Environmental Planner

R.J. Burnside & Associates Limited
292 Speedvale Ave. Unit 20, Guelph, ON N1H 1C4
Office: 800-265-9662 Direct: 226-486-1778
www.rjburnside.com

From: John Brum <jbrum@grandriver.ca>
Sent: Wednesday, April 24, 2019 1:42 PM
To: Tricia Radburn <Tricia.Radburn@rjburnside.com>; Tony Zammit <tzammit@grandriver.ca>
Cc: Shane Taylor <TaylorS@cambridge.ca>; Peter DeCarvalho <Peter.DeCarvalho@rjburnside.com>; Kathy Padgett (PadgettK@cambridge.ca) <PadgettK@cambridge.ca>; Jane Gurney (JGurney@regionofwaterloo.ca) <JGurney@regionofwaterloo.ca>
Subject: RE: Initial Meeting re: Blair-Preston Trail

Hi Tricia:

Thanks for your recent voice message and this request. Tony has also received the ToR from Peter of your office and we'll provide you feedback shortly. We also are aware of a further request for a site walk to confirm wetland limits for this EA project. We also have a another request from City staff to conduct a site walk for the proposed soccer field project which is located near the bridge this EA project. In order to make our time (Tony's) more efficient given our limited staff resources, I would recommend co-ordinating site visits on the same day if possible. With regards to your request for another meeting to get background information, I believe this can best be addressed via our review of the ToR and not another meeting. If you have some specific background information that you haven't received from the Province, please advise.

I trust this helps.

John Brum | Resource Planner
Grand River Conservation Authority
400 Clyde Road, PO Box 729, Cambridge, Ontario N1R 5W6
Tel: 519-621-2763 x2233 | Fax: 519-621-4945 | Toll free: 1-866-900-4722
jbrum@grandriver.ca

From: Tricia Radburn [mailto:Tricia.Radburn@rjburnside.com]
Sent: Tuesday, April 23, 2019 10:11 AM
To: Tony Zammit; John Brum
Subject: Initial Meeting re: Blair-Preston Trail

John and Tony,

R.J. Burnside & Associates Limited has been retained by the City of Cambridge to complete an Environmental Assessment of the proposed Blair-Preston Trail. The trail will create a pedestrian connection between the B. McMullen Linear Trail in the community of Preston and existing multi-use trail on Fountain St. in the community of Blair. This connection will include a crossing of the Speed River, upstream of its confluence with the Grand River. The trail will be located on lands owned by the rare Charitable Research Reserve. Some potential alternative routes are attached.

We have prepared Terms of Reference to scope the natural heritage studies that will be part of the EA. We will submit this to you shortly for your review and input.

In the meantime, the City would like to arrange an initial meeting with yourselves and the Region to introduce the project, discuss some constraints and obtain available background information.

Are you both available on May 14 in the morning (sometime between 9 and 11) to meet at Cambridge City Hall?

Thanks so much.

BURNSIDE
Tricia Radburn, M.Sc.(Pl), MCIP, RPP
Senior Environmental Planner

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April 16, 2020

Via Email

Tricia Radburn, MCIP, RPP
Senior Environmental Planner
R.J. Burnside & Associates Limited
292 Speedvale Avenue West, Unit 20
Guelph, ON N1H1C4

Dear Ms. Radburn:

Re: Review of Draft Natural Heritage Report
Blair-Preston Trail Schedule B Municipal
Class Environmental Assessment
City of Cambridge

As requested, the Grand River Conservation Authority (GRCA) has completed our review of the following report:

- Draft Blair-Preston Trail, Schedule B Municipal Class Environmental Assessment, Natural Heritage Report, City of Cambridge (prepared by R.J. Burnside & Associates Limited and dated March 2020).

Based on our review of this document, the GRCA offers the following advisory comments and recommendations for your review and consideration.

Background and Resource Information

It is our understanding that R.J. Burnside & Associates Limited (Burnside) has been retained by the City of Cambridge to prepare a Schedule B Municipal Class Environmental Assessment (MCEA) in support of the development of a trail and pedestrian bridge spanning the Speed River through lands owned and managed by the *rare* Charitable Research Reserve (*rare*). The proposed construction will create a connection between the B McMullen Linear Trail (Linear Trail) to the east and the existing multi-use trail on Fountain Street to the west.

Information currently available in our office indicates that the study area is traversed by a tributary of the Speed River, the Speed River and its associated Regional Storm floodplain (refer to enclosed map). Further, there are areas of steep valley/erosion hazard slopes along portions of Fountain Street south within the study area. The study area also contains 2 pockets of wetland areas, a portion of the Speed River Provincially Significant Wetland (PSW) Complex and their regulated allowances. All these areas are regulated by the GRCA under Ontario Regulation 150/06 (Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation). Any new development/site alterations within these regulated areas will require approval from the GRCA under Ontario Regulation 150/06.

Natural Heritage Resources Review

1. The report did not make note of the fact that wetland boundaries were jointly verified in the field by the GRCA and R.J. Burnside and Associates on June 10, 2019. Table 4-1 of the report should be revised accordingly.

2. The report does not assess impacts associated with each alternative specifically but rather discusses potential direct and indirect impacts in a general manner only. We would ask that impacts associated with each bridge alternative be discussed to the extent possible and that a preferred alternative be specified based on environmental impacts alone. Bridge crossing alternatives and designs that avoid and/or maximize physical setbacks from key natural heritage and hydrologic features are preferred.

3. If impacts to regulated natural hazard features are anticipated to be equivalent with all 3 bridge crossing alternatives, this should be stated and substantiated more clearly in the report.

4. The minimum setbacks from the small meadow marsh (MAS2-1) and the Speed River will need to be confirmed during the detailed design stage.

5. With respect to the mitigation measures outlined in Table 7-1, please note that erosion and sediment control (ESC) plans must be to the satisfaction of the GRCA. Please be advised that new erosion and sediment control guidelines were developed recently by the Toronto Region Conservation Authority and should be followed where appropriate.

6. With respect to the potential effects on wetland hydrology due to changes in site grades and permeability, we request that appropriate measures be implemented where necessary to maintain or improve the quantity and quality of surface runoff toward the small marsh located to the north of the proposed trail. It is also requested that erosion and sedimentation impacts caused by site grading be avoided and monitored closely during and after trail construction.

Recommendations

7. According to information contained in the Ontario Wetland Evaluation Record for the Speed River PSW Complex, several furbearers (beaver, coyote, muskrat, mink, raccoon, red fox, and skunk) were documented and are still expected to be present. The staff at *rare* may be able to confirm that many if not most species are still in fact present.

8. Regarding the checklists of birds acquired from eBird and *rare,* it would be helpful to include beginning and end dates to help clarify which species are considered to be breeding. In the case of migrating species, summer residents, winter residents, and incidental (or vagrant) species, it would be informative to provide the last observation date.

Conclusion

This Class EA study is of interest to the GRCA due to the presence of the wetlands, watercourses, floodplain, and steep sloped areas. GRCA staff are interested in continuing to participate in the study review and provide further input as the study progresses. Please forward the formal notice of study commencement when available for our records.

We trust the above is of assistance on this matter. If you require any further information, please do not hesitate to contact the undersigned at ext. 2233 or jbrum@grandriver.ca.

Yours truly,

_____

John Brum
Resource Planner
Grand River Conservation Authority

JB/

Encl.

cc: Shane Taylor & Kathy Padgett, City of Cambridge (via email)

Grand River Conservation Authority

Date: Apr 16, 2020

Author: J. Brum

Blair-Preston Bridge Trail EA

Legend

- Regulation Limit (GRCA)
- Regulated Watercourse (GRCA)
- Regulated Waterbody (GRCA)
- Wetland (GRCA)
- Floodplain (GRCA)
  - Engineered
  - Estimated
  - Approximate
  - Special Policy Area
- Slope Valley (GRCA)
  - Steep
  - Oversteep
  - Steep
- Slope Erosion (GRCA)
  - Oversteep
  - Toe
- Lake Erie Flood (GRCA)
- Lake Erie Shoreline Reach (GRCA)
- Lake Erie Dynamic Beach (GRCA)
- Lake Erie Erosion (GRCA)
- Parcel - Assessment (MPAC/MNRF)

This legend is static and may not fully reflect the layers shown on the map. The text of Ontario Regulation 150/06 supercedes the mapping as represented by these layers.

0 45 90 180 270 Metres

N

Map Centre (UTM NAD83 z17): 550,790.48 4,804,359.94

This map is not to be used for navigation | 2015 Ortho (ON) | 2019 Ortho (KWCG)

NAD 1983 UTM Zone 17N

Scale: 7,940

Blair-Preston Pedestrian Bridge and Trail Schedule B Municipal Class Environmental Assessment

Welcome

Grand River Conservation Authority
December 14, 2020

1

STUDY DESCRIPTION

The City of Cambridge is undertaking a Municipal Class Environmental Assessment to study a future pedestrian bridge and trail to connect the communities of Blair and Preston.

Routes are being considered through lands owned by the rare Charitable Research Reserve. The new off-road trail will connect the B. McMullen Linear Trail to the existing multi-use trail on Fountain Street via a bridge over the Speed River. The bridge and trail will provide a major off-road connection to downtown Preston as well as a connection to the 401 pedestrian bridge linking Kitchener and the Doon area.

2

3

STUDY SCOPE

The Environmental Assessment (EA) process is triggered by the need for a pedestrian bridge over the Speed River.

A series of technical studies (including ecological, archaeological and floodplain investigations) will be completed and used to evaluate various alternative bridge locations and associated trail routing.

An option to "do nothing" will also be considered.

At the conclusion of the study, a preferred alternative will be selected, and a Project File Report will be prepared for public review.

4

NEEDS AND JUSTIFICATION

The City of Cambridge Trails Master Plan (2010) identified the need for a connection between the villages of Preston and Blair.

The Region of Waterloo's Active Transportation Master Plan (2014) also identifies the potential for a trail and bridge in the Study Area. The Study Area associated with this EA is mapped as a Special Study Area in the Region's Master Plan.

The City's recent Cycling Master Plan (2020) also identifies a trail in this location as a short-term priority.

Further support for the trail in the area was identified through the Class EA for Fountain / King St/ Shantz Hill Improvements. This document recommended that the Region of Waterloo, in conjunction with the City of Cambridge, should explore the feasibility of an off-road multi-use trail with new pedestrian/cycling bridge across the Speed River and trail connection from Fountain Street South to the City of Cambridge Linear Trail.

The bridge over the Speed River & trail across rare lands is the 'missing link' to providing off-road access between the three core areas, Blair and Kitchener.

The trail and bridge will support active transportation in the community.

5

PROBLEM/OPPORTUNITY STATEMENT

The first step in an EA is to identify the problem to be solved by the study.

The Problem or Opportunity Statement for this project is:

The purpose of this study is to identify the preferred location for pedestrian bridge and connecting trail to link the neighbourhoods of Preston and Blair. The Study will draw from input received through a comprehensive consultation and engagement program with public, review agencies and Indigenous communities.

Above: Walter Bean Trail Bridge over the Grand River

6

ALTERNATIVE SOLUTIONS

An Environmental Assessment is a step-by-step process that evaluates a series of alternatives, each of which are able to meet the project objectives outlined in the Problem/Opportunity Statement. For this project, three alternative pedestrian bridge and connecting trails were identified. Each alternative has the potential to provide a major off-road connection to downtown Preston as well as a connection to the 401 pedestrian bridge linking Kitchener and the Doon area. As required by the Environmental Assessment process, an alternative to "do nothing" is also being considered. The "do nothing" option would not include any new bridge or trail.

The pros and cons of each alternative are being examined through the evaluation process.

7

EXISTING CONDITIONS – NATURAL ENVIRONMENT

The existing vegetation within the Study Area includes a mix of:
- Cultural Meadow/Thicket
- Shallow Marsh
- Lowland Forest

A Section of the Speed River Provincially Significant Wetland (PSW) Complex is present on the northern edge of the Site along the western side of the Speed River

The entire Study Area is within a Significant Valley that incorporates the floodplain and valley slopes associated with the Speed and Grand Rivers.

8

WILDLIFE HABITAT

Confirmed Significant Wildlife present within Study Area:
- Monarch

Additional types of habitat that were not confirmed present but could also not be confirmed absent include:
- Turtle Wintering Areas
- Reptile Hibernaculum
- Turtle Nesting Areas
- Amphibian Breeding Habitat
- Marsh Breeding Bird Habitat
- Terrestrial Crayfish

A number of Endangered or Threatened species were found to have habitat requirements which could be provided on, or adjacent to the study area:
- Bobolink;
- Little Brown Myotis;
- Northern Myotis;
- Tri-coloured Bat;
- Silver Shiner;
- Wavy-rayed Lampmussel;
- Blanding's Turtle.



9

FISH HABITAT

The Speed River flows from north to south through the Study Area in a single thread channel. The banks are densely vegetated with grasses, forbs, shrubs as well as areas of mature riparian vegetation. Spawning nests were observed in select locations. Fish species such as Smallmouth bass, Rock bass, darter, cyprinid, and young-of-the-year were all observed in the Speed River throughout the study area. The Speed River was found to be suitable habitat for Wavy-rayed Lampmussel and Silver Shiner, both species are identified as Species at Risk.

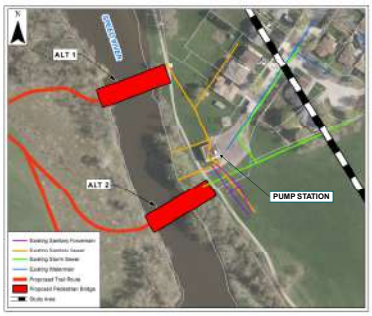


10

INFRASTRUCTURE

A sanitary pump station is located at the end of Dover St.

A variety of below-ground infrastructure is located in the area.



11

DO NOTHING (MAINTAIN THE STATUS QUO)

Doing nothing, or maintaining the status quo is a mandatory alternative in the Class EA process. This alternative would involve the continued operation of the current trail network without any additional connecting trail/bridge development in the Blair Preston area.

Advantages:
- No impact to natural environment or potential habitat.
- No costs to implement.

Disadvantages:
- Does not address the problem statement.

Under this scenario, no bridge or trail will be built. The study area and Speed River shown in the photos will remain unchanged.

12

ALTERNATIVE #1: NORTHERN ROUTE

Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting to the B. McMullen Linear Trail to the north of Dover Street South.

Advantages:

- Creates the shortest connection between Fountain St. and the Linear Trail.
- Provides a route that is the least likely to encourage trail users to veer off-trail and trespass on rare lands.
- The bridge and trail are the farthest distance from the confluence of the Speed and Grand Rivers, a sensitive waterfowl wintering area.

Disadvantages:

- The bridge is the closest option to the Speed River PSW.
- The bridge is close to potential turtle nesting habitat.
- The bridge is close to a sanitary sewer line.
- The bridge will need to be longer than the bridge in Alternative 3 but shorter than the bridge in Alternative 2. This option therefore has a moderate cost relative to the other options.

13

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ALTERNATIVE #2: DOVER STREET SOUTH ROUTE

Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting the to the Linear Trail at Dover Street South near the Dover Street Pump House Building.

Advantages:

- The trail provides a direct link with Dover St. S.
- The bridge ends close to the school property. Students are expected to be among the trail users.
- The bridge is farther from the Speed River PSW than Alternative 1.

Disadvantages:

- The route results in more disturbance to Bobolink and Monarch habitat than Alternative 1.
- The route includes a 90 degree bend which is likely to lead trail users to "cut the corner" and trespass on rare lands.
- Trail is close to the sanitary pump station and related below-ground infrastructure.
- This route has the longest bridge and therefore the highest cost.

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ALTERNATIVE #3: SOUTHERN ROUTE

Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting to the Linear Trail to the south of Dover Street South, west of the Preston High School field.

Advantages:

- This option crosses at the narrowest point and therefore a shorter bridge is required.
- This is the least costly option.
- The bridge is farther from the Speed River PSW than Alternatives 1 and 2.
- No nearby below-ground infrastructure is present.

Disadvantages:

- This bridge is closest to the sensitive waterfowl wintering area at the confluence of the Speed and Grand Rivers.
- Two 90 degree angles in the trail route are likely to encourage trail users to "cut the corners" and travel off-trail, potentially damaging natural features and agricultural lands.
- This is the longest trail route.

15

15

EVALUATION PROCESS

To formally evaluate the advantages and disadvantages of each Alternative, a series of evaluation criteria were developed. Each Alternative and the "Do Nothing" option were compared.

NATURAL ENVIRONMENT
- Impacts to existing trees and vegetation
- Impacts to wetlands
- Impacts to migrating, breeding and wintering birds
- Impacts to surface water quality
- Impacts to Significant Wildlife Habitats
- Impacts to Species at Risk
- Impacts to aquatic habitat

SOCIAL ENVIRONMENT
- Route layout and external connectivity
- Potential for trespassing/off trail uses

CULTURAL ENVIRONMENT
- Impacts to archaeological resources
- Impacts to cultural heritage landscapes

LAND USE AND POLICY
- Compatibility with City and Region policies and plans
- Area of rare lands affected
- Compatibility with rare land management plan

TECHNICAL ENVIRONMENT
- Flood impacts to adjacent property
- Flood impacts to constructed trail and bridge
- Ease/complexity of construction

ECONOMIC ENVIRONMENT
- Comparative capital and operational costs
- Impacts to agricultural uses on rare lands

PROBLEM STATEMENT
- How well does it address the overall Problem/Opportunity Statement?

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EVALUATION OF ALTERNATIVE SOLUTIONS

ORDER OF PREFERENCE	
Most Preferred	○
More Preferred	◔
Somewhat Preferred	◑
Less Preferred	◕
Least Preferred	●

CRITERIA FOR EVALUATING ALTERNATIVES	Do Nothing	Alternative 1 – Northern Route	Alternative 2 – Dover Street South Route	Alternative 3 – Southern Route
NATURAL ENVIRONMENT				
Impacts to existing trees and vegetation	○	◔	◑	◕
Impacts to migrating, breeding and wintering birds	○	◔	◑	◕
Impacts to small wetland on rare lands/amphibian habitat	○	◔	◔	◔
Impacts to the Provincially Significant Speed River Wetland Complex	○	◑	◔	◔
Impacts to Significant Wildlife Habitat	○	◕	◑	◔
Impacts to Species at Risk	○	◔	◑	◕
Impacts to aquatic habitat in the Speed River	○	◔	◑	◕
Impacts to surface water quality	○	◑	◑	◑
SUMMARY NATURAL ENVIRONMENT	○	◔	◔	◑
SOCIAL ENVIRONMENT				
Route layout and connectivity within the City's trail network	●	○	○	○
Potential for trespassing/off trail uses	○	◔	◑	●
SUMMARY SOCIAL ENVIRONMENT	◑	◔	◑	●
CULTURAL ENVIRONMENT				
Impacts to Built Heritage and Cultural Heritage Landscapes	○	◑	◑	◑
Impacts to archaeological resources	○	◕	◕	◕
SUMMARY CULTURAL ENVIRONMENT	○	◑	◑	◑

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17

EVALUATION OF ALTERNATIVE SOLUTIONS

ORDER OF PREFERENCE	
Most Preferred	○
More Preferred	◔
Somewhat Preferred	◑
Less Preferred	◕
Least Preferred	●

CRITERIA FOR EVALUATING ALTERNATIVES	Do Nothing	Alternative 1 – Northern Route	Alternative 2 – Dover Street South Route	Alternative 3 – Southern Route
LAND USE/POLICY				
Compatibility with City and Region policies and plans	●	○	○	○
Area of rare lands affected	○	◔	◑	◕
Compatibility with rare land management plan	○	◑	◕	●
SUMMARY LAND USE/POLICY	○	◔	◑	◑
TECHNICAL ENVIRONMENT				
Flood impacts to adjacent property	○	◔	◔	◔
Flood impacts to constructed trail and bridge	○	◑	◕	●
Ease/complexity of construction	○	◑	◕	◔
SUMMARY TECHNICAL ENVIRONMENT	○	◔	◑	◑
ECONOMIC ENVIRONMENT				
Comparative capital and operational costs	○	◕	●	◔
Impacts to agricultural uses and income on rare lands	○	◔	◑	◕
SUMMARY ECONOMIC ENVIRONMENT	○	◑	◕	◑
PROBLEM STATEMENT				
Addresses Problem Statement?	No	Yes	Yes	Yes
OVERALL SUMMARY	Not Preferred	Most Preferred	Somewhat Preferred	Least Preferred

18

18

REDUCING IMPACTS

Based on the initial evaluation, Alternative 1 appears to be preferred.

This Alternative will include:

- Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land
- A pedestrian bridge across the Speed River connecting to the B. McMullen Linear (BML) Trail to the north of Dover Street South.

The final design will include measures to reduce impacts to the natural environment

These measures are being developed and may include:

- Tree planting and ecological restoration to compensate for trees lost;
- Avoiding any in-water work to reduce impacts to watercourses and fish habitat;
- Installation of fencing or living fences (i.e., shrub lines) and signage to minimize trespassing into natural areas.
- Completion of additional archaeological studies.
- Additional measures to reduce impacts are currently in development and will be identified in the Project File Report.

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EA PROJECT TIMELINE

Municipal Class EA, Blair-Preston Pedestrian Bridge and Trail

Notice of Commencement	Complete Studies Develop Bridge and Alternatives Consult with Stakeholders	Evaluate Alternative Solutions Prepare Public Consultation Materials	Public Consultation	Consult with Stakeholders Select Preferred Alternative	Document Project Findings in a Project File Report (PFR)	Notice of Completion
	Spring 2019-Summer 2020	Winter 2019/20	We are here	Fall /Winter 2020	Winter 2020	

Next Steps….

- Submit revised Natural Heritage Report and Draft EA Report early ;
- Issue Notice of Study Completion and provide Project File Report for final public review and comment for a period of 30 days.

20

Thank you for reading.
Help shape decisions made in this Study

Please feel free to contact one of the project team members below:

Shane Taylor, OALA, CSLA
Landscape Architect
City of Cambridge
50 Dickson Street, P.O. Box 669
Cambridge, ON N1R 5W8
519-740-4681 x 4567
TaylorS@cambridge.ca

Tricia Radburn, M.Sc.(PL), MCIP, RPP
Environmental Assessment Coordinator
R.J. Burnside & Associates Limited
292 Speedvale Ave. W, Unit 20
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226-486-1778
Tricia.Radburn@rjburnside.com

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Administration Centre: 400 Clyde Road, P.O. Box 729 Cambridge, ON N1R 5W6

Phone: 519-621-2761 Toll free: 1-866-900-4722 Fax: 519-621-4844 www.grandriver.ca

August 31, 2021

Via Email

Ms. Tricia Radburn, MCIP, RPP
Senior Environmental Planner
R.J. Burnside & Associates Limited
292 Speedvale Avenue West, Unit 20
Guelph, ON N1H1C4

Dear Ms. Radburn:

Re: Review of Draft Project File Report
Blair-Preston Trail Schedule B Municipal
Class Environmental Assessment
City of Cambridge

Further to our comments of April 16, 2020 and as requested, the Grand River Conservation Authority (GRCA) has completed our review of the following report:

- Draft Blair-Preston Trail, Schedule B Municipal Class Environmental Assessment, Natural Heritage Report, City of Cambridge (prepared by R.J. Burnside & Associates Limited and dated June 2021); and,

- Technical Memorandum, Hydraulic Performance & HecRas Model, Blair-Preston Trail and Pedestrian Bridge, City of Cambridge (prepared by R.J. Burnside & Associates Limited and dated June 22, 2021).

Based on our review of this document, the GRCA offers the following advisory comments and recommendations for your review and consideration.

Water Resource Engineering Review

1. The documentation for the HecRas modeling should include the source of the topographic data, the geodetic datum of the data, the geodectic datum used in the HecRas model, and any factors used for conversion. The datum should be reported as CGVD28 or CGVD2013.

2. The HecRas model should be revised to include the effects of the berm north of the proposed bridge, and the bridge cross sections should be located across the floodplain at the location of the proposed trail.

3. A representative channel section should be added below the water line to the cross sections that were coded using Lidar information.

4. Ineffective flow areas should be added to the model where appropriate.

5. At the confluence of the two rivers, the western portions of the cross sections should spread across the floodplain proportionate to the flow of the Speed River versus the Grand River, at an angle representative of the flow direction (i.e. the cross section end points should not bunch together).

Natural Heritage Resources Review

General Comments

6. In general, the Natural Heritage Report (Burnside 2020) provides a good synopsis of existing biophysical conditions, including regulated wetland and watercourse features, within the study area. An assessment of potential environmental impacts was not provided in this report. However, potential environmental impacts associated with each trail and bridge crossing alternative were summarized in the Project File Report (R.J. Burnside 2021), which presumably is based on the comparative impact assessment provided in the Evaluation Matrix (Appendix D).

7. A second general comment is that the title pages attached to Appendix D and Appendix E do not correspond with the content provided in these appendices. More specifically, Appendix D is more than a Cultural Heritage Resources Assessment whereas Appendix E appears to provide typical trail design drawings only.

Detailed Comments on the Project File Report

8. Executive Summary, page 2, 4th paragraph – Based on the list of alternatives presented in the preceding paragraph, the preferred solution corresponds to Alternative 2 (not Alternative 1). However, according to Figure 6-1, the preferred solution corresponds to Alternative 1 (Northern Route). This apparent discrepancy could lead to confusion and should be corrected.

9. Section 5.2.2, Relevant Land Use Policies –The GRCA's regulation and policies were not reviewed in this section. The report should clearly state that portions of the study area are regulated by the GRCA owing the presence of wetlands, 2 watercourses (unnamed tributary and Speed River), and associated floodplain.

10. The distances between the bridge crossings and the nearest wetland were not specified in Table 6-2 (Summary of Advantages and Disadvantages). However, we note that the approximate distance to the PSW is specified in the Evaluation Matrix (Appendix D). We would ask that Table 6-2 be revised to be more consistent with the Evaluation Matrix.

11. With respect to the Evaluation Matrix (Appendix D), the bridge associated with Alternative 3 (Southern Route) appears to more than 100 m from the PSW and unevaluated wetland.

Grading and construction activities would also be well separated from both wetlands. Therefore, this alternative would be preferred for this reason alone. The evaluation matrix should be revised to reflect the reduced potential for impacts on the PSW specifically.

12. We request that the bridge span lengths and potential impacts on flooding and erosion be clarified at detailed design.

13. We request that all erosion and sediment control measures be inspected at least weekly and after heavy rainfall events.

14. We request that stockpiled materials be setback a minimum of 30 m from any wetland or watercourse.

15. Detailed grading, construction, dewatering, and erosion and sediment control plans will need to be submitted to the GRCA for review and comment at detailed design.

16. The Grand River and Speed River are classified as warm water fish habitat. Consequently, no in water work shall be permitted on or between April 1 and June 30 of any given year.

Advisory Comments

17. We agree that, in the event that in water work is proposed, the submission of a request for review by the Federal Department of Fisheries and Oceans (DFO) would be required given the presence of aquatic species at risk in the Speed River. However, DFO review may not be necessary provided there is no in water work and provided all of the applicable mitigation measures are implemented.

18. We recommend the installation of interpretive signage to help communicate the importance of the Speed and Grand Rivers and their associated wetlands, and to help increase their value to the local community.

Conclusion

The GRCA appreciates the opportunity to participate in this study and provide comments on the draft Project File Report (PFR) and hydraulic analysis. We trust that the final PFR will include the above-noted advisory comments and recommendations. We would further request receiving a copy of the final PFR, hydraulic modelling, and notice of study completion.

We trust the above is of assistance on this matter. If you require any further information, please do not hesitate to contact the undersigned at ext. 2233 or jbrum@grandriver.ca.

Yours truly,

John Brum
Resource Planner
Grand River Conservation Authority

JB/

cc: Shane Taylor & Kathy Padgett, City of Cambridge (via email)
Marcos Kroker & Jane Gurney, Region of Waterloo (via email)

Blair Preston Trail, Environmental Assessment

GRCA Comments on EA

Item		Topic/Section	Agency Comment	Study Team Response
Grand River Conservation Authority				
John Brum, Resource Planner Dated: August 31, 2021				
Water Resource Engineering Comments				
1	1	Documentation for HEC-RAS model	The documentation for the HecRas modeling should include the source of the topographic data, the geodetic datum of the data, the geodetic datum used in the HecRas model, and any factors used for conversion. The datum should be reported as CGVD28 or CGVD2013.	The geodetic datum used for the HEC-RAS model is CGVD28, as this is the datum the topographic survey was completed in. Lidar data used to create the cross sections was received in CGVD2013 format, and it was shifted vertically 0.40 m to be converted to CGVD28 to align with the preliminary design and topo survey. The 0.40 m conversion was obtained from nearby MTO vertical monument elevation differences (Station 00819668030). Given the age of the GRCA HEC model that was used to develop the tailwater condition for this model, it has been assumed that it was completed in the CGVD28 datum as well. Please confirm if this is not correct.
2	2	HEC-RAS model	The HecRas model should be revised to include the effects of the berm north of the proposed bridge, and the bridge cross sections should be located across the floodplain at the location of the proposed trail.	The cross sections have been reconfigured; cross section 657.16 now traverses the top of the berm. We note that due to the presence of a high tailwater condition associated with the downstream confluence of the Grand River and Speed River, the presence of the berm in the model does not impact flood elevations within or upstream of the project area.
3	3	LiDAR - Addition of channel section	A representative channel section should be added below the water line to the cross sections that were coded using Lidar information.	Where available from the Burnside topographic survey, the channel below the water line has been modelled (XS's 591.04, 577.24 & 562.05). Given the magnitude of the Regional flow event and the size of the floodplain, the flow area provided by an assumed low flow channel outside the surveyed area would be relatively small and will not affect results. The current configuration provides a more conservative estimate of the flood elevations in the Study Area which we feel is a better practice given the lack of survey data in the channel beyond our topo survey.
4	4	Add ineffective flow to modeling	Ineffective flow areas should be added to the model where appropriate	Ineffective flow areas have been added to the model.
5	5	Angle change for the western cross sections	At the confluence of the two rivers, the western portions of the cross sections should spread across the floodplain proportionate to the flow of the Speed River versus the Grand River, at an angle representative of the flow direction (i.e. the cross section end points should not bunch together).	The reconfigured cross sections spread across the flood plain of the Speed River and end on the high lands to the west. We have not modelled the Grand River flood plain, and this is beyond the scope of this analysis. It should be noted that modelling a floodplain so close to the confluence of two large watercourses is a complicated task, and we feel that the current configuration, combined with the incorporation of the Grand River model's tailwater elevations, is the most appropriate way to represent the conditions in the Speed River at the crossing location.
John Brum, Resource Planner Dated: August 31, 2021				
General Comments - Natural Heritage Resources				
6	6	Potential Environmental Impacts	In general, the Natural Heritage Report (Burnside 2020) provides a good synopsis of existing biophysical conditions, including regulated wetland and watercourse features, within the study area. An assessment of potential environmental impacts was not provided in this report. However, potential environmental impacts associated with each trail and bridge crossing alternative were summarized in the Project File Report (R.J. Burnside 2021), which presumably is based on the comparative impact assessment provided in the Evaluation Matrix (Appendix D).	Correct. The Natural Heritage Report was intended to provide a summary of existing conditions. The evaluation is carried out in the main Project File Report.
7	7	Mislabeled Appendices - Appendix D and Appendix E	A second general comment is that the title pages attached to Appendix D and Appendix E do not correspond with the content provided in these appendices. More specifically, Appendix D is more than a Cultural Heritage Resources Assessment whereas Appendix E appears to provide typical trail design drawings only	Appendix Titles have been corrected.
John Brum, Resource Planner Dated: August 31, 2021				
Report-Specific Comments: Project File Report				
8	8	Mislabeled solutions - Executive Summary, pg 2, 4th paragraph	Based on the list of alternatives presented in the preceding paragraph, the preferred solution corresponds to Alternative 2 (not Alternative 1). However, according to Figure 6-1, the preferred solution corresponds to Alternative 1 (Northern Route). This apparent discrepancy could lead to confusion and should be corrected.	The list in the preceding paragraph has been updated to clarify the numbering of the Alternatives.
9	9	Section 5.2.2, Relevant Land Use Policies	The GRCA's regulation and policies were not reviewed in this section. The report should clearly state that portions of the study area are regulated by the GRCA owing the presence of wetlands, 2 watercourses (unnamed tributary and Speed River), and associated floodplain.	A description of GRCA regulations has been added to Section 5.2.2.
10	10	Table 6-2, distance to wetland	The distances between the bridge crossings and the nearest wetland were not specified in Table 6-2 (Summary of Advantages and Disadvantages). However, we note that the approximate distance to the PSW is specified in the Evaluation Matrix (Appendix D). We would ask that Table 6-2 be revised to be more consistent with the Evaluation Matrix.	Table 6-2 updated to include a summary of more criteria and include specific quantities and distances outlined in the detailed evaluation matrix.

Blair Preston Trail, Environmental Assessment
GRCA Comments on EA

Item		Topic/Section	Agency Comment	Study Team Response
11	11	Appendix D Evaluation Matrix - Distance to wetland	With respect to the Evaluation Matrix (Appendix D), the bridge associated with Alternative 3 (Southern Route) appears to more than 100 m from the PSW and unevaluated wetland Grading and construction activities would also be well separated from both wetlands. Therefore, this alternative would be preferred for this reason alone. The evaluation matrix should be revised to reflect the reduced potential for impacts on the PSW specifically.	Evaluation matrix revised to better reflect that Alternative 3 is farthest from the PSW.
12	12	Detailed Design	We request that the bridge span lengths and potential impacts on flooding and erosion be clarified at detailed design	Agreed. The text in Section 7.1, under the heading "Bridge Concept" indicates that the preliminary design shown is just conceptual and that the bridge will be designed to comply with GRCA policies and regulations during the detailed design process. Section 7.2 also notes that the bridge will be reassessed during detailed design to ensure that any flood or erosion risk are acceptable by the GRCA.
13	13	Erosion and Sediment Control Measures	We request that all erosion and sediment control measures be inspected at least weekly and after heavy rainfall events.	Table 8-2 updated to include a commitment to weekly inspections and inspections after heavy rainfall (pg 56).
14	14	Stockpiles setback	We request that stockpiled materials be setback a minimum of 30 m from any wetland or watercourse	Table 8-2- Mitigation for spills etc. changed to specify that stockpiled materials should be 30m from a wetland or watercourse (pg61)
15	15	Detailed Design Submission	Detailed grading, construction, dewatering, and erosion and sediment control plans will need to be submitted to the GRCA for review and comment at detailed design	Table 8-2- Mitigation for sediment and erosion impacts added to specify that plans will be submitted to GRCA for review during detailed design (pg56)
9	9	Water work window	The Grand River and Speed River are classified as warm water fish habitat. Consequently, no in water work shall be permitted on or between April 1 and June 30 of any given year.	Table8-2- Under impacts to fish habitat related to bridge construction, text added to specify that if in-water work is required, it will not occur between April 1 and June 30

Blair Preston Trail, Environmental Assessment
GRCA Comments on EA

Item		Topic/Section	Agency Comment	Study Team Response
John Brum, Resource Planner **Dated: August 31, 2021**				
Report-Advisory Comments: Project File Report				
10	10	DFO Review	We agree that, in the event that in water work is proposed, the submission of a request for review by the Federal Department of Fisheries and Oceans (DFO) would be required given the presence of aquatic species at risk in the Speed River. However, DFO review may not be necessary provided there is no in water work and provided all of the applicable mitigation measures are implemented.	Table8-2- Under impacts to fish habitat related to bridge construction, text added to specify that if in-water work is required, a request for review will be prepared and submitted to DFO for consideration.
11	11	Interpretive signage	We recommend the installation of interpretive signage to help communicate the importance of the Speed and Grand Rivers and their associated wetlands, and to help increase their value to the local community	This opportunity has been added to Table 8-2 under the cultural and social value heading.
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Administration Centre: 400 Clyde Road, P.O. Box 729 Cambridge, ON N1R 5W6

Phone: 519-621-2761 Toll free: 1-866-900-4722 Fax: 519-621-4844 www.grandriver.ca

November 22, 2021

Via Email

Ms. Tricia Radburn, MCIP, RPP
Senior Environmental Planner
R.J. Burnside & Associates Limited
292 Speedvale Avenue West, Unit 20
Guelph, ON N1H1C4

Dear Ms. Radburn:

Re: Review of Draft Project File Report
Blair-Preston Trail Schedule B Municipal
Class Environmental Assessment
City of Cambridge

Further to our comments of August 31, 2021, the Grand River Conservation Authority (GRCA) has completed our review of the following report:

- Response Matrix to GRCA Comments on EA, Blair Preston Trail (prepared by R.J. Burnside & Associates Limited and revised October 2021);
- Draft Blair-Preston Trail, Schedule B Municipal Class Environmental Assessment, Natural Heritage Report, City of Cambridge (prepared by R.J. Burnside & Associates Limited and revised October 2021); and,
- Technical Memorandum, Hydraulic Performance & HecRas Model, Blair-Preston Trail and Pedestrian Bridge, City of Cambridge (prepared by R.J. Burnside & Associates Limited and revised October 25, 2021).

Based on our review of this documentation, the GRCA is satisfied that our comments have been adequately addressed.

The GRCA appreciates the opportunity to participate in this study and provide comments on the draft Project File Report (PFR) and hydraulic analysis. We would further request receiving a copy of the final PFR, hydraulic modelling, and notice of study completion.

N:\Resource Planning\Waterloo Region\CAMBRIDGE\2020\EA\Blair-Preston Bridge Trail\Draft EA PFR review-Nov2021

We trust the above is of assistance on this matter. If you require any further information, please do not hesitate to contact the undersigned at ext. 2233 or jbrum@grandriver.ca.

Yours truly,

John Brum
Resource Planner
Grand River Conservation Authority

JB/

cc: Shane Taylor, Kathy Padgett & Jamie Croft, City of Cambridge (via email)
Marcos Kroker & Jane Gurney, Region of Waterloo (via email)

BURNSIDE

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Appendix K
Utilities Consultation

Hydro One Networks Inc
483 Bay St
Toronto, ON

May 06, 2020

Re: Blair-Preston Pedestrian Bridge & Trail

Attention:
Tricia Radburn
R. J. Burnside & Associates Limited

Following our preliminary assessment, we confirm there are no existing Hydro One Transmission assets in the subject area. Please be advised that this is only a preliminary assessment based on current information.

However, if plans for the undertaking change or the study area expands beyond that shown, please contact Hydro One to assess impacts of existing or future planned electricity infrastructure.

Any future communications are sent to Secondarylanduse@hydroone.com.

Be advised that any changes to lot grading and/or drainage within or in proximity to Hydro One transmission corridor lands must be controlled and directed away from the transmission corridor.

Sent on behalf of,

Secondary Land Use
Asset Optimization
Strategy & Integrated Planning
Hydro One Networks Inc.

Sylvia Waters

From: phil.arbeau@zayo.com on behalf of Utility Circulations <utility.circulations@zayo.com>
Sent: Monday, May 11, 2020 5:20 PM
To: Sylvia Waters
Subject: Re: 43765-Agency-Notice of Commencement MCEA-Blair-Preston Pedestrian Bridge & Trail, City of Cambridge

Good afternoon,

Zayo has no existing plant in the area indicated in your submission. No markup and no objection. Thank you.

Phil Arbeau
Utility Circulations

On Thu, 23 Apr 2020 at 09:14, Sylvia Waters <Sylvia.Waters@rjburnside.com> wrote:

> Notice of Commencement, Blair-Preston Pedestrian Bridge & Trail, Municipal Class Environmental Assessment. On behalf of City of Cambridge, please see attached Notice.

BURNSIDE
Sylvia Waters
Technical Administrator, EPA

R.J. Burnside & Associates Limited
128 Wellington Street West, Suite 301, Barrie, Ontario L4N 8J6
Office: +1 800-265-9662 Direct: +1 705-797-4379
www.rjburnside.com

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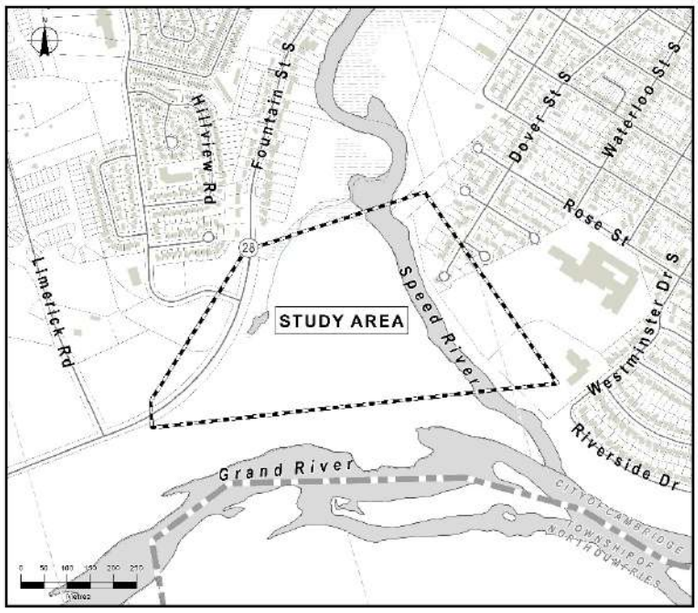
Appendix L
Public Information Consultation

Notice of Public Information Centre
Schedule B Municipal Class Environmental Assessment
Blair-Preston Pedestrian Bridge & Trail

The Study

The City of Cambridge is undertaking a Municipal Class Environmental Assessment to study a future pedestrian bridge and trail to connect the communities of Blair and Preston. Routes are being considered through lands owned by the rare Charitable Research Reserve. The new off-road link will connect the B. McMullen Linear Trail to the existing multi-use trail on Fountain Street via a bridge over the Speed River. The bridge and trail will provide a major off-road connection to downtown Preston as well as a connection to the 401 pedestrian bridge linking Kitchener and the Doon area. The need for an off-road route through this area was identified in the City of Cambridge's Trails Master Plan (2010), the Region of Waterloo's Active Transportation Master Plan (2014), and City of Cambridge Cycling Master Plan (2020).



The approximate extent of the Study Area is shown on the map to the right.

The Process

Pedestrian bridges require study under the Municipal Class Environmental Assessment (MCEA) process, as per the *Ontario Environmental Assessment Act*. The MCEA will meet the requirements for "Schedule B" projects. A series of technical studies (including ecological, archaeological and floodplain investigations) will be completed and used to evaluate various alternative bridge locations and associated trail routing. An option to "do nothing" will also be considered. Agencies, stakeholders, Indigenous communities, and members of the public will be consulted throughout the study.

At the conclusion of the study, a preferred alternative will be selected, and a Project File Report will be prepared for public review.

Input Invited

Consultation is important to this Study. The City invites public input and will consider all opinions as part of the decisions that are made.

Due to the current closures of public spaces for large gatherings, the Public Information Centre (PIC) will be held virtually on the City's engagement platform. The presentation and a short survey can be found at www.engagewr.ca/Blair-Preston starting **October 30, 2020**.

The City encourages residents to visit the platform to view the PIC presentation and provide feedback. At this time, we request your feedback be provided by **November 27, 2020**.

If you have additional comments or are unable to access the presentation and engagement material, please contact either of the following Project Team members:

Shane Taylor
City of Cambridge
50 Dickson Street, P.O. Box 669
Cambridge, ON N1R 5W8
T: 519-740-4681 x 4567
E: TaylorS@cambridge.ca

Tricia Radburn
R. J. Burnside & Associates Limited
292 Speedvale Avenue West Unit 20
Guelph, Ontario N1H 1C4
T: 226-486-1778
E: Tricia.Radburn@rjburnside.com

Project and notice information will be made accessible upon request in accordance with the Accessibility Standard for Information and Communication under the *Accessibility for Ontarians with Disabilities Act, 2005.*

Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record.

This Notice was first Issued on October 30, 2020.

Blair-Preston Pedestrian Bridge and Trail Schedule B Municipal Class Environmental Assessment

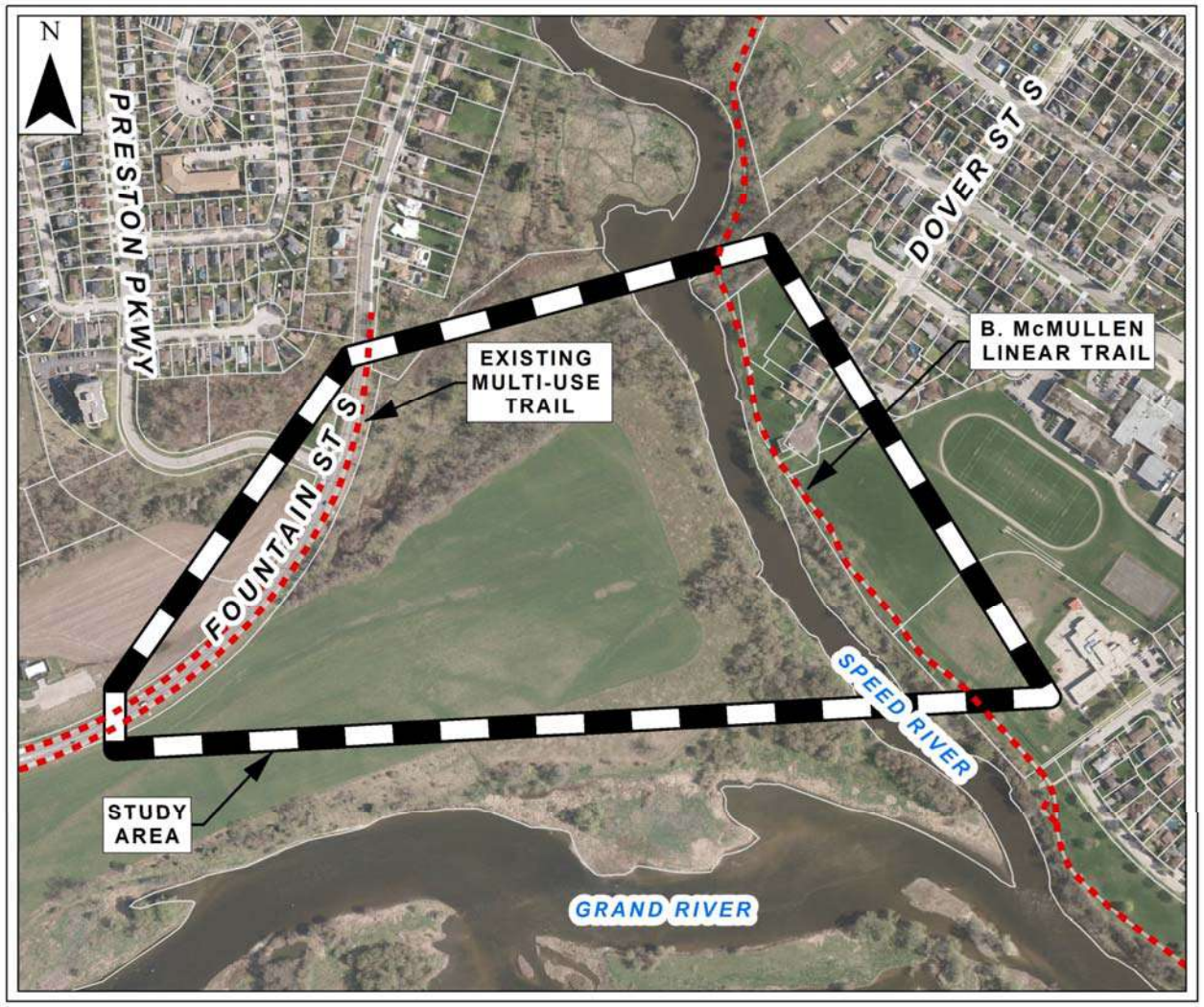
Welcome

- We invite you to participate in the Blair-Preston Pedestrian Bridge and Trail Project.
- Please review the information in this presentation.
- Please fill out the online questionnaire found at www.engagewr.ca/Blair-Preston.
- Please ask questions and share your thoughts.

STUDY DESCRIPTION

The City of Cambridge is undertaking a Municipal Class Environmental Assessment to study a future pedestrian bridge and trail to connect the communities of Blair and Preston.

Routes are being considered through lands owned by the rare Charitable Research Reserve. The new off-road trail will connect the B. McMullen Linear Trail to the existing multi-use trail on Fountain Street via a bridge over the Speed River. The bridge and trail will provide a major off-road connection to downtown Preston as well as a connection to the 401 pedestrian bridge linking Kitchener and the Doon area.



STUDY SCOPE

The Environmental Assessment (EA) process is triggered by the need for a pedestrian bridge over the Speed River.

A series of technical studies (including ecological, archaeological and floodplain investigations) will be completed and used to evaluate various alternative bridge locations and associated trail routing.

An option to “do nothing” will also be considered.

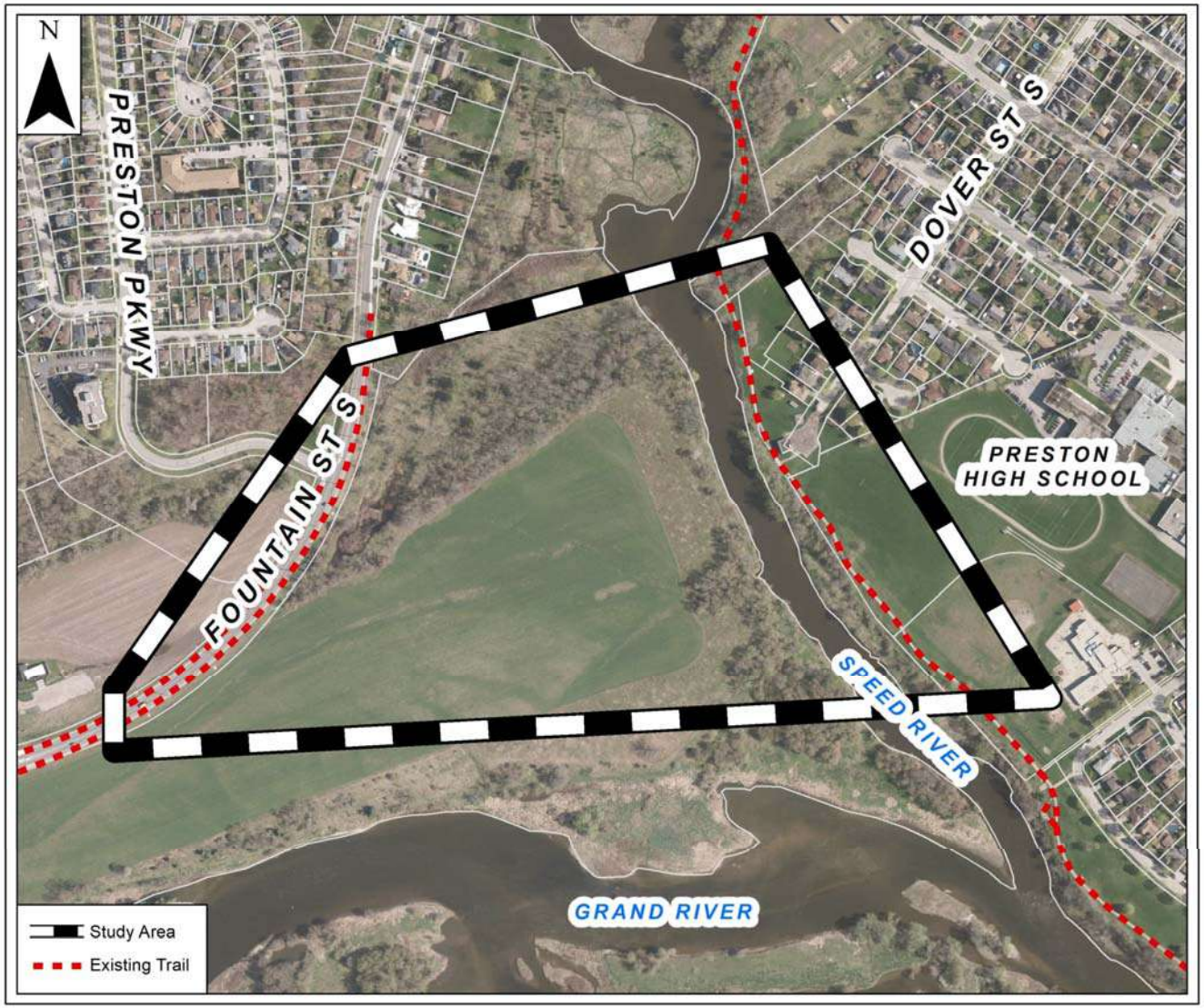
At the conclusion of the study, a preferred alternative will be selected, and a Project File Report will be prepared for public review.

STUDY AREA

The Study Area is approximately 25ha in size. The majority of the Study Area is owned by the rare Charitable Research Reserve (rare) and is located within an area known locally as the Junction (or Confluence) of the Speed and Grand Rivers.

The Study Area broadly includes:

- Fountain Street to the west
- A natural area to the north
- The Linear Trail near Preston High School to the east
- The Grand River to the south



NEEDS AND JUSTIFICATION

The City of Cambridge Trails Master Plan (2010) identified the need for a connection between the villages of Preston and Blair.

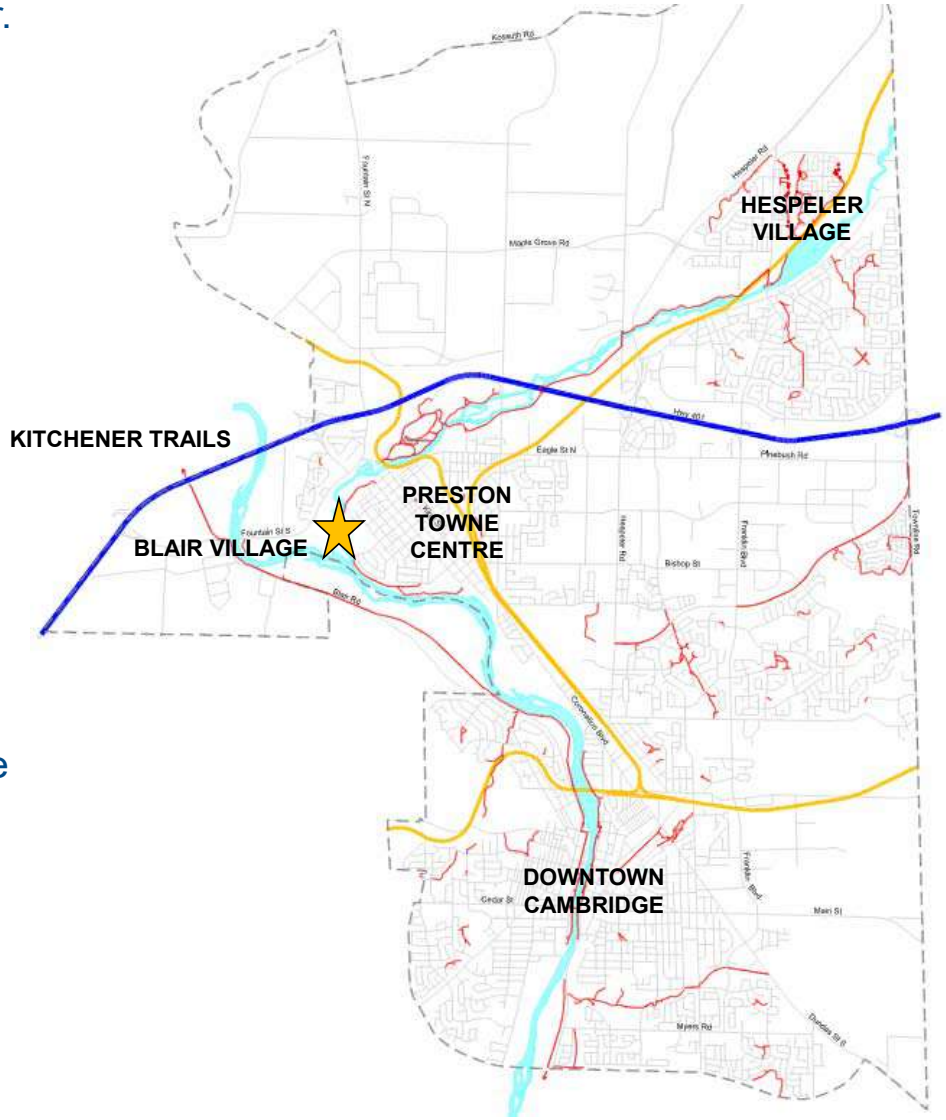
The Region of Waterloo's Active Transportation Master Plan (2014) also identifies the potential for a trail and bridge in the Study Area. The Study Area associated with this EA is mapped as a Special Study Area in the Region's Master Plan.

The City's recent Cycling Master Plan (2020) also identifies a trail in this location as a short-term priority.

Further support for the trail in the area was identified through the Class EA for Fountain / King St/ Shantz Hill Improvements. This document recommended that the Region of Waterloo, in conjunction with the City of Cambridge, should explore the feasibility of an off-road multi-use trail with new pedestrian/cycling bridge across the Speed River and trail connection from Fountain Street South to the City of Cambridge Linear Trail.

The bridge over the Speed River & trail across rare lands is the 'missing link' to providing off-road access between the three core areas, Blair and Kitchener.

The trail and bridge will support active transportation in the community.



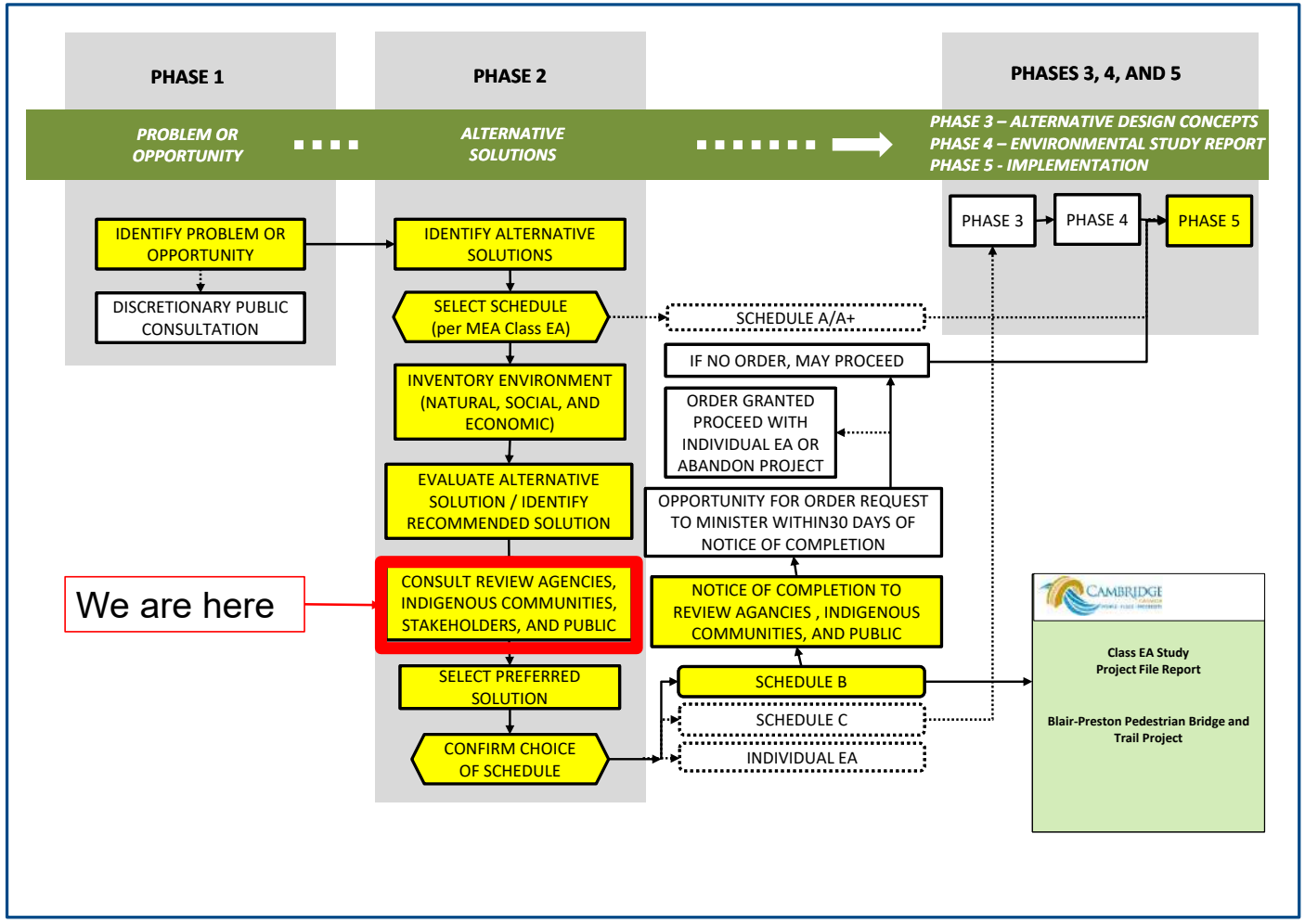
MUNICIPAL CLASS EA PROCESS

The pedestrian bridge location and connecting trail alternatives are being studied through the EA process.

This process will:

- study possible solutions to the problem statement,
- predict potential impacts, and
- identify a preferred solution.

We are currently consulting with agencies and the public to receive feedback on the Problem Statement, Alternatives and preliminary preferred Alternative.



PROBLEM/OPPORTUNITY STATEMENT

The first step in an EA is to identify the problem to be solved by the study.

The Problem or Opportunity Statement for this project is:

The purpose of this study is to identify the preferred location for pedestrian bridge and connecting trail to link the neighbourhoods of Preston and Blair. The Study will draw from input received through a comprehensive consultation and engagement program with public, review agencies and Indigenous communities.

Above: Walter Bean Trail Bridge over the Grand River

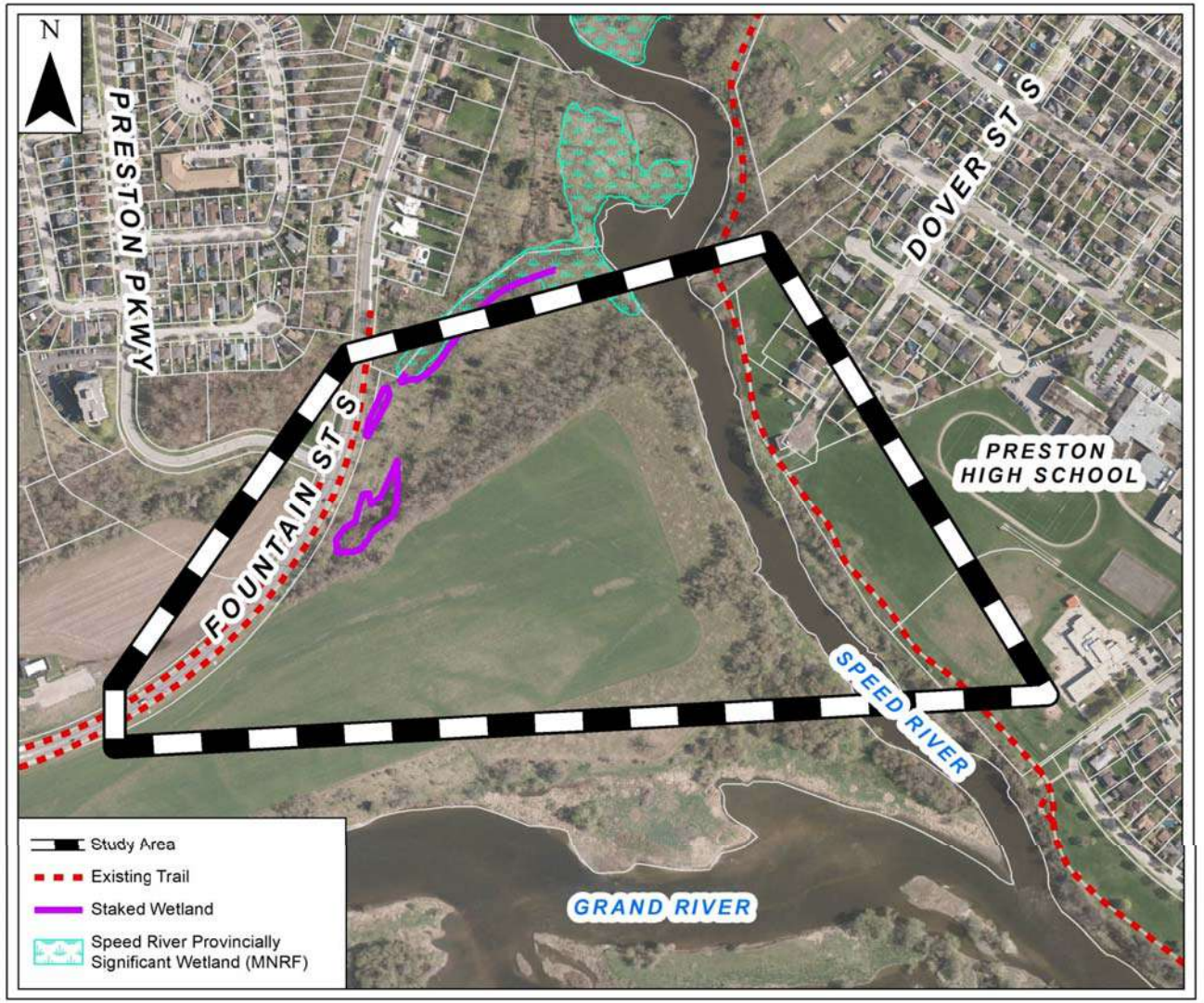
EXISTING CONDITIONS – NATURAL ENVIRONMENT

The existing vegetation within the Study Area includes a mix of:

- Cultural Meadow/Thicket
- Shallow Marsh
- Lowland Forest

A Section of the Speed River Provincially Significant Wetland (PSW) Complex is present on the northern edge of the Site along the western side of the Speed River

The entire Study Area is within a Significant Valley that incorporates the floodplain and valley slopes associated with the Speed and Grand Rivers.



WILDLIFE HABITAT

Confirmed Significant Wildlife present within Study Area:

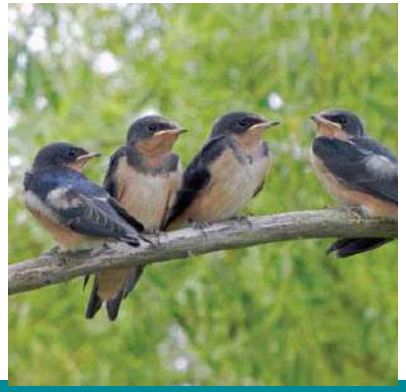
- Monarch

Additional types of habitat that were not confirmed present but could also not be confirmed absent include:

- Turtle Wintering Areas
- Reptile Hibernaculum
- Turtle Nesting Areas
- Amphibian Breeding Habitat
- Marsh Breeding Bird Habitat
- Terrestrial Crayfish

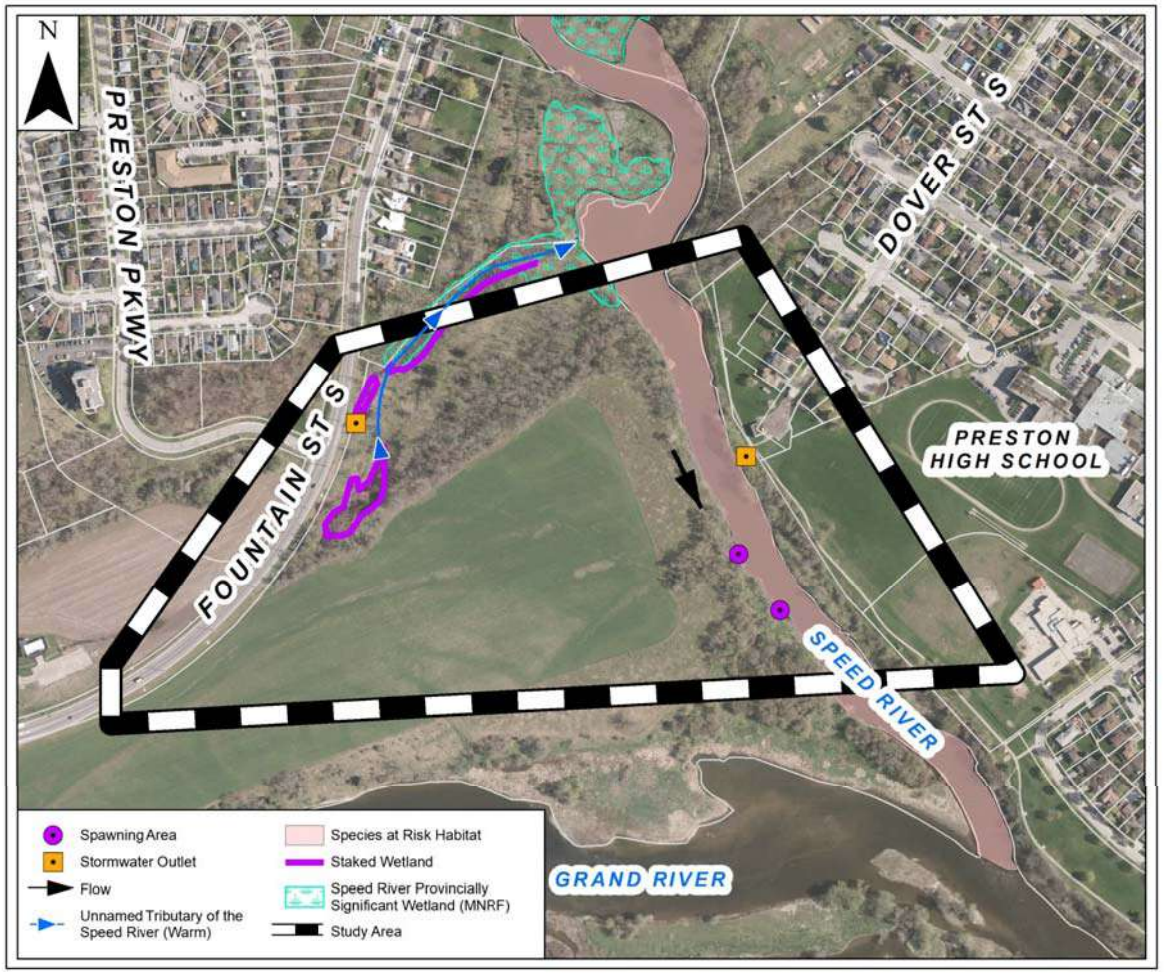
A number of Endangered or Threatened species were found to have habitat requirements which could be provided on, or adjacent to the study area:

- Barn Swallow;
- Bank Swallow;
- Bobolink;
- Chimney Swift;
- Eastern Meadowlark;
- Little Brown Myotis;
- Northern Myotis;
- Tri-coloured Bat;
- Silver Shiner;
- Wavy-rayed Lampmussel;
- American Chestnut; and
- Blanding's Turtle



FISH HABITAT

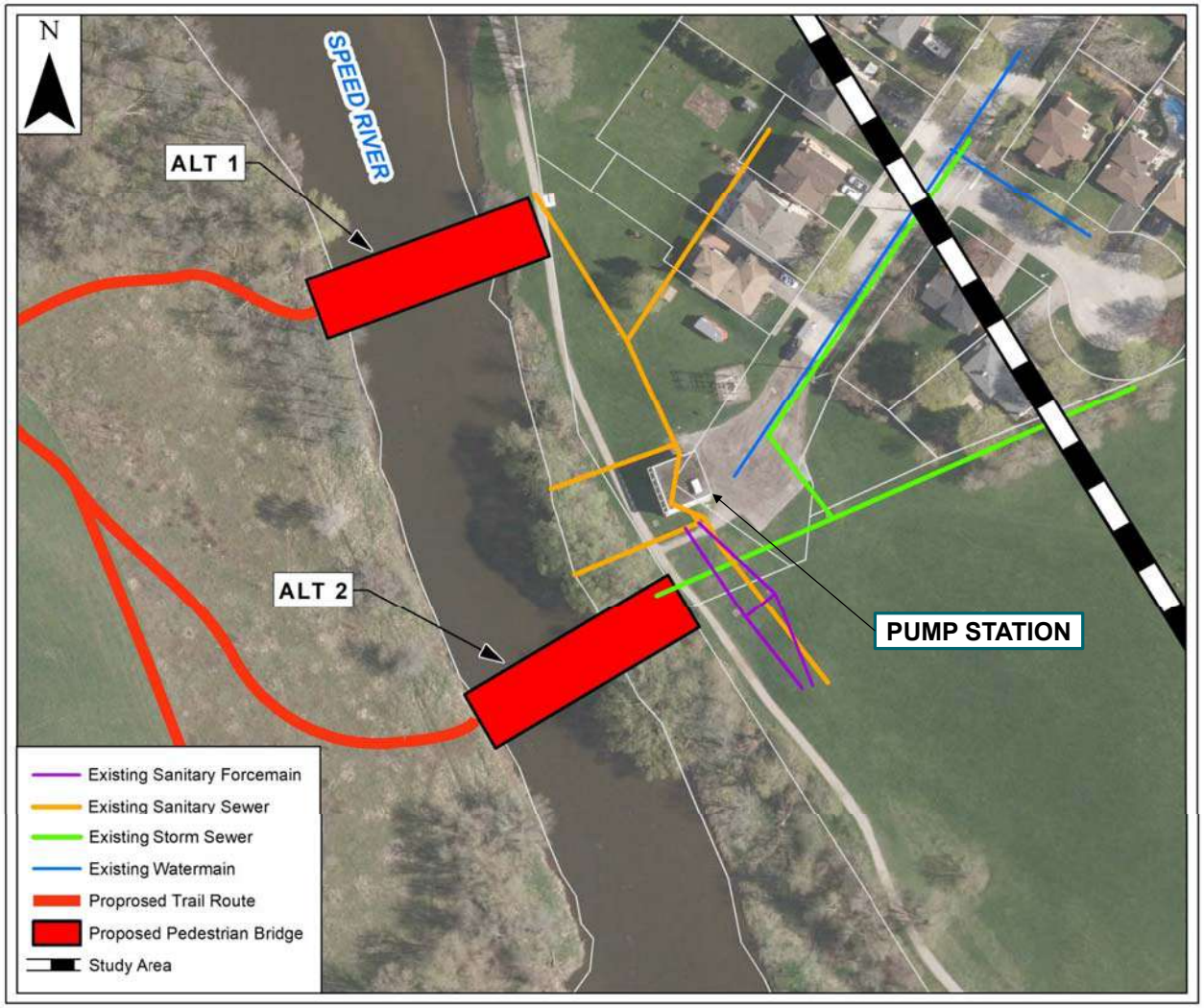
The Speed River flows from north to south through the Study Area in a single thread channel. The banks are densely vegetated with grasses, forbs, shrubs as well as areas of mature riparian vegetation. Spawning nests were observed in select locations. Fish species such as Smallmouth bass, Rock bass, darter, cyprinid, and young-of-the-year were all observed in the Speed River throughout the study area. The Speed River was found to be suitable habitat for Wavy-rayed Lampmussel and Silver Shiner, both species are identified as Species as Risk.



INFRASTRUCTURE

A sanitary pump station is located at the end of Dover St.

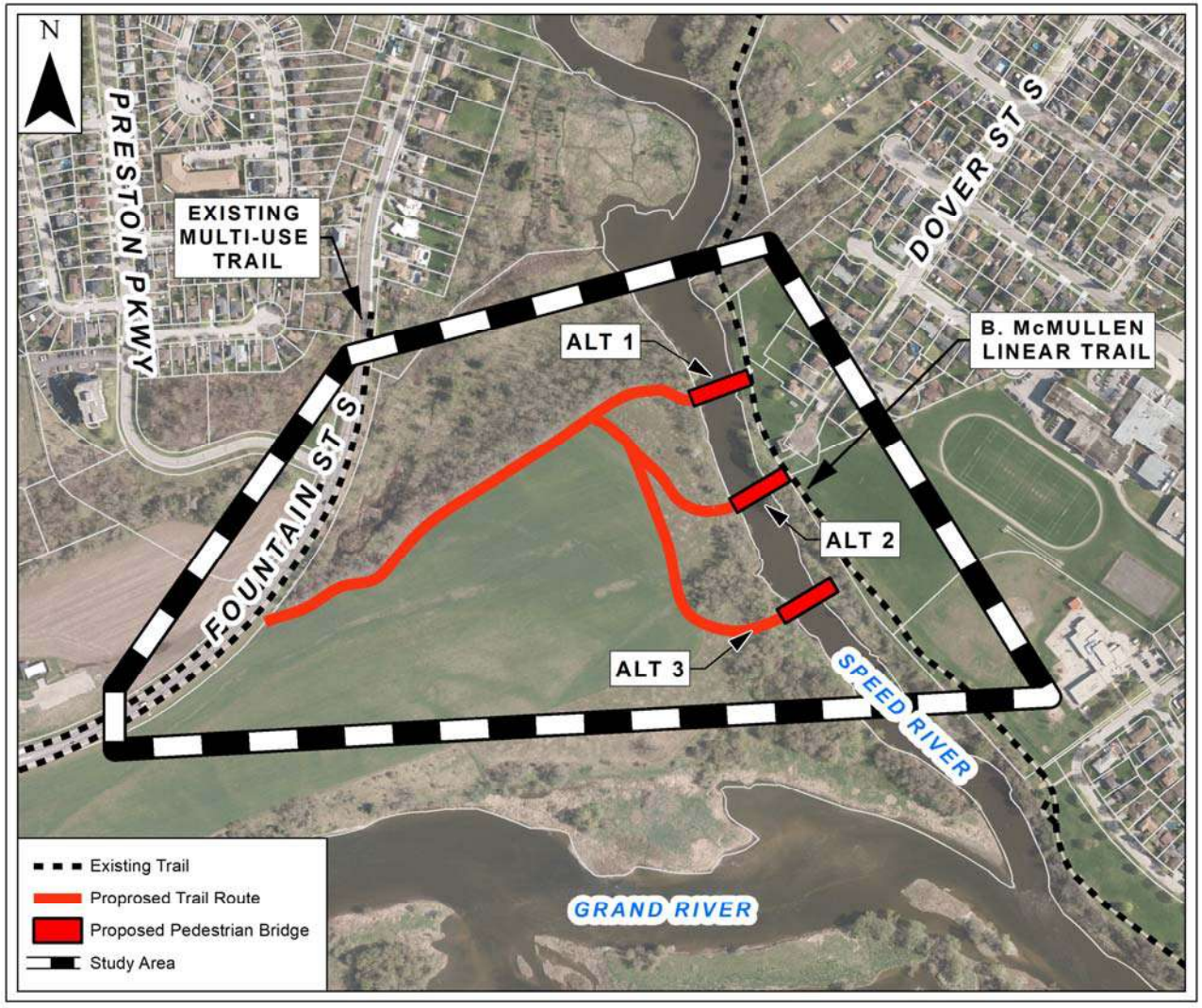
A variety of below-ground infrastructure is located in the area.



ALTERNATIVE SOLUTIONS

An Environmental Assessment is a step-by-step process that evaluates a series of alternatives, each of which are able to meet the project objectives outlined in the Problem/Opportunity Statement. For this project, three alternative pedestrian bridge and connecting trails were identified. Each alternative has the potential to provide a major off-road connection to downtown Preston as well as a connection to the 401 pedestrian bridge linking Kitchener and the Doon area. As required by the Environmental Assessment process, an alternative to "do nothing" is also being considered. The "do nothing" option would not include any new bridge or trail.

The pros and cons of each alternative are being examined through the evaluation process.



DO NOTHING (MAINTAIN THE STATUS QUO)

Under this scenario, no bridge or trail will be built. The study area and Speed River shown in the photos will remain unchanged.

Doing nothing, or maintaining the status quo is a mandatory alternative in the Class EA process. This alternative would involve the continued operation of the current trail network without any additional connecting trail/bridge development in the Blair Preston area.

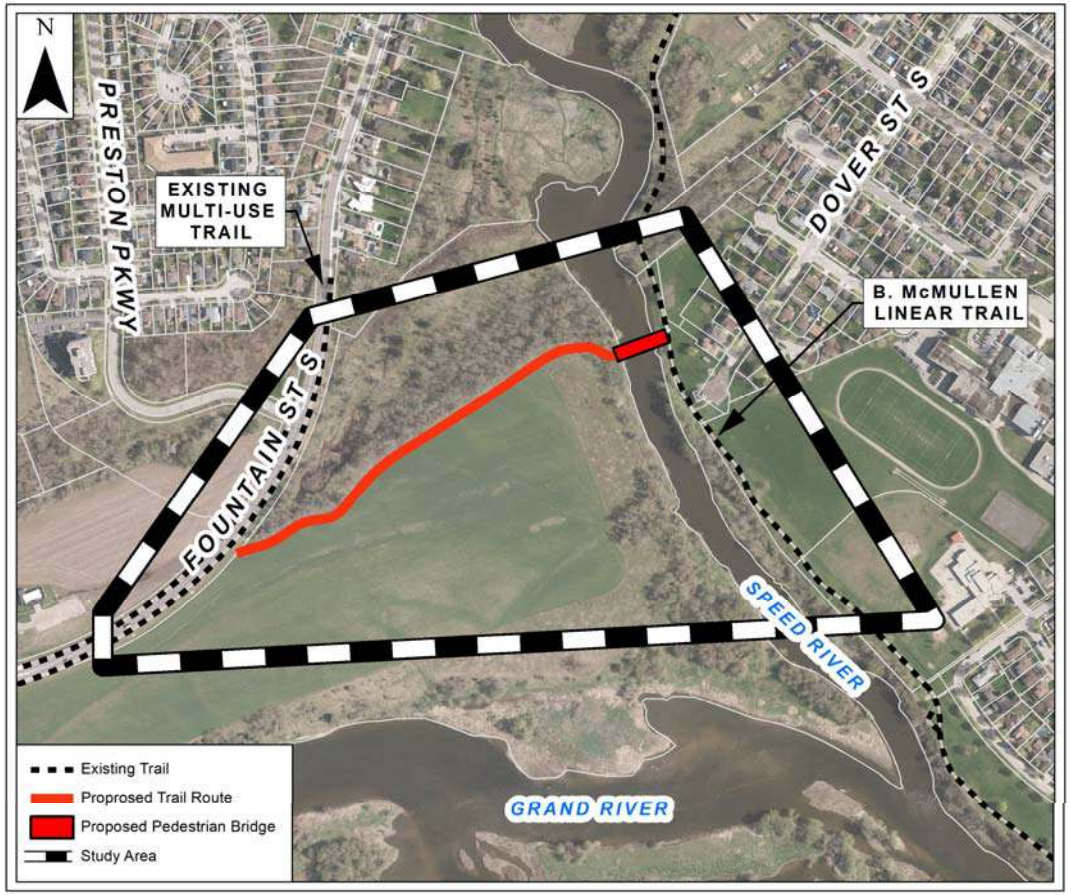
Advantages:

- No impact to natural environment or potential habitat.
- No costs to implement.

Disadvantages:

- Does not address the problem statement.

ALTERNATIVE #1: NORTHERN ROUTE



Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting to the B. McMullen Linear Trail to the north of Dover Street South.

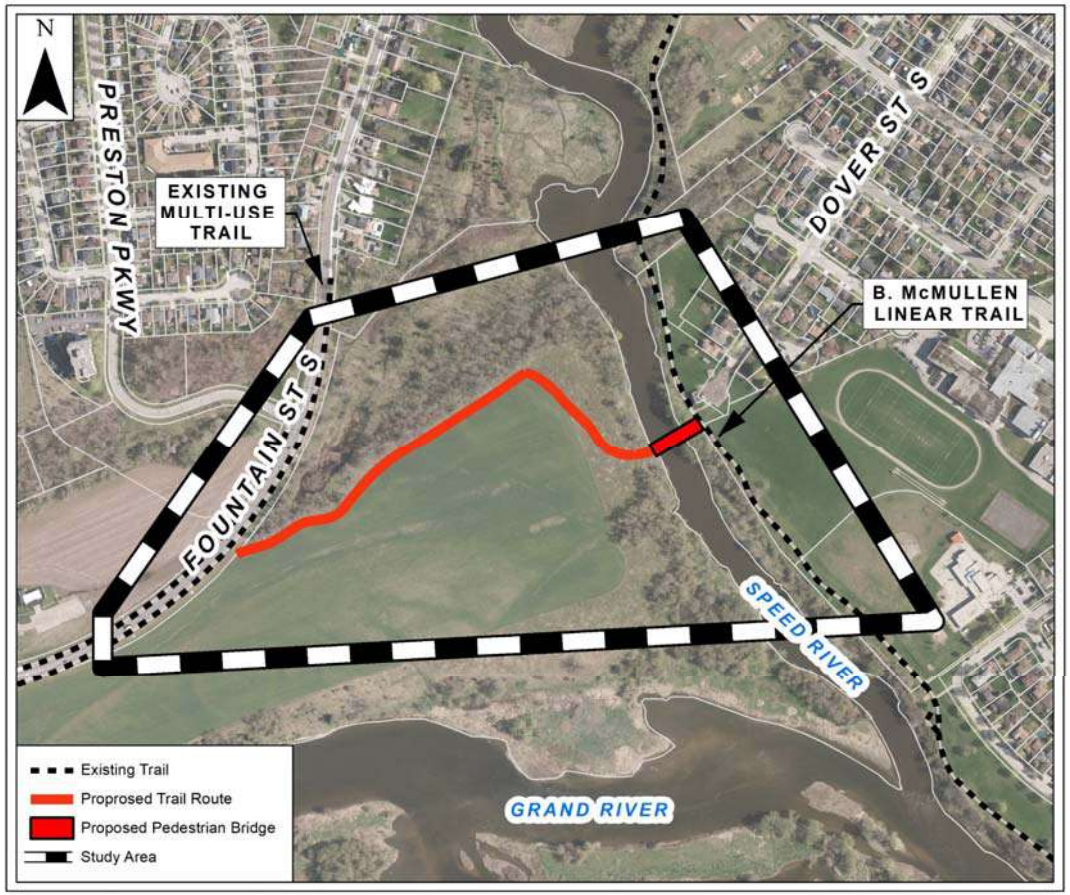
Advantages:

- Creates the shortest connection between Fountain St. and the Linear Trail.
- Provides a route that is the least likely to encourage trail users to veer off-trail and trespass on rare lands.
- The bridge and trail are the farthest distance from the confluence of the Speed and Grand Rivers, a sensitive waterfowl wintering area.

Disadvantages:

- The bridge is the closest option to the Speed River PSW.
- The bridge is close to potential turtle nesting habitat.
- The bridge is close to a sanitary sewer line.
- The bridge will need to be longer than the bridge in Alternative 3 but shorter than the bridge in Alternative 2. This option therefore has a moderate cost relative to the other options.

ALTERNATIVE #2: DOVER STREET SOUTH ROUTE



Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting the to the Linear Trail at Dover Street South near the Dover Street Pump House Building.

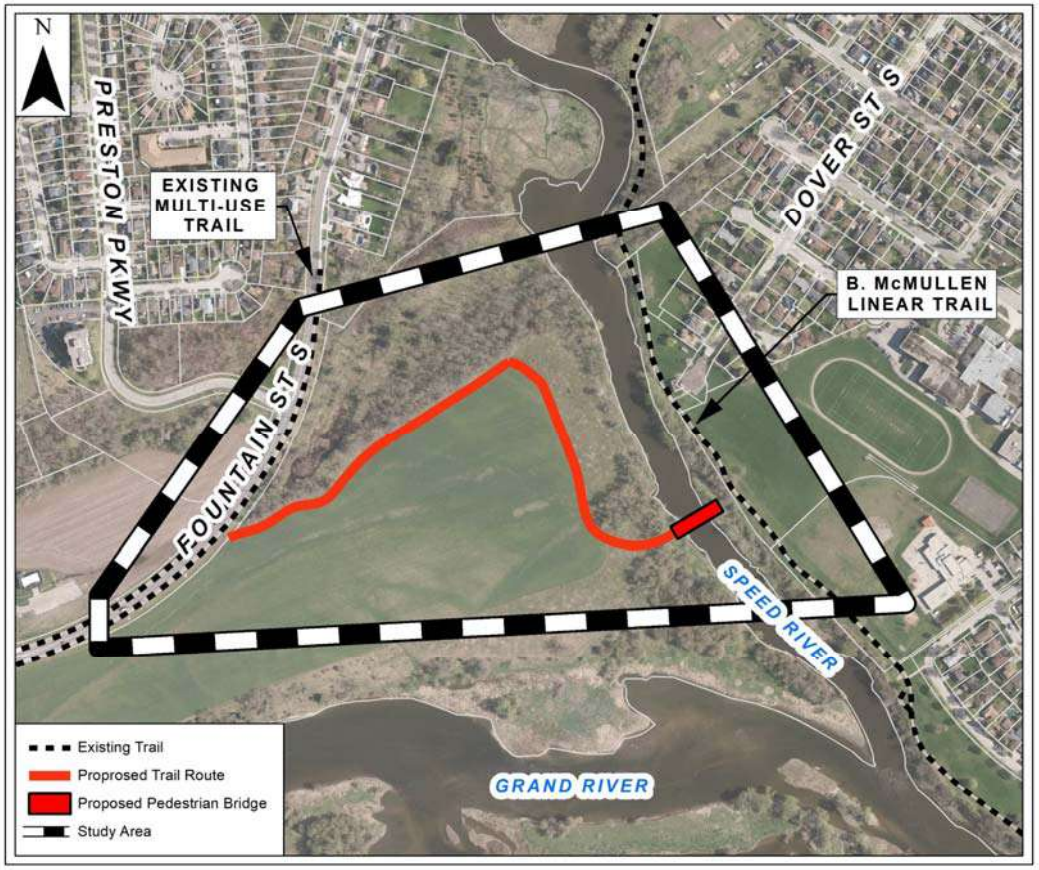
Advantages:

- The trail provides a direct link with Dover St. S.
- The bridge ends close to the school property. Students are expected to be among the trail users.
- The bridge is farther from the Speed River PSW than Alternative 1.

Disadvantages:

- The route results in more disturbance to Bobolink and Monarch habitat than Alternative 1.
- The route includes a 90 degree bend which is likely to lead trail users to “cut the corner” and trespass on rare lands.
- Trail is close to the sanitary pump station and related below-ground infrastructure.
- This route has the longest bridge and therefore the highest cost.

ALTERNATIVE #3: SOUTHERN ROUTE



Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting to the Linear Trail to the south of Dover Street South, west of the Preston High School field.

Advantages:

- This option crosses at the narrowest point and therefore a shorter bridge is required.
- This is the least costly option.
- The bridge is farther from the Speed River PSW than Alternatives 1 and 2.
- No nearby below-ground infrastructure is present.

Disadvantages:

- This bridge is closest to the sensitive waterfowl wintering area at the confluence of the Speed and Grand Rivers.
- Two 90 degree angles in the trail route are likely to encourage trail users to “cut the corners” and travel off-trail, potentially damaging natural features and agricultural lands.
- This is the longest trail route.

EVALUATION PROCESS

To formally evaluate the advantages and disadvantages of each Alternative, a series of evaluation criteria were developed. Each Alternative and the "Do Nothing" option were compared.

NATURAL ENVIRONMENT

- Impacts to existing trees and vegetation
- Impacts to wetlands
- Impacts to migrating, breeding and wintering birds
- Impacts to surface water quality
- Impacts to Significant Wildlife Habitats
- Impacts to Species at Risk
- Impacts to aquatic habitat

SOCIAL ENVIRONMENT

- Route layout and external connectivity
- Potential for trespassing/off trail uses

CULTURAL ENVIRONMENT

- Impacts to archaeological resources
- Impacts to cultural heritage landscapes

LAND USE AND POLICY

- Compatibility with City and Region policies and plans
- Area of rare lands affected
- Compatibility with rare land management plan

TECHNICAL ENVIRONMENT

- Flood impacts to adjacent property
- Flood impacts to constructed trail and bridge
- Ease/complexity of construction

ECONOMIC ENVIRONMENT

- Comparative capital and operational costs
- Impacts to agricultural uses on rare lands

PROBLEM STATEMENT

- How well does it address the overall Problem/Opportunity Statement?

EVALUATION OF ALTERNATIVE SOLUTIONS

ORDER OF PREFERENCE	
Most Preferred	○
More Preferred	◔
Somewhat Preferred	◑
Less Preferred	◕
Least Preferred	●

CRITERIA FOR EVALUATING ALTERNATIVES	Do Nothing	Alternative 1 – Northern Route	Alternative 2 – Dover Street South Route	Alternative 3 – Southern Route
NATURAL ENVIRONMENT				
Impacts to existing trees and vegetation	○	◔	◑	◕
Impacts to migrating, breeding and wintering birds	○	◔	◑	◕
Impacts to small wetland on rare lands/amphibian habitat	○	◔	◔	◔
Impacts to the Provincially Significant Speed River Wetland Complex	○	◑	◔	◔
Impacts to Significant Wildlife Habitat	○	◕	◑	◔
Impacts to Species at Risk	○	◔	◑	◕
Impacts to aquatic habitat in the Speed River	○	◔	◑	◕
Impacts to surface water quality	○	◑	◑	◑
SUMMARY NATURAL ENVIRONMENT	○	◔	◔	◑
SOCIAL ENVIRONMENT				
Route layout and connectivity within the City's trail network	●	○	○	○
Potential for trespassing/off trail uses	○	◔	◑	●
SUMMARY SOCIAL ENVIRONMENT	◑	◔	◑	●
CULTURAL ENVIRONMENT				
Impacts to Built Heritage and Cultural Heritage Landscapes	○	◑	◑	◑
Impacts to archaeological resources	○	◕	◕	◕
SUMMARY CULTURAL ENVIRONMENT	○	◑	◑	◑

EVALUATION OF ALTERNATIVE SOLUTIONS

ORDER OF PREFERENCE	
Most Preferred	○
More Preferred	◔
Somewhat Preferred	◑
Less Preferred	◕
Least Preferred	●

CRITERIA FOR EVALUATING ALTERNATIVES	Do Nothing	Alternative 1 – Northern Route	Alternative 2 – Dover Street South Route	Alternative 3 – Southern Route
LAND USE/POLICY				
Compatibility with City and Region policies and plans	●	○	○	○
Area of rare lands affected	○	◔	◑	◕
Compatibility with rare land management plan	○	◑	◕	●
SUMMARY LAND USE/POLICY	○	◔	◑	◑
TECHNICAL ENVIRONMENT				
Flood impacts to adjacent property	○	◔	◔	◔
Flood impacts to constructed trail and bridge	○	◑	◕	●
Ease/complexity of construction	○	◑	◕	◔
SUMMARY TECHNICAL ENVIRONMENT	○	◔	◑	◑
ECONOMIC ENVIRONMENT				
Comparative capital and operational costs	○	◕	●	◔
Impacts to agricultural uses and income on rare lands	○	◔	◑	◕
SUMMARY ECONOMIC ENVIRONMENT	○	◑	◕	◑
PROBLEM STATEMENT				
Addresses Problem Statement?	No	Yes	Yes	Yes
OVERALL SUMMARY	**Not Preferred**	**Most Preferred**	**Somewhat Preferred**	**Least Preferred**

REDUCING IMPACTS

Based on the initial evaluation, Alternative 1 appears to be preferred.

This Alternative will include:

- Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land
- A pedestrian bridge across the Speed River connecting to the B. McMullen Linear (BML) Trail to the north of Dover Street South.

The final design will include measures to reduce impacts to the natural environment

These measures are being developed and may include:

- Tree planting and ecological restoration to compensate for trees lost;
- Avoiding any in-water work to reduce impacts to watercourses and fish habitat;
- Installation of fencing or living fences (i.e., shrub lines) and signage to minimize trespassing into natural areas.
- Additional measures to reduce impacts are currently in development and will be identified in the Project File Report.

EA PROJECT TIMELINE

Municipal Class EA, Blair-Preston Pedestrian Bridge and Trail

Next Steps….

- Review comments generated from the online survey and other public, agency and Indigenous community comments (**please submit comments by November 27, 2020**);
- Comments received by November 27 will be incorporated into the Project File Report which will include a summary of your written comments along with project-related responses;
- Select Preferred Alternative;
- Issue Notice of Study Completion and provide Project File Report for final public review and comment for a period of 30 days.

Thank you for reading.
Help shape decisions made in this Study

Please complete the online survey found at WEBSITE or contact one of the project team members below:

Shane Taylor, OALA, CSLA
Landscape Architect
City of Cambridge
50 Dickson Street, P.O. Box 669
Cambridge, ON N1R 5W8
519-740-4681 x 4567
TaylorS@cambridge.ca

Tricia Radburn, M.Sc.(PL), MCIP, RPP
Environmental Assessment Coordinator
R.J. Burnside & Associates Limited
292 Speedvale Ave. W, Unit 20
Guelph, ON N1H 1C4
226-486-1778
Tricia.Radburn@rjburnside.com

Sylvia Waters

From: Shane Taylor <TaylorS@cambridge.ca>
Sent: Monday, April 27, 2020 9:01 AM
To: [redacted]
Cc: Tricia Radburn
Subject: RE: pedestrian bridge

Hi [redacted], thank you for your comments. I'm not sure I completely follow what you are suggesting, would you be able to elaborate? I'm available at the number below if it is easier to discuss on the phone.

[redacted]

Thanks,

Shane Taylor
Landscape Architect
City of Cambridge
519-740-4681 ext.4567

From: [redacted]
Sent: April 26, 2020 6:34 PM
To: Shane Taylor
Cc: Tricia.Radburn@rjburnside.com
Subject: pedestrian bridge

Shane, Tricia,

As I have said before, if the LRT is going to come down Shantz Hill, cross the Speed and turn onto Eagle Street, looking at your map for the Blair-Preston bridge, it would make the most sense to extend Fountain Street South from the point where your study area boundary crosses the Street on the left, go across the river and join up with Eagle on the other side. Of course the road could have a trail as part of it (as the Fountain St S. Bridge over the Grand has) with the trail turning right to join up with the Linear Trail.

This alternative would accomplish the same purpose AND go a long way to alleviating the traffic/accident mess that is the Shantz-Fountain-King series of intersections.

[redacted]

[redacted]

[redacted]

Sylvia Waters

From: Tricia Radburn
Sent: Monday, April 27, 2020 9:14 AM
To: [redacted]; TaylorS@cambridge.ca
Cc: 300043765 Blair Preston Trail EA; Sylvia Waters
Subject: RE: pedestrian bridge

Thank you [redacted]. We will consider your comments in the preparation of the Environmental Assessment and add you to our project contact list.

Kind Regards,

BURNSIDE
Tricia Radburn, MCIP, RPP
Senior Environmental Planner

R.J. Burnside & Associates Limited
292 Speedvale Ave. W, Unit 20 Guelph ON
Office: 800-265-9662 Direct: 226-486-1778 www.rjburnside.com

From: [redacted]
Sent: Sunday, April 26, 2020 6:34 PM
To: TaylorS@cambridge.ca
Cc: Tricia Radburn <Tricia.Radburn@rjburnside.com>
Subject: pedestrian bridge

Shane, Tricia,

As I have said before, if the LRT is going to come down Shantz Hill, cross the Speed and turn onto Eagle Street, looking at your map for the Blair-Preston bridge, it would make the most sense to extend Fountain Street South from the point where your study area boundary crosses the Street on the left, go across the river and join up with Eagle on the other side. Of course the road could have a trail as part of it (as the Fountain St S. Bridge over the Grand has) with the trail turning right to join up with the Linear Trail.

This alternative would accomplish the same purpose AND go a long way to alleviating the traffic/accident mess that is the Shantz-Fountain-King series of intersections.

Please keep us on your distribution list.

[redacted]

[redacted]

[redacted]

Sylvia Waters

From: Shane Taylor <TaylorS@cambridge.ca>
Sent: Monday, April 27, 2020 10:32 AM
To: [redacted]
Cc: Tricia Radburn
Subject: RE: Blair Preston Trail

Hi [redacted], thanks for your interest in this project. We will add you to the project contact list for future notices.

City staff and the Cambridge Cycling and Trails Advisory Committee (CCTAC) looked extensively at options for pedestrian bridge connections along the Grand and Speed rivers, in order to accomplish the new pedestrian crossing, which was identified in the 2010 Trails Master Plan (TMP). The biggest challenge of this whole area is the high level of sensitive natural environment and documented provincially & federally regulated Species At Risk (SAR) habitat throughout, that make crossing anywhere very difficult to mitigate. The location identified as the 'study area' meets the criteria set out in the 2010 TMP, and is a strong active transportation connection linking Preston to Blair Village as well as the Doon area of Kitchener via the HWY 401 pedestrian overpass at the end of Morningside Dr. It also provides a safer and more direct connection for students residing in Preston Heights neighbourhood to access Preston High School (PHS) when travelling by foot, which was an item of concern discussed with CCTAC by the former principal at PHS, and supported by the Waterloo Region District School Board.

Additionally, the Rare Charitable Research Reserve owns all of the lands south of the Grand River / north of Blair Rd, from the east limits of the Blair Village to the western limits of West Galt, and they are not supportive of any new City trails/pedestrian bridges in those highly sensitive, protected natural areas. The only location on their lands they are open to consider a new trail/bridge is within the 'study area' shown in the Notice of Commencement, because it is the least environmentally impactful area under consideration.

Kind regards,

Shane Taylor
Landscape Architect
City of Cambridge
519-740-4681 ext.4567

From: [redacted]
Sent: April 25, 2020 10:07 AM
To: Shane Taylor
Subject: Blair Preston Trail

Hi Shane,

I saw the Notice of Study Commencement for the Blair-Preston Pedestrian Bridge and Trail in the Cambridge Times. I am really pleased to see that things are moving forward with a bridge and trail that will connect McMullen Trail with Blair Trail but I question the location of the connection since it requires the trail users to leave what is a trail in a 'natural environment' and engage a trail adjacent to a busy road and backtrack all the

way back to the beginning of the trail where they will also need to engage long stretch of a very narrow trail along side Blair Road. From an amenities perspective, the location of the connection would be much better if it connected Linear Trail to the Walter Bean Grand River Trail. This would be a 'nature to nature' connection and would be a much more direct connection to either Blair or downtown Galt. As a resident of Preston, this is the trail improvement I would prefer.

I realise the location I prefer is likely much more complicated due to floodplain development restrictions, required length and cost of the required bridge, availability of land, etc. but I would appreciate some feedback from you on whether or not a location like this was considered prior to selection of the current location.

Thanks.

Sylvia Waters

From: Shane Taylor <TaylorS@cambridge.ca>
Sent: Monday, April 27, 2020 10:47 AM
To: [redacted]
Cc: Tricia Radburn
Subject: RE: Blair-Preston bridge

Hi [redacted], Thank you for your interest in this project. We will add you to the project contact list.

Kind regards,

Shane Taylor
Landscape Architect
City of Cambridge
519-740-4681 ext.4567

-----Original Message-----
From: [redacted]
Sent: April 23, 2020 1:37 PM
To: Shane Taylor
Subject: Blair-Preston bridge

Hi Shane,

Can you add me to the list to subscribe for updates on the Blair-Preston per bridge?

Thanks, [redacted]

Sent from my mobile device.

Sylvia Waters

From: Shane Taylor <TaylorS@cambridge.ca>
Sent: Monday, November 02, 2020 1:19 PM
To: [redacted]; Sylvia Waters
Cc: Tricia Radburn
Subject: RE: [External] Re: 43765-Public Notice of Public Information Centre MCEA for Blair-Preston Pedestrian Bridge & Trail, City of Cambridge

Hi [redacted],

Are you a registered user with the Engage platform? You won't be able to fill in the forms if not. Once you are registered and signed in you should be able to find the survey at:

https://www.engagewr.ca/blair-preston/survey_tools/blair-preston-survey

We look forward to receiving your feedback.

Thanks,

Shane Taylor
Landscape Architect
City of Cambridge
519-623-1340 ext.4567

From: [redacted]
Sent: November 2, 2020 1:11 PM
To: Sylvia Waters
Cc: Tricia Radburn; Shane Taylor
Subject: [External] Re: 43765-Public Notice of Public Information Centre MCEA for Blair-Preston Pedestrian Bridge & Trail, City of Cambridge

Hi guys,

thanks for forwarding. I look forward to providing my input. On that note, when I click the 'Complete Form' button, it doesn't direct to any page.

If you have an alternate link to the form, I'd be happy to fill that out.

Regards, [redacted]

Sylvia Waters

From: Shane Taylor <TaylorS@cambridge.ca>
Sent: Monday, April 27, 2020 10:36 AM
To: [redacted]
Cc: Tricia Radburn
Subject: RE: Pedestrian bridge

Hi [redacted], thank you for your interest in this project. We will add you to the project contact list.

Kind regards,

Shane Taylor
Landscape Architect
City of Cambridge
519-740-4681 ext.4567

-----Original Message-----
From: [redacted]
Sent: April 24, 2020 7:53 PM
To: Shane Taylor
Subject: Pedestrian bridge

Hello Mr. Taylor,

I would like to be added to the project contact list to receive further notices please. I LOVE the idea of having a bridge to access rare from Preston! Want to show my support in any way I can!

Thank you!

[redacted]

Sylvia Waters

From: Shane Taylor <TaylorS@cambridge.ca>
Sent: Monday, April 27, 2020 10:46 AM
To: [redacted]
Cc: Tricia Radburn
Subject: RE: Blair-Preston Pedestrian Bridge & Trail

Hi [redacted], thank you for your interest in this project. We will add you to the project contact list.

Kind regards,

Shane Taylor
Landscape Architect
City of Cambridge
519-740-4681 ext.4567

From: [redacted]
Sent: April 23, 2020 1:44 PM
To: Shane Taylor
Subject: Blair-Preston Pedestrian Bridge & Trail

Hi Shane,

Can you please add me to the project contact list?

Thanks,
[redacted]

Blair-Preston Survey

SURVEY RESPONSE REPORT

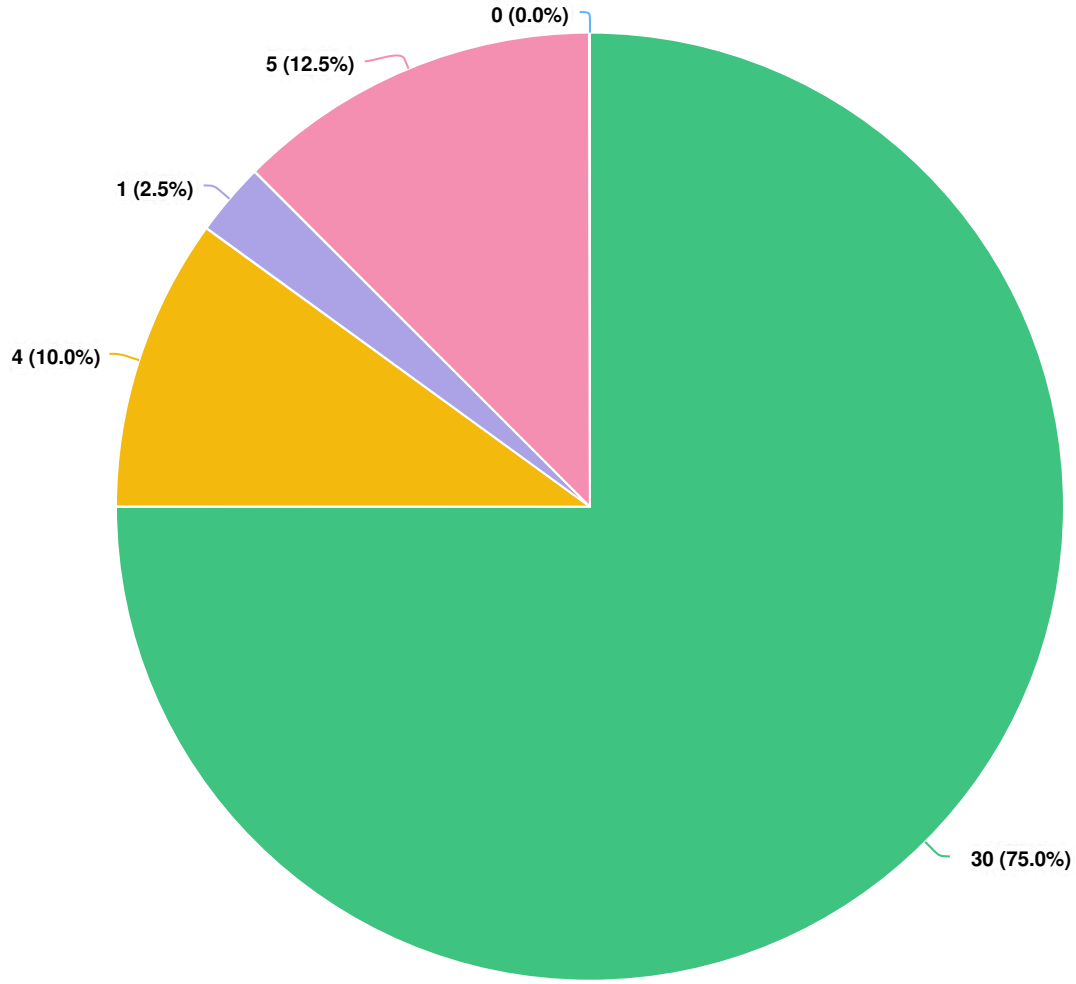
15 August 2018 - 07 December 2020

PROJECT NAME:

Blair-Preston Pedestrian Trail Bridge and Trail: Environmental Assessment (EA)

SURVEY QUESTIONS

Q1 How supportive are you of the City developing a trail connection between the communities of Blair and Preston?

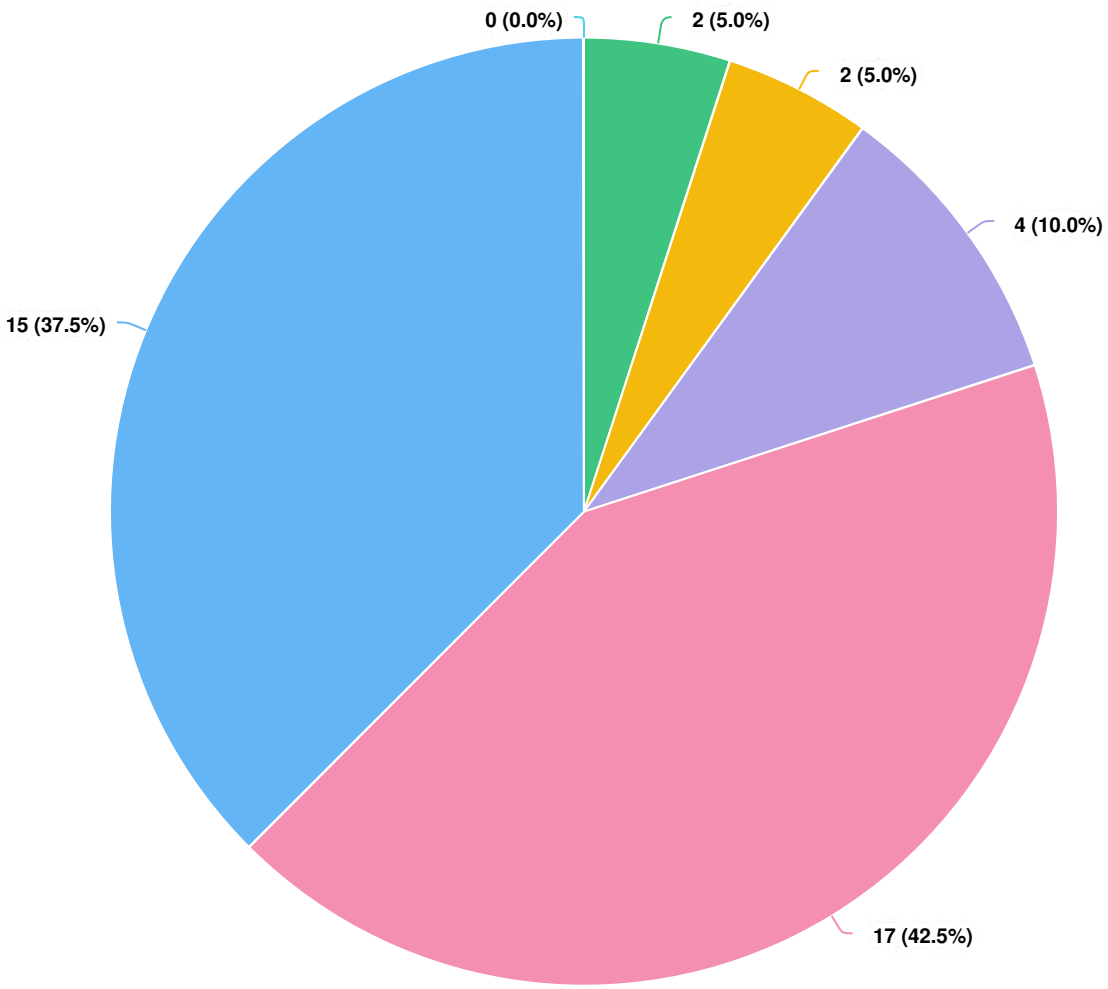


Question options

Very supportive | Somewhat supportive | Neutral | Not supportive | Depends on the trail system route

Mandatory Question (40 response(s))
Question type: Dropdown Question

Q2 How often, on average, do you currently use trails in your community during peak season (May to October)?

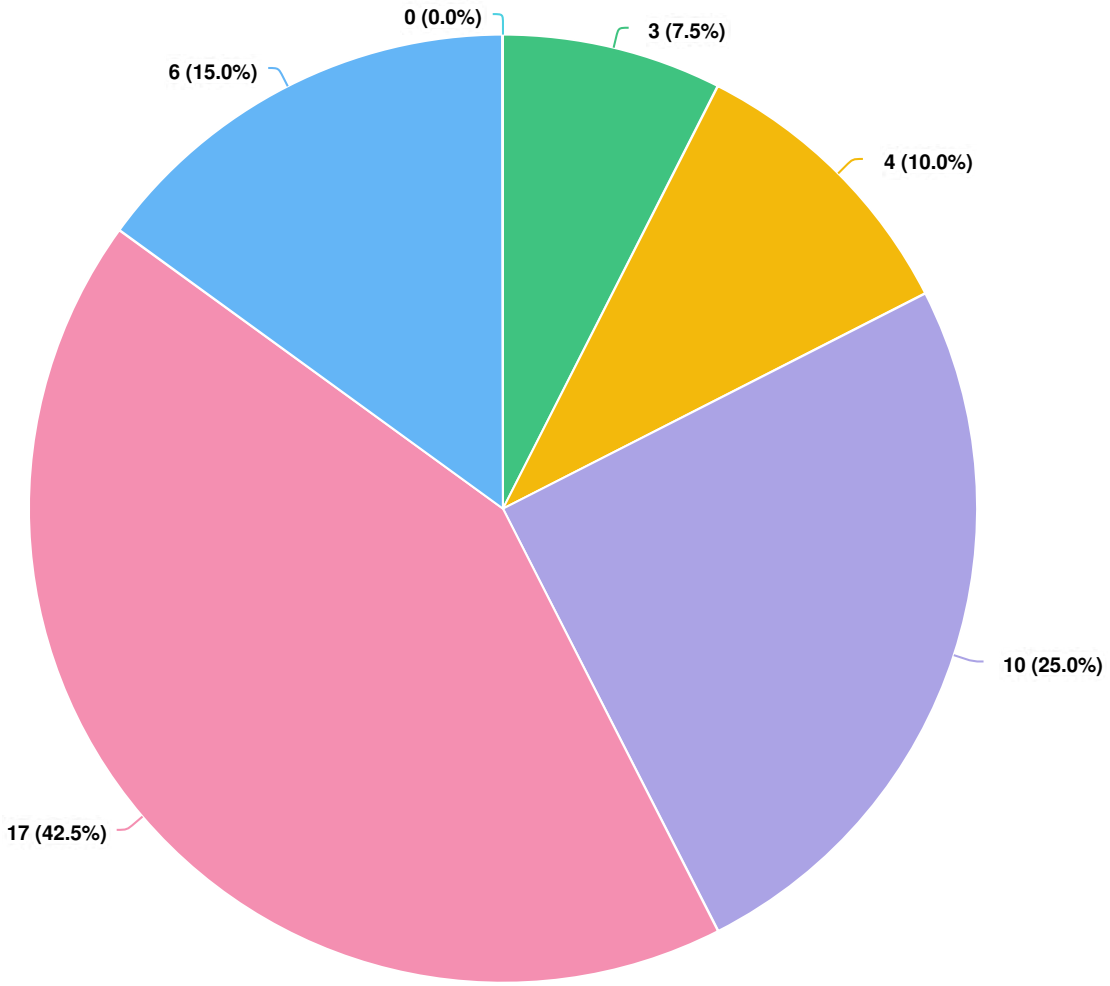


Question options

A few times a year | Once a month | Once a week | A few times a week | Daily | Never

Mandatory Question (40 response(s))
Question type: Dropdown Question

Q3 **How often, on average, do you currently use trails in your community during the off-peak season (November to April)?**

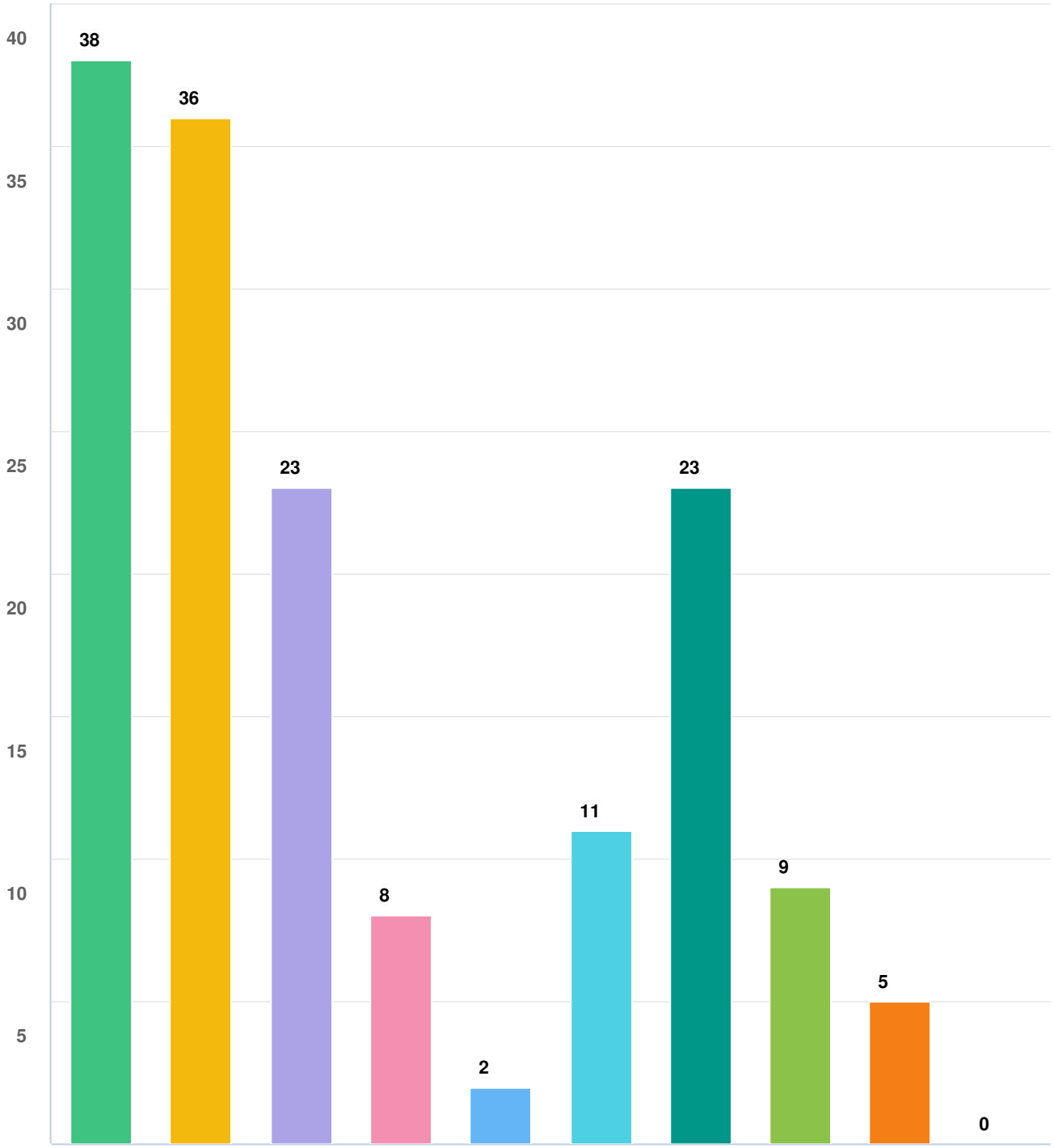


Question options

A few times a year | Once a month | Once a week | A few times a week | Daily | Never

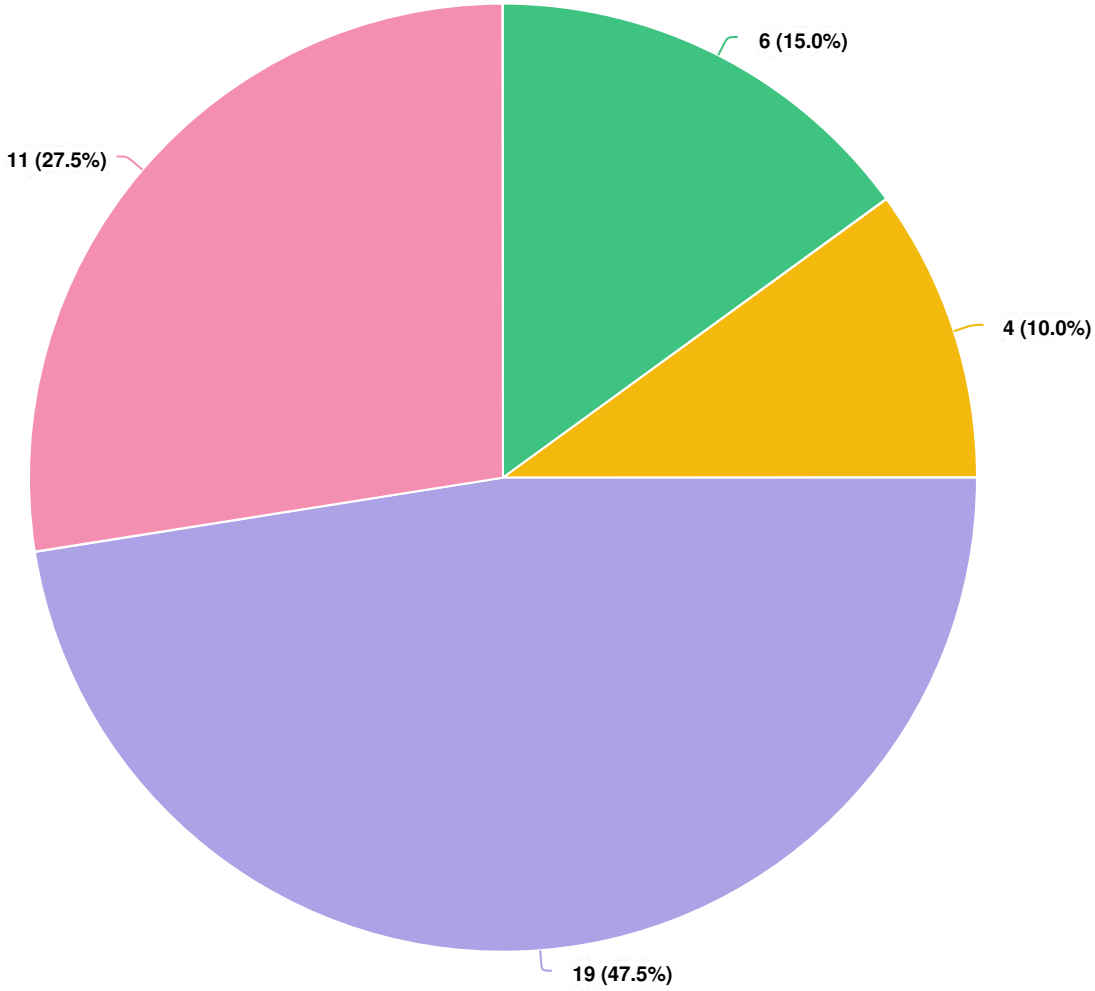
Mandatory Question (40 response(s))
Question type: Dropdown Question

Q4 What are the reasons you currently use trails in your community? (please check all that apply)



Mandatory Question (40 response(s))
Question type: Checkbox Question

Q5 **Would you be more likely to walk or cycle to school or work if more connecting trails such as the proposed Blair-Preston trail were available in your community?**

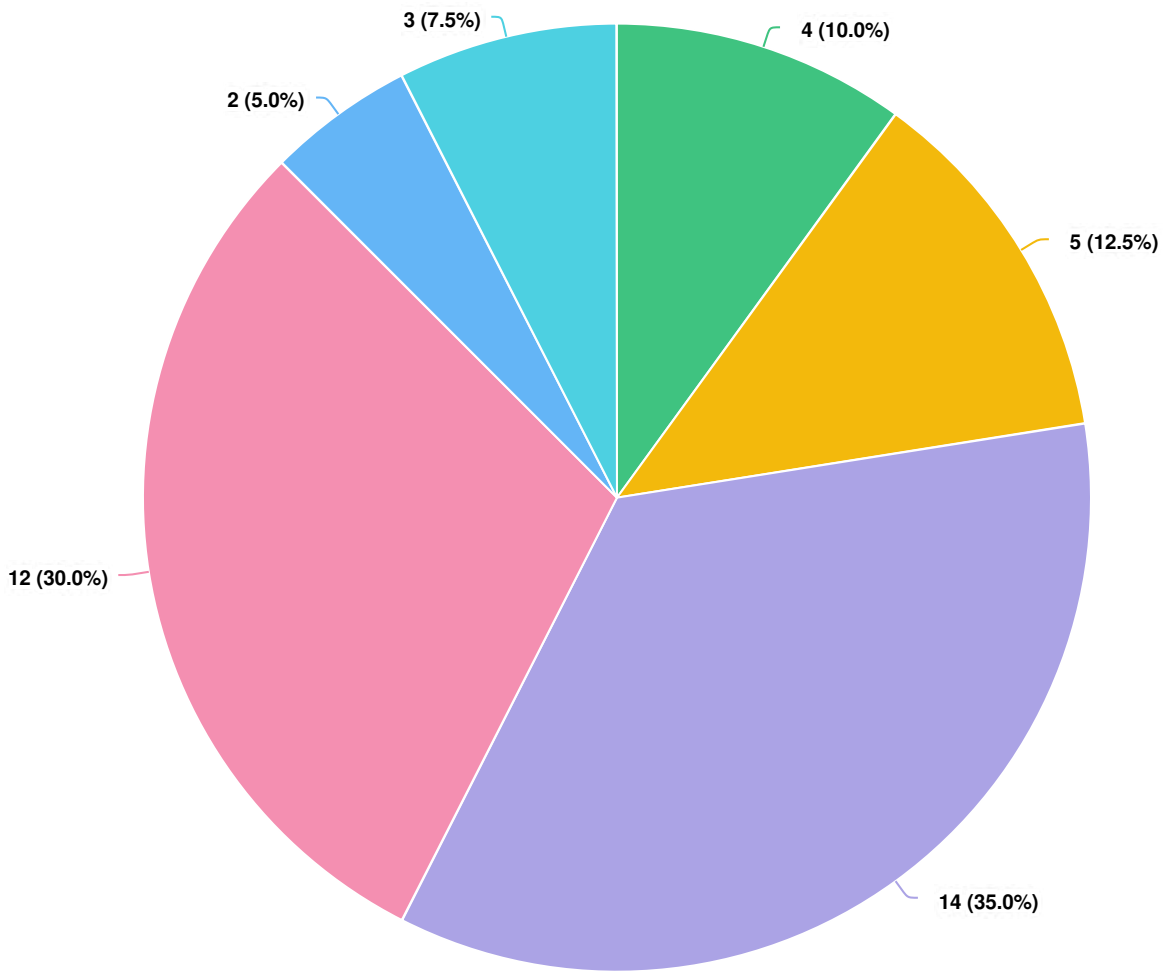


Question options

Much more likely More likely Not likely Depends on the trail routes

Mandatory Question (40 response(s))
Question type: Dropdown Question

Q6 **How often, on average, do you expect to use the proposed Blair-Preston trail link during peak season (May to October)?**

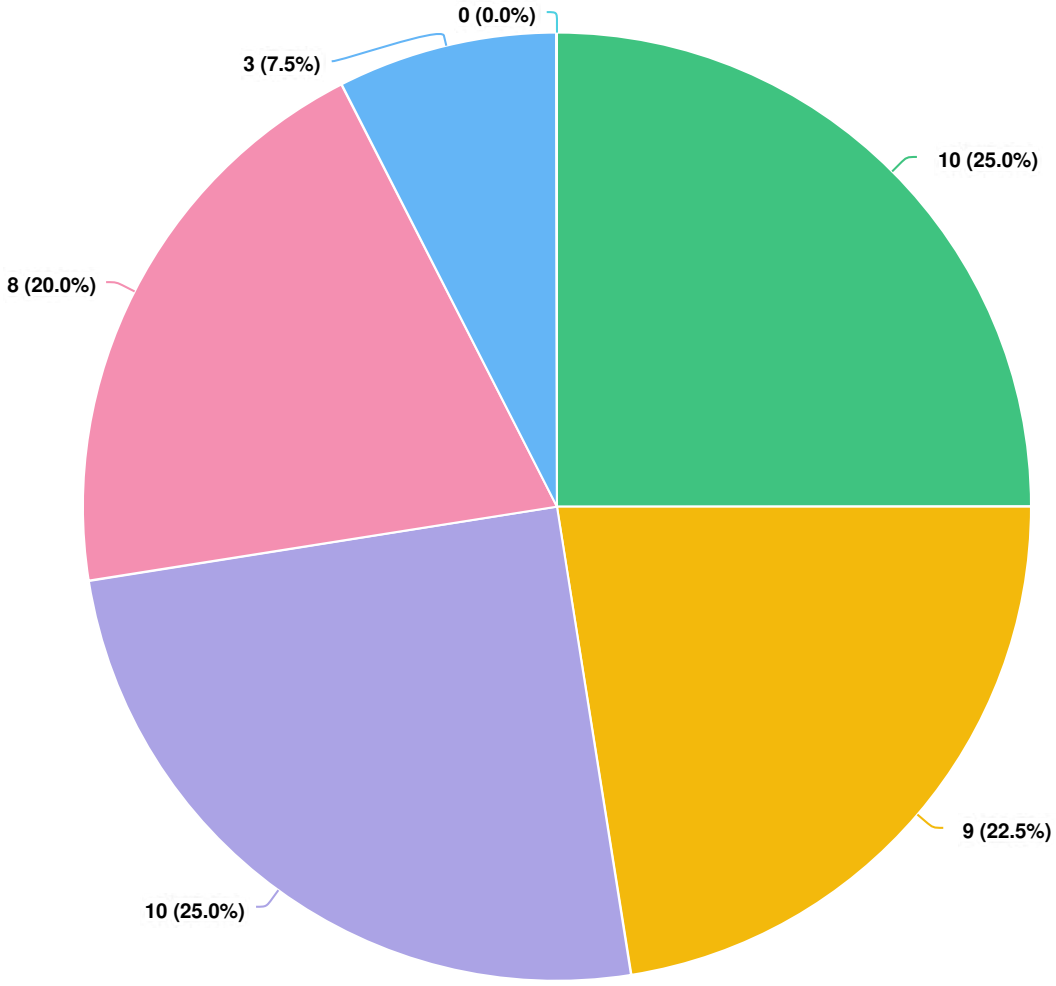


Question options

A few times a year | Once a month | Once a week | A few times a week | Daily | Never

Mandatory Question (40 response(s))
Question type: Dropdown Question

Q7 **How often, on average, do you expect to use the proposed Blair-Preston trail link during the off-peak season (November to April)?**

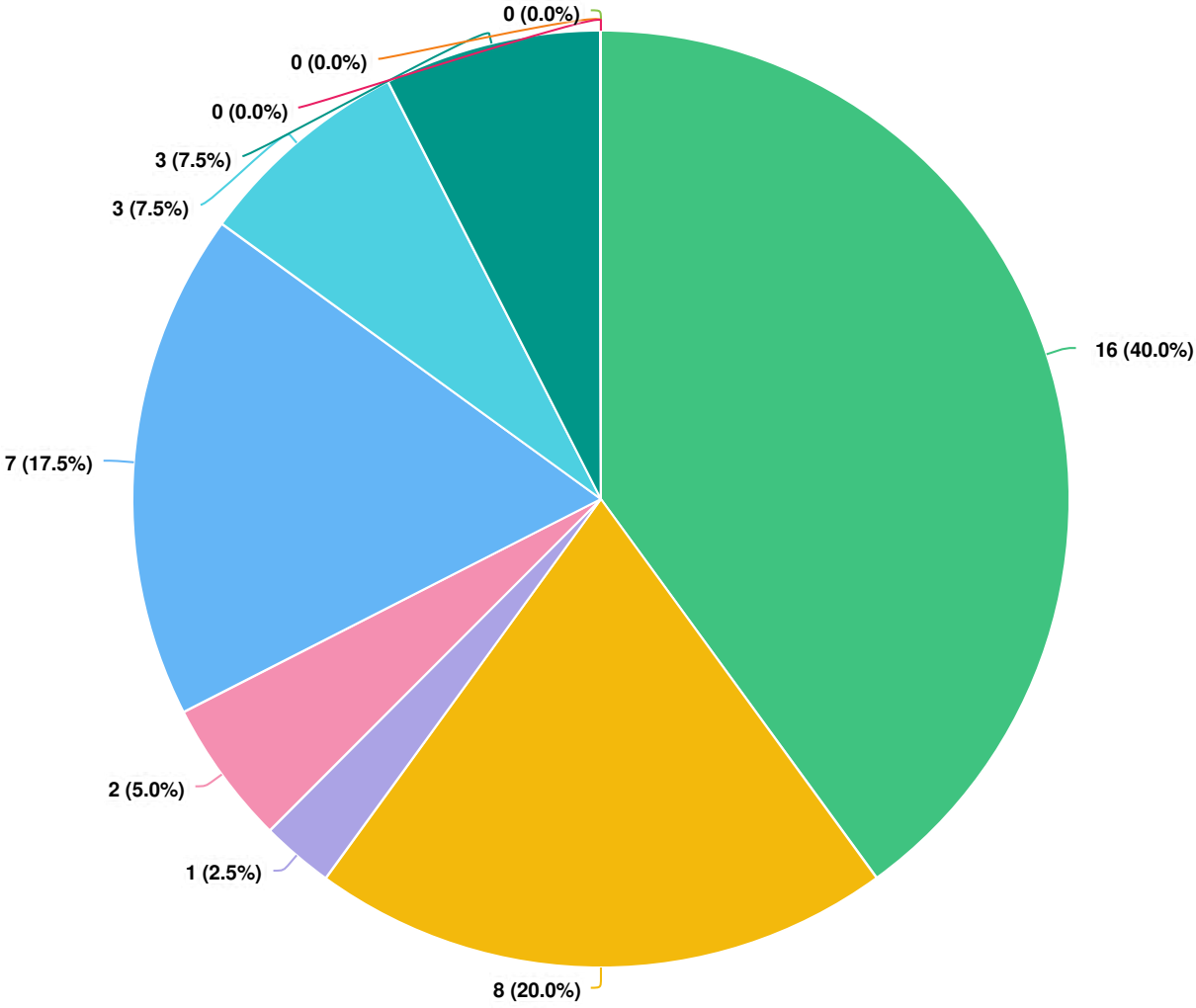


Question options

A few times a year | Once a month | Once a week | A few times a week | Never | Daily

Mandatory Question (40 response(s))
Question type: Dropdown Question

Q8 What are the reasons you expect to use the Blair-Preston trail link?

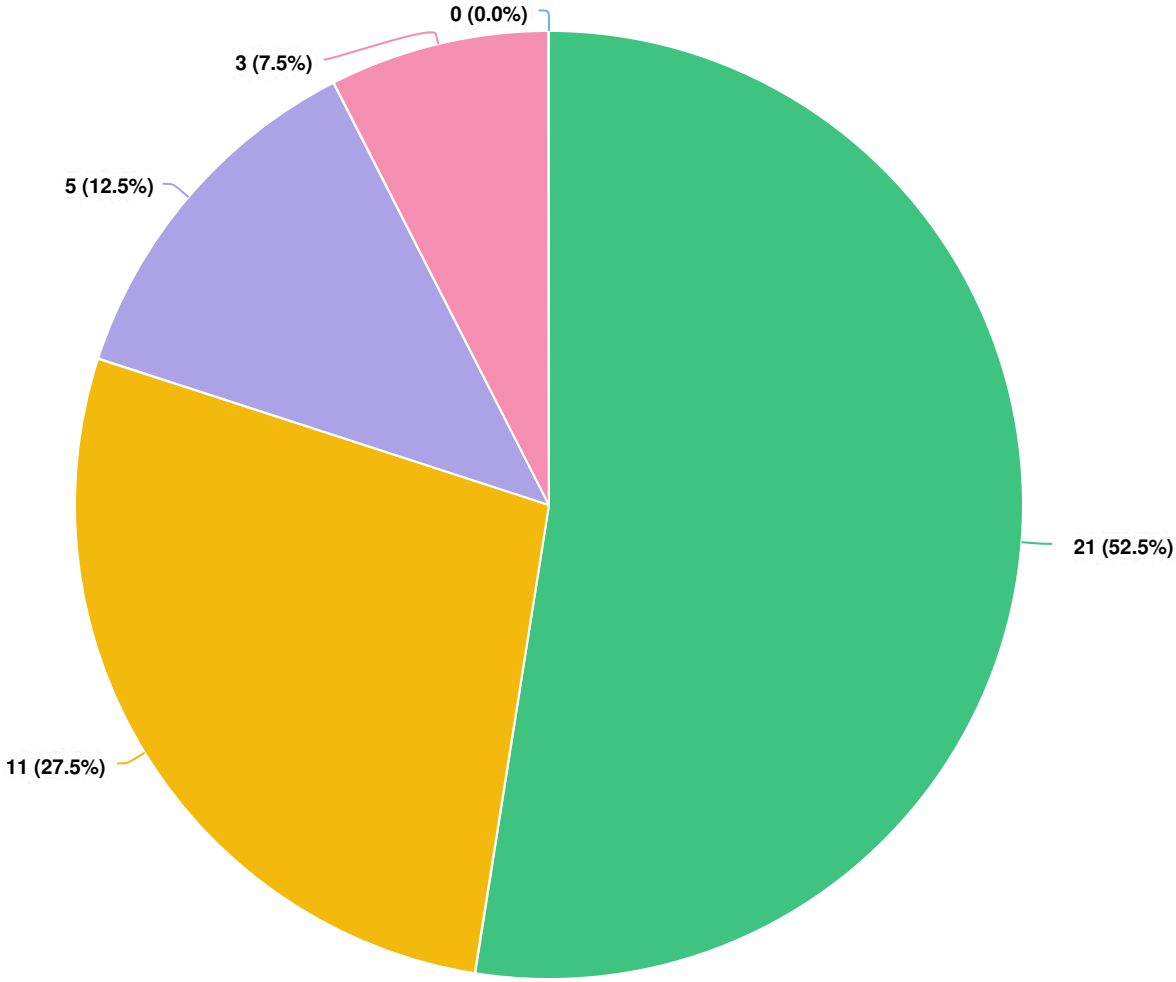


Question options

Walk/hike | Enjoy nature/view wildlife | Spend time with family and friends | Commute to school or work | Bike | Run/jog | I don't think I will use it | Access services or retail | Walk my dog(s) | Other (please specify)

Mandatory Question (40 response(s))
Question type: Dropdown Question

Q9 Which of the options presented do you prefer (please select one)?

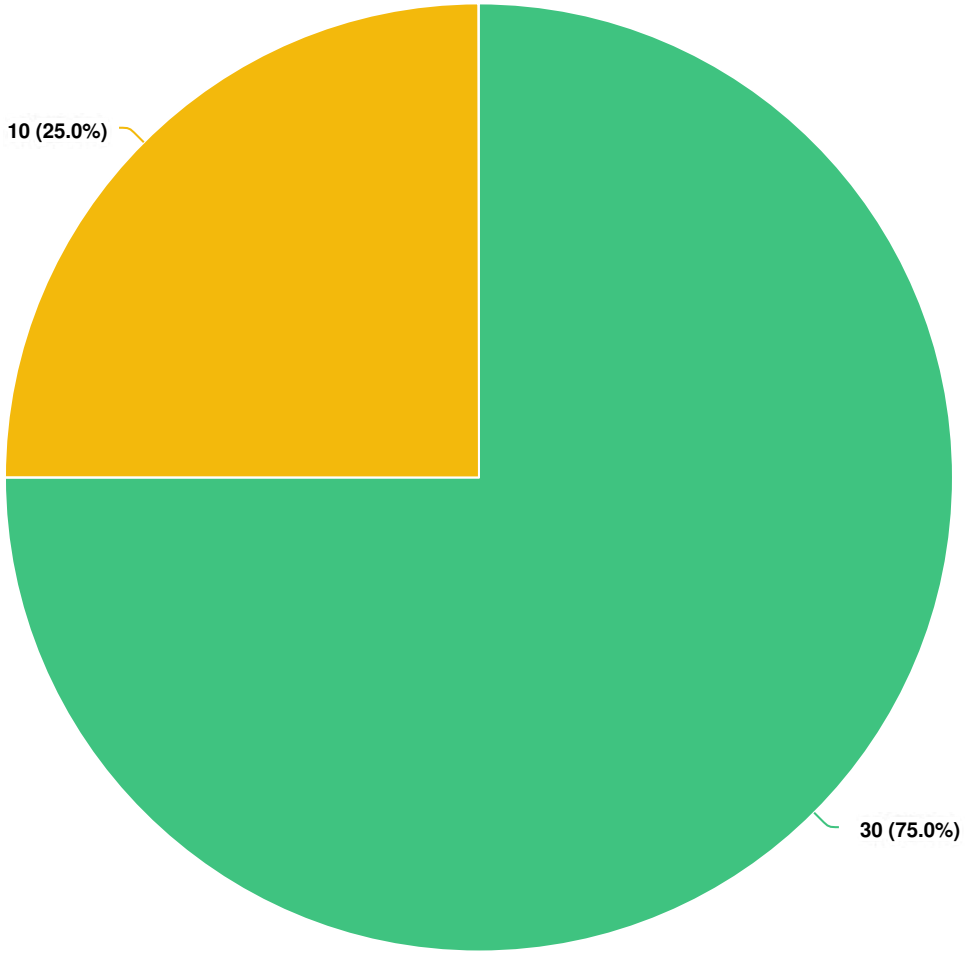


Question options

- Option 1: Northern Route
- Option 2: Dover Street South Route
- Option 3: Southern Route
- I do not wish to see any trail or bridge constructed
- I prefer an alternate route. Please describe your alternate route below.

Mandatory Question (40 response(s))
Question type: Dropdown Question

Q10 Do you live within walking distance of the study area?

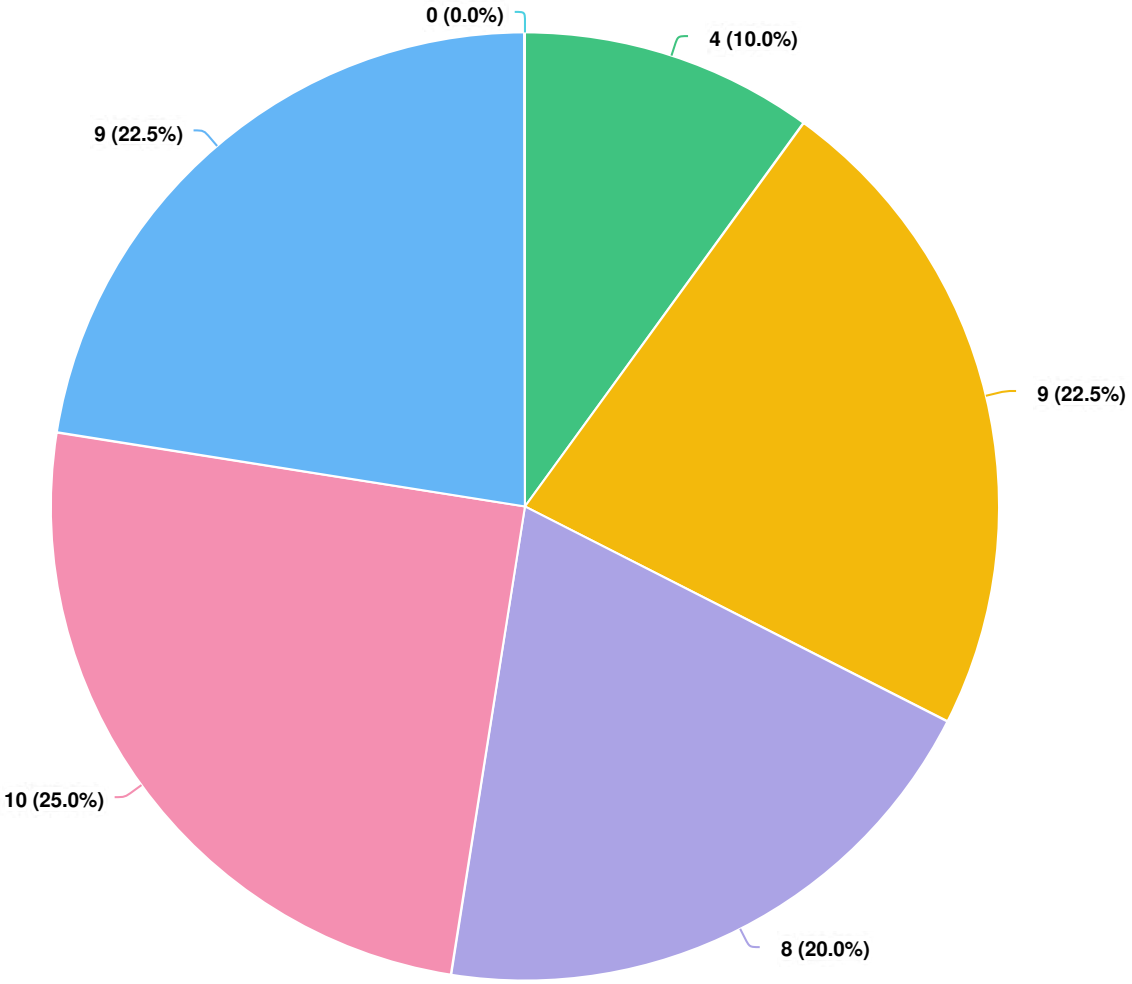


Question options

Yes No

Mandatory Question (40 response(s))
Question type: Radio Button Question

Q11 Please identify your age group:



Question options

26 to 35 36 to 45 46 to 55 56 to 65 66 and older 25 and under

Optional question (40 response(s), 0 skipped)
Question type: Dropdown Question

Q12 Please provide any additional suggestions about the trail and bridge in the text box below.

[redacted]
11/02/2020 12:20 PM

I love this project! It will improve connectivity and allow for more "round trip" cycling excursions in the area. Cycling on Fountain between Shantz Hill Rd and Preston Pkwy is problematic because of the narrow road allowance, this trail will allow people to bypass this problematic area. Also this will allow students in the Limerick Road and Preston Parkway Area a quicker route to High School! I am so excited for this bridge!

[redacted]
11/02/2020 01:53 PM

Thank you for looking at doing this! It's a beautiful area and will be much-used.

[redacted]
11/02/2020 03:41 PM

This is a great opportunity to connect Preston to Galt, as well as connecting Preston to the Doon area. I would fully support moving this project ahead as quickly as possible and it's a much needed investment in Preston and this historic neighbourhood.

[redacted]
11/02/2020 07:09 PM

Clear signage and wayfinding

[redacted]
11/03/2020 09:33 AM

I think this is a waste of tax money. The amount of use will not justify the money spent. Crossing the Grand River in the area of the Preston arena would be much more useful and justifiable even if it cost more.

[redacted]
11/03/2020 01:03 PM

The Dover St. Option is the least obtrusive for existing neighbours and there is a parking option for those who drive to the trail from across the city. Also easier for “more eyes on the bridge” to lessen vandalism.

[redacted]
11/03/2020 01:07 PM

Choose the option that will have the least impact on First Nations archaeological sites.

[redacted]
11/03/2020 01:31 PM

Completion of this connection of Blair and Linear trails will increase pressure to extend the Linear trail to Galt. I believe such an extension should also be constructed as it would greatly enhance the usefulness of this trail system

[redacted]
11/03/2020 01:38 PM

I commute by bike and my least save part of my 30km commute is along Fountain. This would make me much more safe.

[redacted]
11/03/2020 07:34 PM

Love this plan. Just hope it happens while I'm still young enough to be out on my bike! We make a trip from Preston to the Galt Market every week in season, and come home through the trail in Blair. We hate the Fountain St part where the trail ends and you have to go on road or sidewalk. We also go biking on the trail across the 401 pedestrian bridge into Doon area and along the river to Pioneer Tower, same problem there, great ride except for that Fountain St. portion.

[redacted]
11/03/2020 08:33 PM

I prefer the more direct route as it is still quite a bike ride down to the connecting path down to Blair and into Kitchener.

[redacted]
11/04/2020 05:47 PM

The area on the Blair side of the Speed R. is FLOOD PLAIN!!! High water levels and huge chunks of ice are there almost every late winter and early spring! Leave it natural!

[redacted]
11/04/2020 07:53 PM

Option one is the only viable choice , the others would be flooded out when the Grand backs up and floods across the field to flow into the Speed across from the pumping station.

[redacted]
11/05/2020 05:13 PM

Please consider high water flooding when designing the new trail . Route 1 is most suitable because of this . That is a common weakness of city and regional trails bordering the rivers and creeks . Trails are damaged in the winter and spring flooding . Then if We are lucky they are repaired by late Sept . Please elevate sections that will be washed away or submerged ahead of time . Also no Pavement . city policy is to salt all paved trails . thanks [redacted]

[redacted]
11/06/2020 06:57 PM

Northern route and Dover st route are basically equivalent. This bridge would be a very useful cycling connection between the linear trail and the multiuse trail towards Blair. The alternative today is to use roads with heavy traffic and no bike lanes.

[redacted]
11/10/2020 08:26 PM

It doesn't make sense to have a bridge in people's backyards. The only real option is the Southern one. Just sad that wild life will be disrupted by this bridge.

[redacted]
11/11/2020 07:14 PM

Will there be a mid bridge bump out for viewing? Lighting like Craigs Crossing in Galt.

[redacted]
11/11/2020 08:57 PM

Why on earth would you think of Option 1 which goes into the back yard of people who have lived there for 46 years? I have seen the surveys done across the river from option 1 which is directly where at least 10 deer are there nightly Keep it in option 2 or 3 which doesn't affect any homes - seriously if it was your back yard what would you do???

[redacted]
11/12/2020 10:05 PM

It would be nice to make the bridge a community skills building project for young adults, such as heritage building like post and beam or a covered bridge. The spot at Dover Street is used by canoeists as a launch and I would like to see that capacity preserved or even enhanced so more people could enjoy kayaking or canoeing on the river there. One concern I have about a bridge is safety for deer. They sleep on the island there and upriver from there, where they are safe. I would not want any bridge - and its attendant increase in human use - to impair their safe environment any further. Better no bridge than a bridge that worsens the habitat for deer and other animals there

[redacted]
11/13/2020 07:53 PM

Looking forward to this trail being completed!!

[redacted]
11/15/2020 10:02 AM

Q5) There is no N/A option as I do not work or go to school in the area, therefore there is no applicable reply. *The trail should be wide enough to allow easy passing for cyclists and joggers passing those walking or going slower. *The trail should also be either hard crushed gravel or preferably paved allowing all tire widths to easily and safely utilize the trail. *Information placards or posts could be sporadically but purposefully placed along the trail offering information regarding wildlife, or historic pictures and tidbits of years gone by. *Light & Safety posts should be installed ensuring safe access for all users regardless of time of use. Safety posts have a call button to Emergency Services incase of user safety issues.

[redacted]
11/15/2020 02:08 PM

The Northern route is the straightest version creating a T like path, therefore you will have less of a path to construct seeing as on the east side of the Speed river is already the Linear trail heading North and south along that riverbank. Plus the smell of the sewer water release point should be considered. One would not want to spend a huge amount of money on a bridge that brings you right over the smelliest part.

[redacted]
11/15/2020 07:10 PM

Under the current economic situation this added expense is undesirable. This adds to an already high debt load. Other infrastructure improvements would be better served.

[redacted]
11/18/2020 02:53 PM

The least amount of shoreline taken would be the best for wild life

[redacted]
11/18/2020 08:13 PM

I have selected the Northern option because it looks the most suitable for walking / hiking. The other options may be too long when added together with the adjoining trails. (but the maps do not give distance details so this is a guess). Also, there are no details given about what the route through rare would look like - is it just a passage between the 2 trail systems, or will it be an interesting nature hike? If the latter then the longer distance may have been selected.

[redacted]
11/19/2020 09:44 PM

This looks like a trail that would provide excellent biking and connect more bike routes

[redacted]
11/19/2020 10:24 PM

the route should be made to be as safe from flood damage as possible. For greater usage, the area by the pump house should be graded to allow cars to park. The small car park at the end of Hamilton St. is always full, and I am sure that the parking lot at the arena is also used by people on the trails.

[redacted]
11/21/2020 10:10 AM

Make the cut grass area on both sides of the crushed gravel part of the trail as wide as is possible. This is helpful in the winter for cross country skiers and snow shoe users. Also allows side by side walking with social distancing. Also gives walkers space to give way to bicycles in season. Thanks to rare for allowing this.

Optional question (28 response(s), 12 skipped)
Question type: Essay Question

BURNSIDE

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Appendix M
CCTAC Meeting

Blair-Preston Pedestrian Bridge and Trail Schedule B Municipal Class Environmental Assessment

Meeting with the Cambridge Cycling and Trails Advisory Committee
February 11, 2021

1

STUDY DESCRIPTION

The City of Cambridge is undertaking a Municipal Class Environmental Assessment to study a future pedestrian bridge and trail to connect the communities of Blair and Preston.

Routes are being considered through lands owned by the rare Charitable Research Reserve. The new off-road trail will connect the B. McMullen Linear Trail to the existing multi-use trail on Fountain Street via a bridge over the Speed River. The bridge and trail will provide a major off-road connection to downtown Preston as well as a connection to the 401 pedestrian bridge linking Kitchener and the Doon area.

2

NEEDS AND JUSTIFICATION

The City of Cambridge Trails Master Plan (2010) identified the need for a connection between the villages of Preston and Blair.

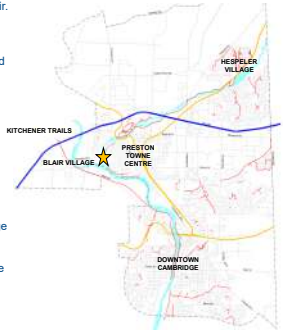
The Region of Waterloo's Active Transportation Master Plan (2014) also identifies the potential for a trail and bridge in the Study Area. The Study Area associated with this EA is mapped as a Special Study Area in the Region's Master Plan.

The City's recent Cycling Master Plan (2020) also identifies a trail in this location as a short-term priority.

Further support for the trail in the area was identified through the Class EA for Fountain / King St/ Shantz Hill Improvements. This document recommended that the Region of Waterloo, in conjunction with the City of Cambridge, should explore the feasibility of an off-road multi-use trail with new pedestrian/cycling bridge across the Speed River and trail connection from Fountain Street South to the City of Cambridge Linear Trail.

The bridge over the Speed River & trail across rare lands is the 'missing link' to providing off-road access between the three core areas, Blair and Kitchener.

The trail and bridge will support active transportation in the community.



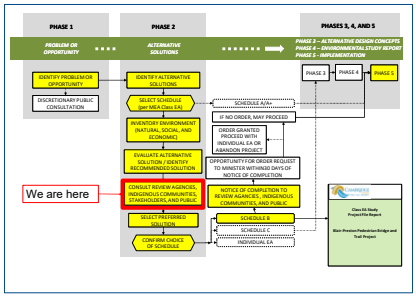
3

MUNICIPAL CLASS EA PROCESS

The pedestrian bridge location and connecting trail alternatives are being studied through the EA process.

This process will:
- study possible solutions to the problem statement,
- predict potential impacts, and
- identify a preferred solution.

We are currently consulting with agencies and the public to receive feedback on the Problem Statement, Alternatives and preliminary preferred Alternative.



4

PROBLEM/OPPORTUNITY STATEMENT

The first step in an EA is to identify the problem to be solved by the study.

The Problem or Opportunity Statement for this project is:

The purpose of this study is to identify the preferred location for pedestrian bridge and connecting trail to link the neighbourhoods of Preston and Blair. The Study will draw from input received through a comprehensive consultation and engagement program with public, review agencies and Indigenous communities.

Above: Walter Bean Trail Bridge over the Grand River

5

EXISTING CONDITIONS – NATURAL ENVIRONMENT

The existing vegetation within the Study Area includes a mix of:
- Cultural Meadow/Thicket
- Shallow Marsh
- Lowland Forest

A Section of the Speed River Provincially Significant Wetland (PSW) Complex is present on the northern edge of the Site along the western side of the Speed River

The entire Study Area is within a Significant Valley that incorporates the floodplain and valley slopes associated with the Speed and Grand Rivers.

6

WILDLIFE HABITAT

Key wildlife habitat present on the site includes:
- Habitat for Bobolink, Threatened bird species, in the hay field and surrounding meadows
- Habitat for Monarch, Special Concern butterfly, in the meadows
- Up to five potential roosting trees for Endangered bat species along the riverbank
- Habitat for Silver Shiner and Wavy-rayed Lampmussel, Threatened fish species, in the Speed River

Additional habitat may be present in the wetlands, including:
- Turtle Wintering Areas
- Turtle Nesting Areas
- Amphibian Breeding Habitat
- Marsh Breeding Bird Habitat
- Terrestrial Crayfish



7

FISH HABITAT

Spawning nests were observed in select locations. Fish species such as Smallmouth bass, Rock bass, darter, cyprinid, and young-of-the-year were all observed in the Speed River throughout the study area.

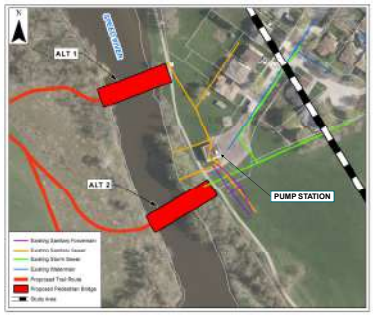


8

INFRASTRUCTURE

A sanitary pump station is located at the end of Dover St.

A variety of below-ground infrastructure is located in the area.



9

CULTURAL HERITAGE

Cultural Heritage:
- A Cultural Heritage Resource Assessment was completed.
- The Grand and Speed River have been designated as Canadian Heritage Rivers

Archaeological Resources:
- A Stage 1 and Stage 2 Archaeological Assessment was completed.
- Archaeological resources are present.

10

ALTERNATIVE SOLUTIONS

An Environmental Assessment is a step-by-step process that evaluates a series of alternatives, each of which are able to meet the project objectives outlined in the Problem/Opportunity Statement. For this project, three alternative pedestrian bridge and connecting trails were identified.

As required by the Environmental Assessment process, an alternative to "do nothing" is also being considered. The "do nothing" option would not include any new bridge or trail.

The pros and cons of each alternative are being examined through the evaluation process.

11

DO NOTHING (MAINTAIN THE STATUS QUO)

Doing nothing, or maintaining the status quo is a mandatory alternative in the Class EA process. This alternative would involve the continued operation of the current trail network without any additional connecting trail/bridge development in the Blair Preston area.

Advantages:
- No impact to natural environment or potential habitat.
- No costs to implement.

Disadvantages:
- Does not address the problem statement.

Under this scenario, no bridge or trail will be built. The study area and Speed River shown in the photos will remain unchanged.

12

ALTERNATIVE #1: NORTHERN ROUTE

Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting to the B. McMullen Linear Trail to the north of Dover Street South.

Advantages:

- Creates the shortest connection between Fountain St. and the Linear Trail.
- Provides a route that is the least likely to encourage trail users to veer off-trail and trespass on rare lands.
- The bridge and trail are the farthest distance from the confluence of the Speed and Grand Rivers, a sensitive waterfowl wintering area.

Disadvantages:

- The bridge is the closest option to the Speed River PSW.
- The bridge is close to potential turtle nesting habitat.
- The bridge is close to a sanitary sewer line.
- The bridge will need to be longer than the bridge in Alternative 3 but shorter than the bridge in Alternative 2. This option therefore has a moderate cost relative to the other options.

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ALTERNATIVE #2: DOVER STREET SOUTH ROUTE

Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting the to the Linear Trail at Dover Street South near the Dover Street Pump House Building.

Advantages:

- The trail provides a direct link with Dover St. S.
- The bridge ends close to the school property. Students are expected to be among the trail users.
- The bridge is farther from the Speed River PSW than Alternative 1.

Disadvantages:

- The route results in more disturbance to Bobolink and Monarch habitat than Alternative 1.
- The route includes a 90 degree bend which is likely to lead trail users to "cut the corner" and trespass on rare lands.
- Trail is close to the sanitary pump station and related below-ground infrastructure.
- This route has the longest bridge and therefore the highest cost.

14

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ALTERNATIVE #3: SOUTHERN ROUTE

Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting to the Linear Trail to the south of Dover Street South, west of the Preston High School field.

Advantages:

- This option crosses at the narrowest point and therefore a shorter bridge is required.
- This is the least costly option.
- The bridge is farther from the Speed River PSW than Alternatives 1 and 2.
- No nearby below-ground infrastructure is present.

Disadvantages:

- This bridge is closest to the sensitive waterfowl wintering area at the confluence of the Speed and Grand Rivers.
- Two 90 degree angles in the trail route are likely to encourage trail users to "cut the corners" and travel off-trail, potentially damaging natural features and agricultural lands.
- This is the longest trail route.

15

15

EVALUATION PROCESS

To formally evaluate the advantages and disadvantages of each Alternative, a series of evaluation criteria were developed. Each Alternative and the "Do Nothing" option were compared.

NATURAL ENVIRONMENT
- Impacts to existing trees and vegetation
- Impacts to wetlands
- Impacts to migrating, breeding and wintering birds
- Impacts to surface water quality
- Impacts to Significant Wildlife Habitats
- Impacts to Species at Risk
- Impacts to aquatic habitat

SOCIAL ENVIRONMENT
- Route layout and external connectivity
- Potential for trespassing/off trail uses

CULTURAL ENVIRONMENT
- Impacts to archaeological resources
- Impacts to cultural heritage landscapes

LAND USE AND POLICY
- Compatibility with City and Region policies and plans
- Area of rare lands affected
- Compatibility with rare land management plan

TECHNICAL ENVIRONMENT
- Flood impacts to adjacent property
- Flood impacts to constructed trail and bridge
- Ease/complexity of construction

ECONOMIC ENVIRONMENT
- Comparative capital and operational costs
- Impacts to agricultural uses on rare lands

PROBLEM STATEMENT
- How well does it address the overall Problem/Opportunity Statement?

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EVALUATION OF ALTERNATIVE SOLUTIONS

ORDER OF PREFERENCE	
Most Preferred	○
More Preferred	◔
Somewhat Preferred	◑
Less Preferred	◕
Least Preferred	●

CRITERIA FOR EVALUATING ALTERNATIVES	Do Nothing	Alternative 1 – Northern Route	Alternative 2 – Dover Street South Route	Alternative 3 – Southern Route
NATURAL ENVIRONMENT				
Impacts to existing trees and vegetation	○	◔	◑	◕
Impacts to migrating, breeding and wintering birds	○	◔	◑	◕
Impacts to small wetland on rare lands/amphibian habitat	○	◔	◔	◔
Impacts to the Provincially Significant Speed River Wetland Complex	○	◑	◔	◔
Impacts to Significant Wildlife Habitat	○	◕	◑	◔
Impacts to Species at Risk	○	◔	◑	◕
Impacts to aquatic habitat in the Speed River	○	◔	◑	◕
Impacts to surface water quality	○	◑	◑	◑
SUMMARY NATURAL ENVIRONMENT	○	◔	◔	◑
SOCIAL ENVIRONMENT				
Route layout and connectivity within the City's trail network	●	○	○	○
Potential for trespassing/off trail uses	○	◔	◑	●
SUMMARY SOCIAL ENVIRONMENT	◑	◔	◑	●
CULTURAL ENVIRONMENT				
Impacts to Built Heritage and Cultural Heritage Landscapes	○	◑	◑	◑
Impacts to archaeological resources	○	◕	◕	◕
SUMMARY CULTURAL ENVIRONMENT	○	◑	◑	◑

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EVALUATION OF ALTERNATIVE SOLUTIONS

ORDER OF PREFERENCE	
Most Preferred	○
More Preferred	◔
Somewhat Preferred	◑
Less Preferred	◕
Least Preferred	●

CRITERIA FOR EVALUATING ALTERNATIVES	Do Nothing	Alternative 1 – Northern Route	Alternative 2 – Dover Street South Route	Alternative 3 – Southern Route
LAND USE/POLICY				
Compatibility with City and Region policies and plans	●	○	○	○
Area of rare lands affected	○	◔	◑	◕
Compatibility with rare land management plan	○	◑	◕	●
SUMMARY LAND USE/POLICY	○	◔	◑	◑
TECHNICAL ENVIRONMENT				
Flood impacts to adjacent property	○	◔	◔	◔
Flood impacts to constructed trail and bridge	○	◑	◕	●
Ease/complexity of construction	○	◑	◕	◔
SUMMARY TECHNICAL ENVIRONMENT	○	◔	◑	◑
ECONOMIC ENVIRONMENT				
Comparative capital and operational costs	○	◕	●	◔
Impacts to agricultural uses and income on rare lands	○	◔	◑	◕
SUMMARY ECONOMIC ENVIRONMENT	○	◑	◕	◑
PROBLEM STATEMENT				
Addresses Problem Statement?	No	Yes	Yes	Yes
OVERALL SUMMARY	Not Preferred	Most Preferred	Somewhat Preferred	Least Preferred

18

18

REDUCING IMPACTS

Based on the initial evaluation, Alternative 1 appears to be preferred.

This Alternative will include:

- Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land.
- A pedestrian bridge across the Speed River connecting to the B. McMullen Linear (BML) Trail to the north of Dover Street South.

The final design will include measures to reduce impacts to the natural environment

These measures are being developed and may include:

- Tree planting and ecological restoration to compensate for trees lost;
- Avoiding any in-water work to reduce impacts to watercourses and fish habitat;
- Installation of fencing or living fences (i.e., shrub lines) and signage to minimize trespassing into natural areas.
- Completion of additional archaeological studies.
- Additional measures to reduce impacts are currently in development and will be identified in the Project File Report.

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EA PROJECT TIMELINE

Municipal Class EA, Blair-Preston Pedestrian Bridge and Trail

Notice of Commencement	Complete Studies Develop Bridge and Alternatives Consult with Stakeholders	Evaluate Alternative Solutions Prepare Public Consultation Materials	Public Consultation	Consult with Stakeholders Select Preferred Alternative	Document Project Findings in a Project File Report (PFR)	Notice of Completion
	Spring 2019-Summer 2020	Winter 2019/20	Winter 2020/21	We Are Here	Winter 2021	

Next Steps….

- Confirm the Preferred Alternative;
- Complete the Project File Report;
- Issue Notice of Study Completion and provide Project File Report for final public review and comment for a period of 30 days.

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Please contact us with your comments.

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BURNSIDE

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Appendix N
Consultation with RARE

Blair- Preston Pedestrian Trail and Bridge Environmental Assessment

Why a trail here?

- City of Cambridge Trails Master Plan identified this area as an important new connection
- Identified as a "Special Study Area" in the Region of Waterloo's Active Transportation Master Plan
- Provides an important trail network connection

1

2

Proposed Ecological Baseline Data Collection	RJB Fieldwork	Rare Records
ELC	✓	✓
Wetland Boundary	✓	
Bat Maternity Habitat Survey	✓	
Aquatic Habitat	✓	
Amphibian Surveys		
Spring Migratory Waterfowl and Shorebird Survey	✓	✓
Spring Breeding Bird Survey	✓	
Fall Migratory Waterfowl and Shorebird Survey	✓	✓
Winter Raptor Survey	✓	✓
Wildlife Habitats/ Incidental Species Observations	✓	

3

4

Draft Evaluation Criteria

Natural Environment
- Impacts to existing trees and vegetation
- Impacts to migrating, breeding and wintering birds
- Impacts to small wetland on *rare* lands
- Impacts to Speed River wetland complex
- Impacts to Species at Risk
- Impacts to aquatic habitat
- Impacts to surface water quality

Social Environment/Public Health and Safety
- Pedestrian safety
- Route layout and connectivity
- Potential for trespassing/off-trail use
- Provision for emergency services

Cultural Environment
- Impacts to archaeological resources
- Impacts to Indigenous Treaties and Rights

Land Use
- Compatibility with City and Region policies and plans
- Area of *rare* lands affected
- Compatibility with *rare* land management plan and policies

Technical Factors
- Flood impacts to adjacent property
- Flood impacts to constructed trail and bridge
- Vulnerability to climate change
- Ease/complexity of construction
- Navigability

Economic Environment
- Comparative capital and operational costs
- Impacts to agricultural uses and income on *rare* lands

5

Next Steps

- Ecological fieldwork in progress
  - Wetland staking scheduled for June 10th
  - Remaining fieldwork throughout spring, summer, fall and winter
- Stage 1 Archaeological Assessment in progress
  - Stage 2 to commence once/if a preliminary preferred route is identified
- Hydraulic Modeling/Floodplain mapping to begin shortly
- PIC tentatively scheduled for late September 2019
- All project updates will be circulated to the *rare* Charitable Research Reserve
- *Rare* will be notified when any project-related activities or fieldwork are taking place on rare lands

6

Comments for *rare* re: Speed River footbridge proposal by Bill Wilson
Attention: Tom Woodcock

Almost daily since July 2015, I observe and count birds at the confluence of the Grand and Speed rivers from a bench with scope and binoculars. This activity takes place mainly during early to mid-morning hours; less frequently in late afternoon and evening. The latter is more likely in early spring during waterfowl roosting and loafing in the baylet of the Grand River just upstream of the confluence.

When trail walkers stop to ask questions concerning my bird watching, I describe to them the location of **rare** lands as viewed from this location and identify ESPA #36 as a roosting, loafing and foraging site for fall, winter and spring waterfowl. For example, during this winter and early spring, 2019, I've recorded 24 species of waterfowl on the river corridors of the Grand and Speed rivers through ***rare*** from this location.

With the publication in local newspapers this winter about the future construction of a footbridge over the Speed River in the vicinity of the confluence, I have been asked about the bridge's location and received from trail walkers some comments which I'm passing on to you as well as my comments.

The use of Linear Trail has increased dramatically in the last few years compared to its use in the '70s to '00s. This seems to be the result of younger families moving into South Preston, an increase in dog ownership and, hence, daily walking of pets, and an increase in exercise by individuals who walk or jog or ride bikes, often on a daily basis. Dog walking and exercise is a four-season activity for many Linear Trail users. Numbers of users decrease when the trail is ice covered (although some users simply shift to the grass on either side of the trail which may be snow covered or have ice patches). When the trail and park is snow covered, cross-country skiing is done by some individuals. A half dozen or so trail users cycle in winter; large balloon tires and tire spikes make winter cycling possible. This winter's icy conditions permitted at least one trail user to skate from the Hamilton Street entrance to the Bernhardt Street entrance.

In spring 2019, a significant length (80+m) of Linear Trail upstream of the pumphouse was flooded and considered impassable on foot for a number of days. (river flow on the Speed River measured ~50m^3/s.

Through spring to autumn, especially in summer, a number of people gather in the evenings at the confluence to enjoy the sunset and watch for wildlife, particularly white-tailed deer. Other animals observed include beaver, coyote, eastern cottontail, ground hog, mink, muskrat, raccoon, red fox, striped skunk, and weasel. Most sightings are at distance and observed either in the river or on ***rare*** lands, particularly on the portion of ***rare*** lands between the two rivers.

I'm aware of "four types of trail users" who have stopped at the bench at the confluence where I bird and talked about the proposed bridge: 1) those who have lived in Preston for many years; 2) those who are new to town and for the most part to the immediate area and have purchased a home in south Preston or live in one of the high rises, near King Street and Eagle Street; 3) those from out-of-town e.g. Kitchener, who enjoy the trail or have perhaps recently "heard about it"; and, 4) students attending PHS whose courses and/or extra-curriculars or lunch hour break provide opportunities to use Linear Trail. A few parents/grandparents of children attending St. Joseph elementary school will occasionally spend some time along the trail.

None of the people to whom I have spoken are against having a footbridge across the Speed River. A typical comment from long-time residents was to chuckle and suggest that construction would perhaps begin in ten to twenty years. Older people who have moved into Preston to live in condos or townhouses or high-rise apartments, see the river and trail system benefitting from such an extension of the trail system.

Following the publication of a news item describing the proposal, no one who spoke to me knew the whereabouts of the proposed location. To some the bridge would be right at the confluence and cross the Speed River onto the end of the peninsula and many thought that the objective of having a bridge crossing was to allow Linear Trail to be extended into ***rare***.

A foot bridge across the Speed River upstream of the Pumphouse will provide an alternate route for students attending PHS and living in Preston Heights or in the new subdivision off Linden Drive to walk or bike to school.

Providing a river crossing that allows an access through a peripheral portion of ***rare*** lands would speak to ***rare's*** commitment to engage with the local community and increase ***rare's*** awareness and possibly increase commitment to **rare** among trail users.

Trail walkers and cyclists would like the opportunity to travel between Linear trail and Fountain St bike lanes leading to Blair without having to travel through Preston i.e. King Street to Fountain Street adjacent to P & H Mill. Reduced traffic and less noise are two reasons given.

Concerns

The Grand River shoreline of the peninsula and ***rare*** lands along the Grand River that form the baylet of the river is an acknowledged wintering roosting, loafing and feeding site for diving ducks and a migration stopover site for many species of waterfowl (see above). In 1972 the recommendation of C.A. Campbell and L. Lamb to Waterloo Region that this location be designated Environmentally Sensitive Protected Area (ESPA # 36) was accepted. Based upon waterfowl observations made during 1970s to mid-90s by W.G. Wilson, the extent and boundaries of this ESPA were expanded and delineated both upstream and downstream from the baylet. To this day the baylet remains the focal point of nocturnal roosting and daytime loafing for waterfowl not only during winter but also during early spring and late fall.

For a ten-year period in the '00s and early teens monitoring of wintering Bald Eagles by OMNR, supporters of ***rare*** and members of KWFN, now WRN, within the central corridor of the Grand River Watershed established the significance of the area about the confluence, both shoreline habitat and the river corridor, as a key area for overwintering eagles. To that end certain ***rare*** trails along the river and a City of Cambridge parkette (Blair-Moyers Landing) were, and continue to be, closed mid-November to mid- March. During winters and as recently as this winter, Bald Eagle have been observed perched along the shoreline of the Speed River within 150m of the proposed footbridge site.

Within the last five years or so the open reach of the Speed River from the confluence to upstream of the pump house has become an open-water refuge during extreme cold periods for both Trumpeter and Mute Swans. In late January 2019, a Tundra Swan was also present.

During the mid-teens, ***rare*** bird monitors monitored the Preston (aka Fountain Street) Flats and ***rare*** lands to the Speed River and the land adjacent to private property on Fountain Street. Human activity

without permission included camping with campfire, accessing fishing opportunity on the rivers by crossing ***rare*** land, dogs off leash, four-wheel vehicles driving unto the flats as well as to the end of the peninsula, adults with children "hiking" to the Grand River and carp fishing and hauling out of catch in packs across ***rare*** lands.

In a column for the Globe and Mail, 30 March 2019, O. Moore writes about public trail use and safety. Today in urban areas, public safety on trails raises these questions: How well lit are the trails for evening use? Is the greenway managed to provide adequate sight-lines? What of snow clearing and winter maintenance? If this bridge is to serve as public access for students, will the bridge be available for use September to June? ***rare*** has photos of the extensive flooding due to ice jams during 2018 – Preston Flats was a "lake", flooding on the Preston side of the river including Linear Trail made the trail unusable. As well, note that the footbridge over the Preston STP channel downstream on the Grand River was damaged by ice and had to be replaced; new guidelines were developed for its winter removal (as necessary) given the ice damage in 2018. Obviously, construction decisions and maintenance schedule put in place can deal with some of these concerns. With respect to the crossing between ***rare*** lands and Linear Trail on the Speed River, the question will be who is responsible for annual maintenance?

In order to ensure that the Grand River through ***rare*** remains a protected area for wintering waterfowl, there is a need to restrict access by humans to wander about the lands and shorelines of the ESPA particularly during winter and both spring and fall migration. The footbridge upstream in Kitchener over the Grand River is physically closed during the winter months – at least that was the case during its first winter and the policy as I recall during each subsequent winter. To establish such a protocol for this bridge proposal makes sense given conditions of some winters; however, such a protocol would eliminate one of the suggested reasons for constructing the bridge, i.e. a short-cut for secondary school students.

One of Moore's talking points in his column was the colonizing of trail space by young people. During the '90s, the former RR berm on the Preston side of the Speed River became a lunch hour hang out for students looking for an out of way location to congregate. Refuse was considerable and was cleaned up on at least one occasion by other supervised students. That a foot bridge over the Speed River leads to an out of the way quiet space within a short time walking distance from school suggests that such a space on ***rare*** lands could become similarly used. What effect would such human activity have on wildlife and vegetation of these lands?

Plans by the City of Cambridge to develop soccer fields for various age groups on the west side of Fountain Street may add to an increased use of a footbridge over the Speed River. Again, the usual questions will be asked: what maintenance schedule will be put in place to clean up refuse on ***rare*** lands (at the Preston Auditorium end of the Linear Trail some visitors to the hockey rinks spend some time walking the trails. Their dogs and drink/food containers require refuse bins and /or clean-up. Who will be responsible for this annual clean-up of refuse, often windblown, along a public trail through ***rare***?

Ensuring that people and their pets remain on trail will be a significant challenge to those put in charge of trail decorum and maintenance.

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Minutes of Meeting

Meeting Date: April 2, 2020 **Project No.:** 300043765.0000

Project Name: Blair-Preston Trail Schedule B Class EA

Meeting Subject: Project Update

Meeting Location: Video Conference Call

Date Prepared: April 7, 2020

Those in attendance were:

Shane Taylor	City of Cambridge	TaylorS@cambridge.ca
Marcos Kroker	Region of Waterloo	MKroker@regionofwaterloo.ca
Tom Woodcock	Rare Charitable Research Reserve	Tom.Woodcock@raresites.org
Tricia Radburn	R.J. Burnside & Associates Limited	TRadburn@rjburnside.com

The following items were discussed		**Action by**
1.	**Project Update**	
1.1	Tricia (TR) provided an update on the status of the project. Work has continued with a draft Natural Heritage Report submitted to the City, Region and GRCA for initial review. After this initial review it will also be submitted to rare for review.	
2.	**Consultation**	
2.1	The Notice of Commencement signals the formal start of the consultation component of the EA. There had been a plan to hold a Public Information Centre this spring and issue a combined Notice of Commencement and Notice of PIC. However, it is unlikely that an open house-style PIC will be held due to current public health measures. Various options are available, including posting information online, having web-based surveys/questionnaires or holding online forums. These will be researched and discussed	

The following items were discussed		Action by
	further as the project progresses and as the current situation evolves. It was noted that the GRCA may not review the Natural Heritage Report until a formal Notice of Commencement has been issued.	
2.2	The project team would like to meet with rare's Board of Directors. Tom (TW) noted that it is unclear whether the Board will meet in May and how any subsequent meetings will take place. They may occur through video conference. The team will be in touch and will follow up to identify the best opportunity and approach to discuss the project with the Board.	
3.	**Alternative Bridge and Trail Locations**	
3.1	TR discussed the location of the northern-most bridge. There is a wider band of trees in this area vs. a location slightly to the south and there is a gravel area on the east bank in this are that could potentially provide turtle nesting habitat (this has not been confirmed). This area is also on a bend in the river which is not a preferred location for bridges as bends are more prone to erosion. This bridge is also located at a wide section of the river which would require a longer bridge than some of the other options. TR questioned whether the bridge location could be moved slightly south. TW agreed that it made sense to relocate the bridge but wanted to keep it as far north as possible while addressing the concerns noted above.	RJB to update bridge Alternatives and circulate for comment.
4.	**Archaeological Assessment**	
4.1	TR noted that the Stage 1 Archaeological Assessment has been completed. The next step will be to complete Stage 2 work. This involves ploughing a field and or/digging test pits to visually search for archaeological resources. Because it is relatively invasive, it is only planned to be done on the preferred trail/bridge location. TR questioned whether the field could be ploughed. TW indicated that the field is in perennial hay and is harvested each year. Ploughing the whole field would not be acceptable but a small strip along the edge may be ok.	
4.2	TR noted that we will need to confirm the Alternatives routes (including the change to the northern bridge location). Then each route will be evaluated based on a variety of criteria. The	

The following items were discussed		Action by
	archaeological work would not take place until the preferred route is selected and confirmed with the City, Region and rare.	
4.3	Shane (ST) noted that the City is also on hold with site activities right now. The City and Region are developing a protocol to address requests by Indigenous communities to participate in fieldwork, including archaeological studies. It was noted that some ecological fieldwork is on hold as a result as well.	
4.4	Although the discussion noted above are ongoing, ST noted that the City and Region have agreed to work with Indigenous communities for Stage 2 Archaeological Assessments. It is the City's policy to have consultants hire Indigenous field staff directly rather than the City. TR will follow up to confirm whether RJB or ASI can hire Indigenous staff.	TR to confirm RJB/ASI policies.
5.	**Next Steps**	
5.1	TR/ST will work to issue the Notice of Commencement. TR will update the Trail/Bridge Alternatives mapping and circulate to all. Once the updated bridge location has been approved, RJB staff will finalize the evaluation of Alternatives and circulate a draft for review. TR will update the City and Region on whether RJB or ASI can hire Indigenous field staff to complete the Stage 2 Archaeological Assessment work.	

The preceding are the minutes of the meeting as observed by the undersigned. Should there be a need for revision, please advise Burnside within seven days of issuance. In the absence of notification to the contrary, these minutes will be deemed to be an accurate record of the meeting.

Minutes prepared by:

R.J. Burnside & Associates Limited

Tricia Radburn, M.Sc.(Pl), MCIP, RPP
Environmental Planner
TR:js

Distribution:

All Attendees

Blair- Preston Pedestrian Trail and Bridge Environmental Assessment

Why a trail here?

- City of Cambridge Trails Master Plan identified this area as an important new connection
- Identified as a “Special Study Area” in the Region of Waterloo’s Active Transportation Master Plan
- Provides an important trail network connection

Preliminary Proposed Alternatives

Alternative 1: Do Nothing

Alternative 2: Northern Crossing

Alternative 3: Dover St. South Crossing

Alternative 4: Southern Crossing

Proposed Ecological Baseline Data Collection	RJB Fieldwork	Rare Records
ELC	✓	✓
Wetland Boundary	✓	
Bat Maternity Habitat Survey	✓	
Aquatic Habitat	✓	
Amphibian Surveys		
Spring Migratory Waterfowl and Shorebird Survey	✓	✓
Spring Breeding Bird Survey	✓	
Fall Migratory Waterfowl and Shorebird Survey	✓	✓
Winter Raptor Survey	✓	✓
Wildlife Habitats/ Incidental Species Observations	✓	

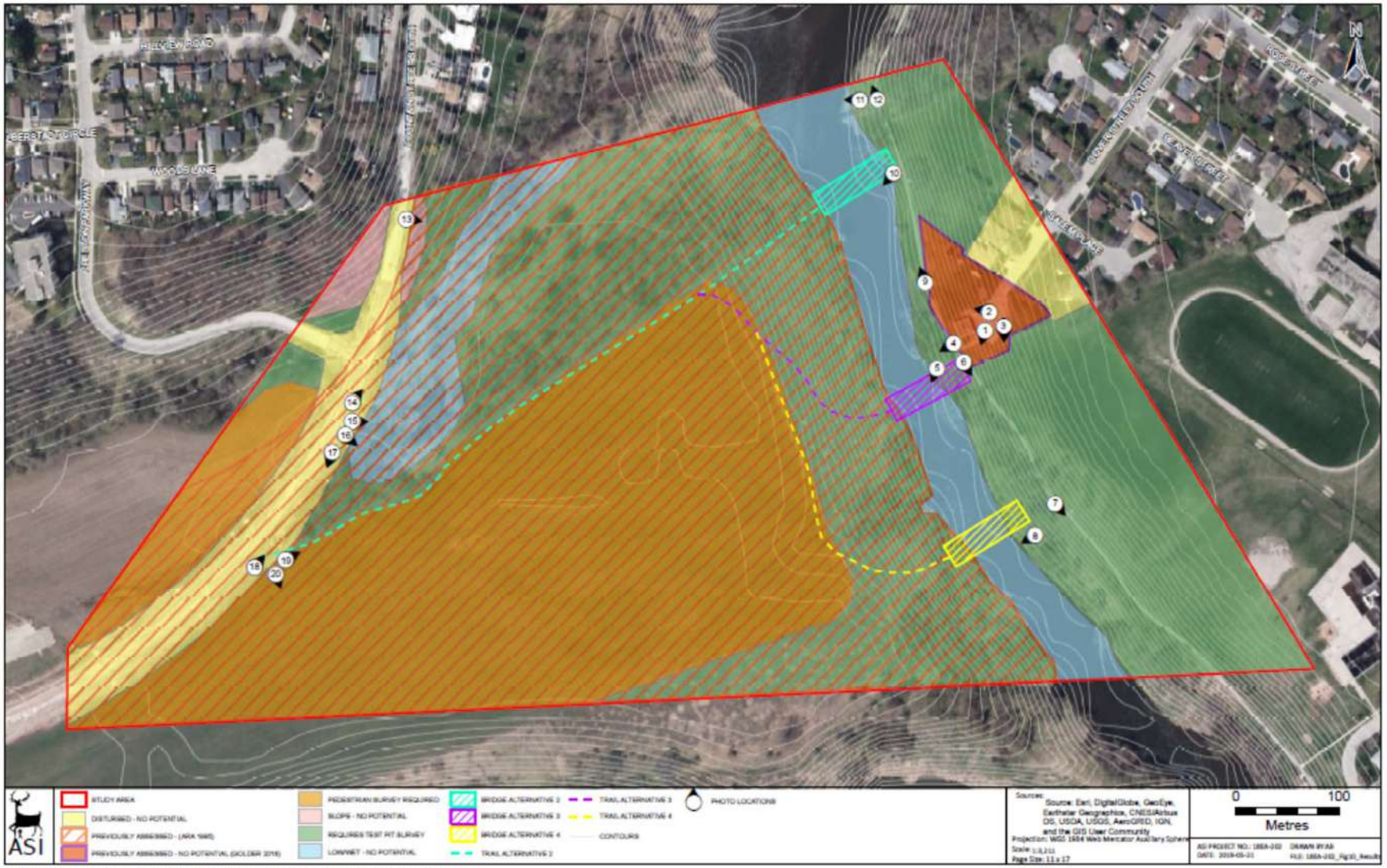

Figure 10: Blair-Preston Trail and Pedestrian Bridge Study Area - Results of the Property Inspection

Draft Evaluation Criteria

Natural Environment
- Impacts to existing trees and vegetation
- Impacts to migrating, breeding and wintering birds
- Impacts to small wetland on *rare* lands
- Impacts to Speed River wetland complex
- Impacts to Species at Risk
- Impacts to aquatic habitat
- Impacts to surface water quality

Social Environment/Public Health and Safety
- Pedestrian safety
- Route layout and connectivity
- Potential for trespassing/off-trail use
- Provision for emergency services

Cultural Environment
- Impacts to archaeological resources
- Impacts to Indigenous Treaties and Rights

Land Use
- Compatibility with City and Region policies and plans
- Area of *rare* lands affected
- Compatibility with *rare* land management plan and policies

Technical Factors
- Flood impacts to adjacent property
- Flood impacts to constructed trail and bridge
- Vulnerability to climate change
- Ease/complexity of construction
- Navigability

Economic Environment
- Comparative capital and operational costs
- Impacts to agricultural uses and income on *rare* lands

Next Steps

- Ecological fieldwork in progress
  - Wetland staking scheduled for June 10th
  - Remaining fieldwork throughout spring, summer, fall and winter
- Stage 1 Archaeological Assessment in progress
  - Stage 2 to commence once/if a preliminary preferred route is identified
- Hydraulic Modeling/Floodplain mapping to begin shortly
- PIC tentatively scheduled for late September 2019
- All project updates will be circulated to the *rare* Charitable Research Reserve
- *Rare* will be notified when any project-related activities or fieldwork are taking place on rare lands

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Minutes of Meeting

Meeting Date: July 23, 2020 **Project No.:** 300043765.000

Project Name: Blair-Preston Trail Schedule B Class EA

Meeting Subject: Project Update to Rare Board of Directors

Meeting Location: Online

Date Prepared: July 23, 2020

Those in attendance were:

Board of Directors c/o Kim Robichaud	Rare Charitable Research Reserve	Kim.Robichaud@raresites.org
Joy Roberts	Chair, Rare Charitable Research Reserve	Joy.roberts@raresites.org
Tom Woodcock	Rare Charitable Research Reserve	Tom.Woodcock@raresites.org
Shane Taylor	City of Cambridge	TaylorS@cambridge.ca
Tricia Radburn	R.J. Burnside & Associates Limited	tradburn@rjburnside.com

The following items were discussed	**Action by**
1. Presentation	
1.1 Tricia gave a presentation on the history of the project, work completed to date, alternative routes under consideration and the preliminary preferred route and bridge location. She noted that the preferred route is still considered draft and is open for discussion. This presentation will be published online for public review and comment in the coming month or so. A discussion was held after the presentation and is documented in the following sections.	

The following items were discussed		Action by
2.	**Trail Maintenance and Monitoring**	
2.1	Board members question who would be responsible for trail maintenance and for monitoring and addressing issues with off-leash dogs, littering, trespassing, off-trail use and campfires etc. Shane noted that complaints through the City's complaints system are addressed quickly (often within an hour) and the City arranges an annual volunteer litter clean-up. Board members were concerned that an annual clean-up and complaint-response system may not be sufficient to deal with chronic issues. There was concern that more regular monitoring may be required. Shane suggested arranging a call between Rare and the City's trails maintenance and bylaw staff to discuss these concerns in further detail.	Shane to arrange call.
3.	**Seasonal Trail Closure**	
3.1	It was questioned whether the trail would be closed seasonally due to Bald Eagles and other wintering birds in the area. Some trails on rare lands and other areas are closed from mid-November to mid-March. Ploughing and salting on rare lands are discouraged. Shane noted that this would be an important link in the City's trail network, and they would prefer to keep it open year-round. It is most likely that the trail would not be cleared or maintained by the City in the winter, but people could continue to use it.	
4.	**Rare Acceptance of the Trail**	
4.1	Joy questioned the timing of Rare's approval and when that approval would occur. Can Rare "pull the plug" on this project at any time? Ideally, Rare would like to give its approval after seeing the detailed design. Shane and Tricia indicated that we would like Rare's approval throughout the project at all stages rather than at one point in time. The City's goal is to work with Rare and address concerns as they arise as the project progresses.	

The following items were discussed		Action by
	There will be several formal approval processes as the project moves forward. The first is the completion of the EA. This would be followed by the land use agreement/easement/lease between the City and Rare as well as other approvals e.g. GRCA permit, etc. Shane indicated that it is the City's preference to sign the land use agreement with Rare after the EA is completed but before detailed design proceeds. Given the cost of the design process, they would want some form of assurance that the trail and bridge could proceed before spending too much.	
5.	**Design Considerations**	
5.1	There was a discussion regarding the design of the trail and bridge and how the design could work to limit impacts. Board members questioned whether a covered bridge and trail fencing could be used to keep users on the trail. Shane noted that solid fencing around the trail would not be supported from a safety perspective. Other options were discussed including strategic planting of thick shrubs, creation of wetland areas and some strategic fencing to deter movement off-trail. It was suggested that the EA should include design criteria that would guide how the design should proceed and the type of considerations that should be included. Tom will ask EAC members for design criteria suggestions and discuss this issue at the next meeting in October. At the close of the meeting, Joy noted that Rare does support trails and appreciates the value in creating well-connected trail networks. This needs to be balanced with appropriate measures to minimize impacts to ensure the trail can be created without negatively impacting sensitive Rare lands.	Tom to discuss design criteria with EAC members.

The preceding are the minutes of the meeting as observed by the undersigned. Should there be a need for revision, please advise Burnside within seven days of issuance. In the absence of notification to the contrary, these minutes will be deemed to be an accurate record of the meeting.

Minutes prepared by:

R.J. Burnside & Associates Limited

Tricia Radburn
Senior Environmental Planner
TR:

Distribution:

All Attendees

Marcus Kroker	Region of Waterloo	Via: Email MKroker@regionofwaterloo.ca

Blair-Preston Pedestrian Bridge and Trail Schedule B Municipal Class Environmental Assessment

Rare Charitable Research Reserve
Board of Directors' Meeting
July 23, 2020

1

STUDY DESCRIPTION

The City of Cambridge is undertaking a Municipal Class Environmental Assessment to study a future pedestrian bridge and trail to connect the communities of Blair and Preston.

Routes are being considered through lands owned by the rare Charitable Research Reserve. The new off-road trail will connect the B. McMullen Linear Trail to the existing multi-use trail on Fountain Street via a bridge over the Speed River. The bridge and trail will provide a major off-road connection to downtown Preston as well as a connection to the 401 pedestrian bridge linking Kitchener and the Doon area.

2

STUDY SCOPE

The Environmental Assessment (EA) process is triggered by the need for a pedestrian bridge over the Speed River.

A series of technical studies (including ecological, archaeological and floodplain investigations) will be completed and used to evaluate various alternative bridge locations and associated trail routing.

An option to "do nothing" will also be considered.

At the conclusion of the study, a preferred alternative will be selected, and a Project File Report will be prepared for public review.

3

STUDY AREA

The Study Area is approximately 25ha in size. The majority of the Study Area is owned by the rare Charitable Research Reserve (rare) and is located within an area known locally as the Junction (or Confluence) of the Speed and Grand Rivers.

The Study Area broadly includes:

- Fountain Street to the west
- A natural area to the north
- The Linear Trail near Preston High School to the east
- The Grand River to the south

4

NEEDS AND JUSTIFICATION

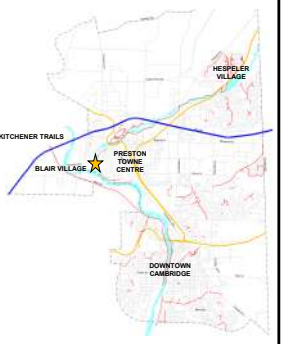
The City of Cambridge Trails Master Plan (2010) identified the need for a connection between the villages of Preston and Blair.

The Region of Waterloo's Active Transportation Master Plan (2014) also identifies the potential for a trail and bridge in the Study Area. The Study Area associated with this EA is mapped as a Special Study Area in the Region's Master Plan.

Further support for the trail in the area was identified through the Class EA for Fountain / King St/ Shantz Hill Improvements. This document recommended that the Region of Waterloo, in conjunction with the City of Cambridge, should explore the feasibility of an off-road multi-use trail with new pedestrian/cycling bridge across the Speed River and trail connection from Fountain Street South to the City of Cambridge Linear Trail.

The bridge over the Speed River & trail across rare lands is the 'missing link' to providing off-road access between the three core areas, Blair and Kitchener.

The trail and bridge will support active transportation in the community.



5

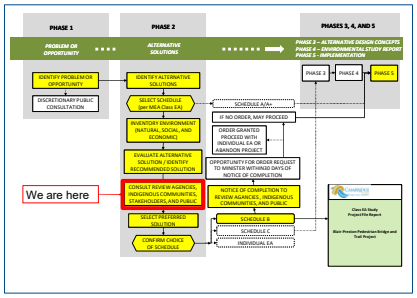
MUNICIPAL CLASS EA PROCESS

The pedestrian bridge location and connecting trail alternatives are being studied through the EA process.

This process will:

- study possible solutions to the problem statement,
- predict potential impacts, and
- identify a preferred solution.

We are currently consulting with agencies and the public to receive feedback on the Problem Statement, Alternatives and preliminary preferred Alternative.



6

PROBLEM/OPPORTUNITY STATEMENT

The first step in an EA is to identify the problem to be solved by the study.

The Problem or Opportunity Statement for this project is:

The purpose of this study is to identify the preferred location for pedestrian bridge and connecting trail to link the neighbourhoods of Preston and Blair. The Study will draw from input received through a comprehensive consultation and engagement program with public, review agencies and Indigenous communities.

Above: Walter Bean Trail Bridge over the Grand River

7

EXISTING CONDITIONS – NATURAL ENVIRONMENT

The existing vegetation within the Study Area includes a mix of:
- Cultural Meadow/Thicket
- Shallow Marsh
- Lowland Forest

A Section of the Speed River Provincially Significant Wetland (PSW) Complex is present on the northern edge of the Site along the western side of the Speed River

The entire Study Area is within a Significant Valley that incorporates the floodplain and valley slopes associated with the Speed and Grand Rivers.

8

WILDLIFE HABITAT

Confirmed Significant Wildlife present within Study Area:
- Monarch

Additional types of habitat that were not confirmed present but could also not be confirmed absent include:
- Turtle Wintering Areas
- Reptile Hibernaculum
- Turtle Nesting Areas
- Amphibian Breeding Habitat
- Marsh Breeding Bird Habitat
- Terrestrial Crayfish

A number of Endangered or Threatened species were found to have habitat requirements which could be provided on, or adjacent to the study area:
- Barn Swallow;
- Bank Swallow;
- Bobolink;
- Chimney Swift;
- Eastern Meadowlark;
- Little Brown Myotis;
- Northern Myotis;
- Tri-coloured Bat;
- Silver Shiner;
- Wavy-rayed Lampmussel;
- American Chestnut; and
- Blanding's Turtle

9

FISH HABITAT

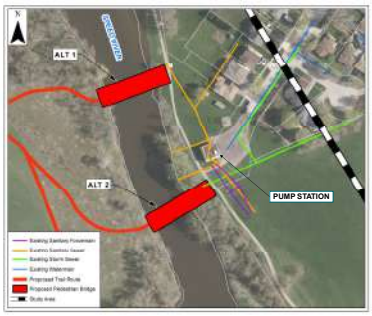
The Speed River flows from north to south through the Study Area in a single thread channel. The banks are densely vegetated with grasses, forbs, shrubs as well as areas of mature riparian vegetation. Spawning nests were observed in select locations. Fish species such as Smallmouth bass, Rock bass, darter, cyprinid, and young-of-the-year were all observed in the Speed River throughout the study area. The Speed River was found to be suitable habitat for Wavy-rayed Lampmussel and Silver Shiner, both species are identified as Species as Risk.

10

INFRASTRUCTURE

A sanitary pump station is located at the end of Dover St.

A variety of below-ground infrastructure is located in the area.



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ALTERNATIVE SOLUTIONS

An Environmental Assessment is a step-by-step process that evaluates a series of alternatives, each of which are able to meet the project objectives outlined in the Problem/Opportunity Statement. For this project, three alternative pedestrian bridge and connecting trails were identified. Each alternative has the potential to provide a major off-road connection to downtown Preston as well as a connection to the 401 pedestrian bridge linking Kitchener and the Doon area. As required by the Environmental Assessment process, an alternative to "do nothing" is also being considered. The "do nothing" option would not include any new bridge or trail.

The pros and cons of each alternative are being examined through the evaluation process.

12

DO NOTHING (MAINTAIN THE STATUS QUO)

Under this scenario, no bridge or trail will be built. The study area and Speed River shown in the photos will remain unchanged.

Doing nothing, or maintaining the status quo is a mandatory alternative in the Class EA process. This alternative would involve the continued operation of the current trail network without any additional connecting trail/bridge development in the Blair Preston area.

Advantages:

- No impact to natural environment or potential habitat.
- No costs to implement.

Disadvantages:

- Does not address the problem statement.

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ALTERNATIVE #1: NORTHERN ROUTE

Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting to the B. McMullen Linear Trail to the north of Dover Street South.

Advantages:

- Creates the shortest connection between Fountain St. and the Linear Trail.
- Provides a route that is the least likely to encourage trail users to veer off-trail and trespass on rare lands.
- The bridge and trail are the farthest distance from the confluence of the Speed and Grand Rivers, a sensitive waterfowl wintering area.

Disadvantages:

- The bridge is the closest option to the Speed River PSW.
- The bridge is close to potential turtle nesting habitat.
- The bridge is close to a sanitary sewer line.
- The bridge will need to be longer than the bridge in Alternative 3 but shorter than the bridge in Alternative 2. This option therefore has a moderate cost relative to the other options.

14

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ALTERNATIVE #2: DOVER STREET SOUTH ROUTE

Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting the to the Linear Trail at Dover Street South near the Dover Street Pump House Building.

Advantages:

- The trail provides a direct link with Dover St. S.
- The bridge ends close to the school property. Students are expected to be among the trail users.
- The bridge is farther from the Speed River PSW than Alternative 1.

Disadvantages:

- The route results in more disturbance to Bobolink and Monarch habitat than Alternative 1.
- The route includes a 90 degree bend which is likely to lead trail users to "cut the corner" and trespass on rare lands.
- Trail is close to the sanitary pump station and related below-ground infrastructure.
- This route has the longest bridge and therefore the highest cost.

15

15

ALTERNATIVE #3: SOUTHERN ROUTE

Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting to the Linear Trail to the south of Dover Street South, west of the Preston High School field.

Advantages:

- This option crosses at the narrowest point and therefore a shorter bridge is required.
- This is the least costly option.
- The bridge is farther from the Speed River PSW than Alternatives 1 and 2.
- No nearby below-ground infrastructure is present.

Disadvantages:

- This bridge is closest to the sensitive waterfowl wintering area at the confluence of the Speed and Grand Rivers.
- Two 90 degree angles in the trail route are likely to encourage trail users to "cut the corners" and travel off-trail, potentially damaging natural features and agricultural lands.
- This is the longest trail route.

16

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EVALUATION PROCESS

To formally evaluate the advantages and disadvantages of each Alternative, a series of evaluation criteria were developed. Each Alternative and the "Do Nothing" option were compared.

NATURAL ENVIRONMENT

- Impacts to existing trees and vegetation
- Impacts to wetlands
- Impacts to migrating, breeding and wintering birds
- Impacts to surface water quality
- Impacts to Significant Wildlife Habitats
- Impacts to Species at Risk
- Impacts to aquatic habitat

SOCIAL ENVIRONMENT

- Route layout and external connectivity
- Potential for trespassing/off trail uses

CULTURAL ENVIRONMENT

- Impacts to archaeological resources
- Impacts to cultural heritage landscapes

LAND USE AND POLICY

- Compatibility with City and Region policies and plans
- Area of rare lands affected
- Compatibility with rare land management plan

TECHNICAL ENVIRONMENT

- Flood impacts to adjacent property
- Flood impacts to constructed trail and bridge
- Ease/complexity of construction

ECONOMIC ENVIRONMENT

- Comparative capital and operational costs
- Impacts to agricultural uses on rare lands

PROBLEM STATEMENT

- How well does it address the overall Problem/Opportunity Statement?

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EVALUATION OF ALTERNATIVE SOLUTIONS

ORDER OF PREFERENCE	
Most Preferred	○
More Preferred	◔
Somewhat Preferred	◑
Less Preferred	◕
Least Preferred	●

CRITERIA FOR EVALUATING ALTERNATIVES	Do Nothing	Alternative 1 – Northern Route	Alternative 2 – Dover Street South Route	Alternative 3 – Southern Route
NATURAL ENVIRONMENT				
Impacts to existing trees and vegetation	○	◔	◑	◕
Impacts to migrating, breeding and wintering birds	○	◔	◑	◕
Impacts to small wetland on rare lands/amphibian habitat	○	◔	◔	◔
Impacts to the Provincially Significant Speed River Wetland Complex	○	◑	◔	◔
Impacts to Significant Wildlife Habitat	○	◕	◑	◔
Impacts to Species at Risk	○	◔	◑	◕
Impacts to aquatic habitat in the Speed River	○	◔	◑	◕
Impacts to surface water quality	○	◑	◑	◑
SUMMARY NATURAL ENVIRONMENT	○	◔	◔	◑
SOCIAL ENVIRONMENT				
Route layout and connectivity within the City's trail network	●	○	○	○
Potential for trespassing/off trail uses	○	◔	◑	●
SUMMARY SOCIAL ENVIRONMENT	◑	◔	◑	●
CULTURAL ENVIRONMENT				
Impacts to Built Heritage and Cultural Heritage Landscapes	○	◑	◑	◑
Impacts to archaeological resources	○	◕	◕	◕
SUMMARY CULTURAL ENVIRONMENT	○	◑	◑	◑

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EVALUATION OF ALTERNATIVE SOLUTIONS

ORDER OF PREFERENCE	
Most Preferred	○
More Preferred	◔
Somewhat Preferred	◑
Less Preferred	◕
Least Preferred	●

CRITERIA FOR EVALUATING ALTERNATIVES	Do Nothing	Alternative 1 – Northern Route	Alternative 2 – Dover Street South Route	Alternative 3 – Southern Route
LAND USE/POLICY				
Compatibility with City and Region policies and plans	●	○	○	○
Area of rare lands affected	○	◔	◑	◕
Compatibility with rare land management plan	○	◑	◕	●
SUMMARY LAND USE/POLICY	○	◔	◑	◑
TECHNICAL ENVIRONMENT				
Flood impacts to adjacent property	○	◔	◔	◔
Flood impacts to constructed trail and bridge	○	◑	◕	●
Ease/complexity of construction	○	◑	◕	◔
SUMMARY TECHNICAL ENVIRONMENT	○	◔	◑	◑
ECONOMIC ENVIRONMENT				
Comparative capital and operational costs	○	◕	●	◔
Impacts to agricultural uses and income on rare lands	○	◔	◑	◕
SUMMARY ECONOMIC ENVIRONMENT	○	◑	◕	◑
PROBLEM STATEMENT				
Addresses Problem Statement?	No	Yes	Yes	Yes
OVERALL SUMMARY	Not Preferred	Most Preferred	Somewhat Preferred	Least Preferred

REDUCING IMPACTS

Based on the initial evaluation, Alternative 1 appears to be preferred.

This Alternative will include:

- Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land
- A pedestrian bridge across the Speed River connecting to the B. McMullen Linear (BML) Trail to the north of Dover Street South.

The final design will include measures to reduce impacts to the natural environment.

These measures are being developed and may include:

- Tree planting and ecological restoration to compensate for trees lost;
- Avoiding any in-water work to reduce impacts to watercourses and fish habitat;
- Installation of fencing or living fences (i.e., shrub lines) and signage to minimize trespassing into natural areas.
- Additional measures to reduce impacts are currently in development and will be identified in the Project File Report.

EA PROJECT TIMELINE

Municipal Class EA, Blair-Preston Pedestrian Bridge and Trail

Next Steps….

- Review comments generated from the online survey and other public, agency and Indigenous community comments;
- Comments will be incorporated into the Project File Report which will include a summary of your written comments along with project-related responses;
- Select Preferred Alternative;
- Issue Notice of Study Completion and provide Project File Report for final public review and comment for a period of 30 days.

Thank you for reading.
Help shape decisions made in this Study

Please complete the online survey or contact one of the project team members below:

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Landscape Architect
City of Cambridge
50 Dickson Street, P.O. Box 669
Cambridge, ON N1R 5W8
519-740-4681 x 4567
TaylorS@cambridge.ca

Tricia Radburn, M.Sc.(PL), MCIP, RPP
Environmental Assessment Coordinator
R.J. Burnside & Associates Limited
292 Speedvale Ave. W, Unit 20
Guelph, ON N1H 1C4
226-486-1778
Tricia.Radburn@rjburnside.com

R.J. Burnside & Associates Limited 292 Speedvale Avenue West Unit 20 Guelph ON N1H 1C4 CANADA
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BURNSIDE
[THE DIFFERENCE IS OUR PEOPLE]

Minutes of Meeting

Meeting Date: September 1, 2021 **Project No.:** 300043765.000

Project Name: Blair-Preston Trail EA

Meeting Subject: Rare review of draft EA document

Meeting Location: Teams virtual meeting

Date Prepared: September 1, 2021

Those in attendance were:

Tom Woodcock	rare	Tom.woodcock@raresites.org
Shane Taylor	City of Cambridge	TaylorS@cambridge.ca
Marcos Kroker	Region of Waterloo	mkroker@regionofwaterloo.ca
Tricia Radburn	R.J. Burnside and Associates Limited	tradburn@rjburnside.com

The following items were discussed		Action by
1.	**Comments on Draft EA Documents** The purpose of the meeting was to discuss any initial comments from rare as a result of their ongoing review of the draft EA documents and to discuss next steps.	
1.1	Tom noted concern with trespassing through the woodland by people cutting the corner from the multi-use trail on Fountain St. to the proposed trail. He suggested some type of barrier along Fountain St. There was discussion about whether this should be a solid barrier (fence) or more green option such as thick shrubs. It was agreed that shrubs are preferable from a City/Region maintenance perspective and ecological perspective. There is wording in the draft EA regarding construction of a barrier in this area and along the northern edge of the trail. Tricia to add to this to further clarify that barriers should be green and the barrier	

	The following items were discussed	Action by
	along Fountain St. should extend from the entrance to the trail across the rare property to the edge of the neighbouring property. Text will also be added to indicate that rare will be consulted on the barrier during detailed design.	Burnside
1.2	Tom indicated that rare would prefer a stonedust trail over asphalt, noting that asphalt trails are typically maintained during the winter and rare would prefer to avoid winter maintenance. Shane noted that the EA report refers to a trail standard that uses stonedust in most areas with the exceptions of steep slopes. This will be the most likely surface. However, given the anticipated use of the trail, there may be a push to maintain it in the winter. He noted that there are alternatives to salt that could be used. He suggested that these details be discussed during detailed design and during preparation of the land use agreement.	
1.3	Tom noted that some folks have an interest in the design details for the bridge. Shane confirmed that there will be an opportunity to have input during the detailed design process.	
1.4	Tom also noted that rare would like to have a formal complaints/maintenance agreement in place with the City. Shane agreed that this will be important but noted that the City would like to wait until after the Stage 3 archaeological work is complete because there is potential that that trail route may change slightly as a result of the findings.	
1.5	There were questions about the archaeological work and whether Stage 3 and 4 would be completed. Tricia indicated that an archaeologist would need to finish Stage 3 before confirming if Stage 4 is necessary. Shane noted that a timeline for the Stage 3 has not been confirmed. It may be included in next year's budget. Interested Indigenous communities would be invited to participate in that work.	
1.6	Tom questioned whether there is support among Indigenous communities for this work. Tricia noted that a meeting was held with Six Nations staff. Their concerns aligned with rare's and were primarily centered around environmental protection. They requested a relatively high replacement ratio for trees that will be removed (i.e. 10:1). The EA includes a statement that this ratio will be considered if suitable property for the replacement trees can be found on rare	

	The following items were discussed	Action by
	lands. There was a discussion about whether trees could also be planted on the City property across the road. Shane indicated that this may be a possibility. The number of trees to be replaced will be determined at detailed design when the design and construction staging details are better understood.	
	Tricia noted that the draft EA documents were provided to HDI, Six Nations and Mississaugas of the Credit at the same time as they were sent to rare. Burnside is following up by telephone to ensure documents were received and confirmed if there are any comments.	Burnside
1.7	Tom will summarize the EA and present it to the rare Board of Directors at the retreat in October. He will provide any comments from the board to us after that. Shane noted that after rare has review the document, the report will be presented to Council for approval. It will then be posted to the City's website for a final 30-day public review period, after which the EA will be consider complete. Discussions with rare will be ongoing throughout the next phases of the project.	Tom Woodcock/ rare

The preceding are the minutes of the meeting as observed by the undersigned. Should there be a need for revision, please advise Burnside within seven days of issuance. In the absence of notification to the contrary, these minutes will be deemed to be an accurate record of the meeting.

Minutes prepared by:

R.J. Burnside & Associates Limited

Tricia Radburn
Environmental Planner

Distribution:

All Attendees

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BURNSIDE
[THE DIFFERENCE IS OUR PEOPLE]

Minutes of Meeting

Meeting Date: November 2, 2021 **Project No.:** 300043765.000

Project Name: Blair-Preston Trail EA

Meeting Subject: Rare review of draft EA document

Meeting Location: Teams virtual meeting

Date Prepared: November 8, 2021

Those in attendance were:

Tom Woodcock	Rare	Tom.woodcock@raresites.org
Stephanie Sobek-Swaint	Rare	Stephanie.Sobek-Swaint@raresites.org
Shane Taylor	City of Cambridge	TaylorS@cambridge.ca
Jamie Croft	City of Cambridge	Croftj@cambridge.ca
Marcos Kroker	Region of Waterloo	mkroker@regionofwaterloo.ca
Tricia Radburn	R.J. Burnside and Associates Limited	tradburn@rjburnside.com

The following items were discussed		**Action by**
1.	**Comments on Draft EA Documents** The purpose of the meeting was to discuss comments from rare on the draft EA documents following their Board of Directors meeting held in October.	
1.1	Stephanie noted that there are concerns with how to manage the increased number of people accessing the area as a result of the trail. There are concerns that trail users will not stay on the trail and may use the trail to access other areas of the rare property to fish or camp.	

	The following items were discussed	Action by
	There is a challenge in that rare's mandate is to conserve lands. A trail through this area is not compatible with that mandate as it would allow people access to conservation lands. There was discussion about how to keep pedestrians and cyclists on the trail. Thick shrubbery (potentially with thorns) was discussed along the northern boundary of the trail, along with signage to indicate that users must stay on the trail. Stephanie and Tom indicated that that may not be sufficient to keep people out. There is also concern with trespassing through the agricultural field to access the confluence of the Grand and Speed Rivers to the south.	
1.2	There was a discussion about whether fencing could help alleviate concerns. It was noted that the trail cannot be fenced on both sides due to safety concerns. There is potential to fence at least one side. Tom and Stephanie indicated that they would prefer a living fence i.e. fence of shrubs/trees over a hard fence as this would not restrict wildlife movement.	
1.3	Stephanie noted that rare has consciously put trails on portions of their property and not others. This location is considered to be more sensitive than the areas that currently have trails. It is felt by rare that it would not be possible to construct a trail without sacrificing some component of conservation. Tricia and City staff noted that considerable work has gone into developing measures to minimize any possible negative effects of the trail.	
1.4	Shane provided some context regarding the benefits of the trail. With this connection there will be a 100% off-road connection between Hespeler, Blair and Preston, including connection to the trail over Hwy 401. As such, this section of trail is very important to the City's Active Transportation Network. It was also noted that alternative crossing locations along Fountain St. are very constrained and generally not feasible. Shane also noted that there are current safety concerns for students in the area. The area around King St. and Fountain St. is not very safe for cycling. It also does not provide a direct route for many students. Some students have been crossing the river in the winter.	

	The following items were discussed	Action by
	There may be an opportunity to use the trail for educational purposes. There is a science class at the high school that supports a stewardship group. There may be opportunities to use the group to promote stewardship and responsible use of the trail to other students as well as lead trail clean up days etc.	
1.5	Tom questioned the timing of the next steps and when the trail could be built. Shane indicated that the City will need to complete the EA process and hope to do so shortly. This will be followed detailed design which is anticipated in 2022. Any easement with rare would be arrange during that stage. Construction would follow in the next budget year or later.	
1.6	There was a question about the easement and whether compensation would be provided to rare. Easements are generally confirmed at detailed design once the actual property requirements are known. However, general discussions with the City's property department could be held to get an idea of what an easement agreement might look like.	
1.7	Stephanie questioned whether support had been received from Indigenous communities and noted that rare is working toward reconciliation and would like to see support from Indigenous communities before proceeding. It was noted that MCFN have indicated that they have no concerns with the project moving forward. Consultation with Six Nations and HDI is ongoing. Stephanie asked if any additional consultation had occurred that is not captured in the EA document. A meeting was held with Six Nations on October 28. The minutes of this meeting will be provided to rare.	Tricia to provide minutes of recent Six Nations meeting.
1.8	Tom noted that trails have become more heavily used over the last couple of years and this leads to greater damage to adjacent lands. They have seen this on their other trails. It was noted that rare seemed more open to a trail in the earlier stages of the project. Stephanie noted that the Board of Directors takes its direction from staff and advisors. At this point, some advisors are not in favour of the trail while others see the benefits of it. Tom summarized that the main concern is with trail users accessing the confluence area, how to keep people out and what to do if they go in.	

The following items were discussed		Action by
2.	**Next Steps**	
	A board meeting will be held on Nov 17th. Stephanie will present this discussion to the board and advisors. It is expected that a statement about the boards position will come out of the meeting.	Stephanie/Rare Board of Directors

The preceding are the minutes of the meeting as observed by the undersigned. Should there be a need for revision, please advise Burnside within seven days of issuance. In the absence of notification to the contrary, these minutes will be deemed to be an accurate record of the meeting.

Minutes prepared by:

R.J. Burnside & Associates Limited

Tricia Radburn
Environmental Planner

Distribution:

All Attendees

Tricia Radburn

From: Tom Woodcock <Tom.Woodcock@raresites.org>
Sent: Tuesday, November 23, 2021 4:13 PM
To: Tricia Radburn; Shane Taylor; croftj@cambridge.ca; Marcos Kroker; Stephanie Sobek-Swant
Subject: RE: Blair-Preston Trail

Hello everyone,
Since the finalization of the Environmental Assessment (EA) documents, several concerns about the process and result have been raised by ***rare*** staff, board members, and advisors. As a charitable land trust organization, ***rare's*** priority is protection of land, and it remains unclear to us that the EA process is effectively assessing the alternatives including the "do nothing" option. Rather, it seems to guide the process to a desired conclusion, namely a trail link identified as desirable in the City and Regional master planning processes, which ***rare*** was not part of. We understand and appreciate the many positive aspects of the Preston Link project currently under consideration, including the encouragement of active transportation and reduction in greenhouse gas emissions, and the safety of people (including students from Preston High School) traversing the currently hazardous river crossing involving Fountain St – Shantz Hill Rd – King St. The municipal organizations are understandably focussed on the human benefit of the proposed project, which could be considerable and include improvement of active transportation, reduction of car trips, and recreation. In the past year alone, we have expanded our trail network from 8km to 14km, always with a view to bring people and nature together in areas that can be properly managed. You will recall that ***rare*** was one of the very few places that people could access nature during the pandemic lockdowns, and recreational use remains high. We are far from discouraging of trails, but we also understand the importance of careful management of their planning and use.

From the beginning of this lengthy process, ***rare*** has been clear that the increase of human presence in this area cannot have a benefit for conservation, and that it was up to the proponents to demonstrate that impact could be minimized. So far, this has not been done. We appreciate that the "detailed design phase', which is upcoming, is the place where these issues will be addressed. However, it has become more difficult to see that this can in fact happen; rather, it's becoming clearer that the proponents are not understanding and appreciating the conservation aspect of the project.

Preston Flats includes a 44-acre hay field (leased to a local farmer) and approximately 55 acres of riparian meadow, forest, and wetland. There are also several islands near the Speed-Grand Confluence that are owned by ***rare***. The entire area is an active floodplain, stewarded by ***rare***, which provides significant benefit in terms of the health of the Grand River and flood mitigation elsewhere in the City. There is currently no authorized public access to this area, although there is trespassing of several varieties that is frequently addressed by the organization. Our primary concerns with the project are the introduction of human trail users (and on-leash/off-leash dogs) into an area that currently has less intrusion with no authorized access point, and increased accessibility of important ecological features, namely the Confluence area and the riparian wetlands on the Speed River. While the EA notes the abundance and diversity of birds in this area, it does not discuss the potential effects on the Confluence because it is outside the "Study Area" of the project. This is despite our repeated discussion of its importance, and submission of years of data from our bird monitors that demonstrates the ecological significance.

Finally, discussion of municipal responsibility for rules enforcement and management of incidents, including clean-up, has been confined to the trail and its immediate vicinity. The Grand Trunk Trail is another local trail owned and managed by the City of Cambridge for more than 2km where it passes through ***rare*** property (20m wide strip along old rail line). Hazards on this trail, such as fallen trees, are addressed promptly by City staff, and garbage cans near the trailhead are adequately managed. However, the trail also provides access to our connecting trails, bringing activities undesirable from a conservation perspective such as dogs (on- or off-leash), bicycles, fishing, camping, drinking, and squatting. Signage indicating that these activities are prohibited are routinely ignored, damaged or defaced. These undesirable activities result in ecological damage, hazards (glass, fires, etc.), and significant clean up issues near our trails, and in off-

trail areas. Plantings of hostile and other vegetation to limit unauthorized access has not been successful and plants have frequently been removed by trespassers. At the height of the opioid crisis in 2017 and 2018 there was a city initiative to help private landowners clean up encampments that may contain biohazards such as needles, but that initiative has not been available recently. We are greatly concerned that increasing human traffic in Preston Flats via a new trail will result in increases in similar activities on the entire property, resulting in ecological damage, and increased staff time required to monitor, report, and address instances of intrusion.

An organization responsible for stewarding conservation land, ***rare*** manages some of the largest remaining areas of high quality habitat in the Region of Waterloo. As pressure increases on our properties from increased development, rapidly growing population, and changes in climate, it is important that these areas be protected for the benefit of wild flora and fauna. With most of the Region's land base given over to development and agriculture, biodiversity is dependent on areas of intact habitat that are impacted as little as possible. The increasing amount of infrastructure in and around the Grand River is a major concern for conservation, and from our understanding also violates local Indigenous Rights and Responsibilities. The land trust community in Ontario is in a process of learning to understand better their settler responsibilities in supporting the sovereignty of Indigenous Nations in this context that goes beyond a mere legal duty to consult.

As per the information currently available for the project, our first position remains to say no to a bridge and trail entering ***rare*** lands.

Best wishes, Tom

Tom Woodcock, Ph.D.
Planning Ecologist
***rare* Charitable Research Reserve**
1679 Blair Road, Cambridge ON N3H 4R8
phone: 519-650-9336 x121 fax: 519-650-5923
email: tom.woodcock@raresites.org
website: raresites.org

From: Tricia Radburn <Tricia.Radburn@rjburnside.com>
Sent: November 9, 2021 10:44 AM
To: Shane Taylor <TaylorS@cambridge.ca>; croftj@cambridge.ca; Marcos Kroker <MKroker@regionofwaterloo.ca>; Tom Woodcock <Tom.Woodcock@raresites.org>; Stephanie.Sobek-Swaint@raresites.org
Subject: Draft Minutes of Nov 2 2021 meeting re: Blair-Preston Trail

Good morning,

Attached are draft minutes of our recent meeting. Please let me know if I have missed anything or captured anything inaccurately.

As per one of our action items, I have also attached the minutes of our recent meeting with Six Nations. Please note that these minutes are also still draft.

Tom and Stephanie, we look forward to hearing back from you after the board meeting on the 17th.

Kind Regards,

BURNSIDE

Tricia Radburn, MCIP, RPP
Senior Environmental Planner

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Community Development
Engineering and Transportation Services
The City of Cambridge
Croftj@cambridge.ca

August 12, 2022

Tom Woodcock, Ph.D.
Planning Ecologist
***rare* Charitable Research Reserve**
1679 Blair Road
Cambridge ON N3H 4R8

Dear Tom:

Re: **Blair-Preston Trail Follow-up**
Project No.: 300043765.000

Over the last several months, the City of Cambridge, Region of Waterloo, and R.J. Burnside & Associates Limited have been undertaking a careful review of our discussions and correspondence with *rare*. This includes your email of November 23, 2021, our site visit on April 7, 2022, as well as all previous correspondence regarding the proposed trail dating back to March 2016. We have taken time to thoroughly consider your comments. We respect that *rare* has concerns about the proposed trail and potential changes that may occur on the Preston Flats property. We are concerned that *rare*'s current position appears to be that there is nothing the City can do that would make this project acceptable to *rare*. We continue to be optimistic and believe that human activity can coexist with the natural environment in a sustainable manner. To that end, we have been considering ways in which the project could be improved to meet the goals of both the City and *rare*.

In 2016, when the City approached *rare* regarding this project, *rare* provided the City with some background documentation about *rare*'s overarching purpose and objectives. The document is attached. We note that it includes the following text:

> *At rare, the word 'conservation' is defined by our intention to be caretakers of the land and the biodiversity native to Waterloo Region/Wellington. Conservation in this context is very different from 'fortress conservation'; which is based on the belief that biodiversity protection is best achieved by creating protected areas where ecosystems can function in isolation from human disturbance. Humans have the potential and ability to enhance life when it is cared for and treated in reciprocity –*

which is the goal of conservation at rare – and everyone's inherent responsibility. We also acknowledge that what we consider natural landscapes today, in most areas of the country, are landscapes that have been used and modified by humans for thousands of years. While many alterations of landscapes and habitat in Canada, particularly since European settlement, have been detrimental and led to loss of habitat and biodiversity, we believe that sustainability is an attainable goal that can be reached if we recognize people as part of the environment and work together towards responsible stewardship.

We believe that trails are important features that can bring people together with nature in ways that can help build an appreciation for the natural world and a desire to work as stewards to protect it. We hope to continue to work with *rare* to develop a trail connection that can be beneficial to the community and *rare*.

We have carefully reviewed *rare*'s Environmental Management Plan (2020) and all correspondence and meeting minutes related to this EA. Below we have summarized and paraphrased the various concerns we have heard and various long-term goals which we believe *rare* would like to achieve on the property. We believe that the trail can be constructed in a way that can be mutually beneficial to both the City and *rare*. Below, we have suggested several improvements to the project to address concerns related to trespassing and other nuisances, impacts to the ecological functions of the area and opportunities to provide an ecological benefit as part of trail construction. These are not considered final, and we look forward to further discussions about these options with yourself and other *rare* staff and representatives.

1. The wintering waterfowl habitat at the river confluence is of utmost importance to protect. There is concern that the study area excluded the confluence, and the EA did not sufficiently consider this area or impacts to it.

    a) We acknowledge that the study area shown on the various figures was set early in the project. As the project progressed, it became clear that the study area needed to include features beyond the limit originally identified. All ecological studies, including vegetation community mapping and bird surveys, extended beyond the mapped study area limit and included the river confluence area. Figures in the EA will be updated to better reflect the true study area of our various studies.

    b) The importance of the confluence is recognized. The EA report will be edited to reflect this reality more clearly. The project design will be altered to include additional barriers to minimize intrusions into the confluence area. This will include thick shrub barriers in areas outside of the agricultural field and additional signage.

    c) The small amount of tree clearing required must occur outside of the bird nesting and bat roosting window which runs from April 1st to September 30th of each year. The EA will stipulate that trees should be cut in October or November to avoid significant noise during the waterfowl wintering season. The trail route through the agricultural field will also be cleared during this period. Other components of trail construction can occur during the spring and summer season to avoid impacts to wintering birds.

d) The Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF) has mapped the area as a Winter Waterfowl Concentration Area. There is a vast record of wintering waterfowl at the river confluence. This information provides a useful record of baseline conditions. In addition, the City has committed to carrying out winter waterfowl surveys in the winter of 2022/2023 to further build our understanding of current waterfowl presence. Surveys will then be carried out for three years after construction. Should the trail cause a significant decrease in wintering waterfowl, the trail will be closed during winter months. *Rare* will be asked to be involved in the development of specific triggers (level of population decline) that, if reached, would necessitate the closure of the trail during the key waterfowl wintering season. Criteria will also be established to identify when, and how, the trail could subsequently be reopened in the winter months. This may include additional exclusion measures and/or monitoring.

2. *Rare* has also expressed concern about wintering raptors. Raptors, including Bald Eagles are known to winter along the Grand River. Based on the extensive bird records available for the area, a Bald Eagle wintering area is known to be present along the Grand River between Highway 401 and Fountain Street.

   a) The City has committed to conducting additional winter raptor surveys in the winter of 2022/2023. *Rare* will be contacted to participate in those surveys. The intent will be to confirm the extent of raptor wintering activities occurring on the site and its immediate vicinity. As with waterfowl, wintering raptor habitats will be surveyed for three years post-construction. If significant impacts are observed due to the trail, additional mitigation can be implemented, such as winter trail closures, if required.

   b) The Ministry of Natural Resources' Significant Wildlife Habitat Mitigation Support Tool (2014) indicates that "Required setbacks [from bald eagle wintering areas] may vary site-to-site depending on the level of habituation that eagles demonstrate to human activity…. In southern Ontario, wintering Bald Eagles occur regularly in the City of Cambridge and in Paris with perches within a few metres of an active trail system and Highway 401." This habituation to human activities needs to be considered when assessing potential effects.

   c) The closest portion of the trail is approximately 730 m from the known wintering area between Highway 401 and Fountain Street. There is significant existing development between this area and the proposed trail, including Fountain Street which is a relatively high-traffic road with adjacent multi-use trail, in addition to other residential and institutional development. All of these elements provide existing noise levels that are typical of urban environments. Highway 401 is also present along the northern extent of the wintering area which provides another significant noise source to the wintering area. Any construction noise from the trail project will be dampened by this existing noise. The human presence along the trail will have no impact on this known wintering area as there is significant human presence much closer to the area.

d) It is important to note that there are different types of wintering habitat. Feeding perches are used by eagles to locate prey. As noted in the Significant Wildlife Habitat Mitigation Support Tool (MNRF, 2014):

> *"Feeding perches are important, but less critical to eagles. If an eagle is disturbed from a perch, it may simply fly to another.... a buffer of 300 m is recommended from Bald Eagle winter perches. This is the distance that was recommended by Timmerman and Halyk (2001) for eagles wintering in the City of Cambridge. This distance was based on a detailed review of the literature. These eagles appeared to be habituated to human disturbance and approached buildings, roads, and pedestrians at much closer distances than 300 m. However, 300 m is recommended as this distance should be sufficient to protect perching eagles even in areas where they are not accustomed to human activity (Stalmaster and Kaiser 1998)."*

Nocturnal roosts are more important. The Mitigation Support tool recommends that pedestrians should not be allowed within 400 m of a nocturnal roost. It is also important to note that roosts are only used at night. As noted in the Mitigation Support tool, "This eliminates some of the human disturbance factors as there are likely to be fewer pedestrians, etc. when the roost is occupied." Even if a nocturnal roost was identified on Preston Flats, human presence along the trail during the evening is likely to be very minimal.

- It is acknowledged that Bald Eagles will fly through the study area and forage along the Grand River and Speed River through this area. However, the key critical habitat area between Fountain St. and Hwy 401 is well away from the trail and will not be affected. During construction it is preferable to remove trees during the fall and winter outside the nesting and roosting seasons for birds and bats, respectively. Other elements of the project will be constructed outside of the winter season when there is no snow on the ground, avoiding the raptor wintering season. These timing windows will be added as commitments within the EA.

3. *Rare*'s EMP indicates that invasive species such as buckthorn, giant hogweed and Himalayan balsam should be removed from the portions of Preston Flats outside of the hay fields.

   a) A commitment to removing invasive species will be made in the EA. Measures will be taken to prevent the spread or introduction of new invasive species during construction. The construction area will be monitored for one year after construction to ensure that invasive species have not established. If invasive species have been introduced, they will be removed by the City.

4. We understand that trespassing and vandalism are a significant concern. Section 6.4.8.5 of the EMP also notes that *rare* will "Continue monitoring for human impacts resulting from trespassing, such as fires, dumping, and littering. It will be important to establish baseline data in the event that the footbridge and trail are constructed."

   a) The City's by-law office will work with *rare* to develop an inspection schedule and protocol for responding to complaints. This may include regular visits by by-law officers, additional

by-law blitzes, community clean-up events, erection of additional fencing, including solid and/or living fences.

b) The City will work with Preston Highschool to develop a stewardship group or class to help with monitoring and clean-up of the trail as well as education about the importance of the property aimed at high school students. The opportunity to involve youth in the stewardship of natural areas is key to instilling an interest in nature among youth. This aligns with *rare*'s goals to achieve strong stewardship and community engagement and to train the next generation of land stewards who will perpetuate *rare*'s values.

5. *Rare* has expressed concerns that trespassing will increase as the area is not currently accessible by the public. We understand this concern and we appreciate the challenging experiences *rare* has had with other trails on *rare* property.

a) We note that *rare* has expanded its own trail network from 8 km to 14 km in the last year. Many of *rare*'s trails pass through, or near, sensitive habitats including very rare alvar communities and Provincially Significant Wetland, with much closer proximity than the proposed City trail would be to the bird wintering area.

b) We also note that the proposed trail area is not currently isolated and free of human presence. The woodland to the north of the proposed trail route directly abuts Fountain Street. There are existing opportunities for access by squatters and unauthorized camping off Fountain Street. The proposed plan would improve this situation by limiting access from Fountain Street with the installation of a solid fence. Current access from the farm field would also become less accessible with the proposed living fence. It is our experience that squatters prefer areas that are well out of the public eye. When there is a public presence, illegal activity is often reduced. We understand that your concern is that the trail will push squatters further into the woodland to the north.

c) There is a small boat launch from Moyer's Blair Landing at the western edge of the *rare* property. This boat launch provides access through the Grand River, its banks, and islands. The area is well used by kayakers and canoeists, although less so in the winter months. We also note that the existing Linear Trail, high school, and elementary school are on the east bank of the river. The visual human presence and noise from these features is much more likely to disturb wintering waterfowl due to their close proximity. The proposed trail is significantly farther from the confluence than these other features and will not be as visually or audibly disruptive. However, birds have adapted to this existing human presence.

d) Some people may attempt to travel from the trail to the confluence area to fish, view birds or camp illegally. We feel this will be extremely rare because:

i. At its closest point, the trail is approximately 350 m from the confluence. In the summertime, people would need to walk this distance through a hay field, in the winter across a snow covered field and in the spring, across a fairly wet and muddy field. The distance and conditions are a barrier to all but the most determined people.

ii. There is much easier existing access to the confluence from Moyer's Blair Landing or straight across the narrowest point in the agricultural field, directly south of Linden Drive, both of which are access points that currently exist.

e) The above is not intended to dismiss *rare*'s concerns regarding the potential increase in trespassing but rather an objective discussion of current conditions. As noted, in Comment 4, the City's by-law office will work with *rare* to develop an inspection schedule and protocol for responding to complaints. This may include regular visits by by-law officers, additional by-law blitzes, community clean-up events, erection of additional fencing, including solid and/or living fences.

6. *Rare*'s policies permit a trail through Preston Flats. In the EMP, the agricultural field is identified as a Low Priority Protection Area. Section 5.4.2 of the EMP indicates that permitted uses in Low Priority Protection Areas, includes "Regular public use of existing or newly created public trails and open access areas. Regular trail use includes hiking on the trail independently or on guided tours, and possibly cycling and geocaching in suitable area…" It is also noted that the focus of these areas is on recreation, education, and agriculture among other uses. "Educational material, communicated through trail signage, the *rare* website, trail maps and handouts, should be provided to the public to explain the vision and methods behind the agricultural practices on the property."

a) The proposed trail be used to educate the public on several topics, including *rare*'s agricultural practices. There are plans to include interpretive signage. The City will work with *rare* on appropriate text.

b) *Rare*'s EMP does map the area along the banks of the Speed River as a Very High Priority Protection Area. New trails are not permitted in this area. We concur that the banks of the river are important to protect. The proposed bridge abutments would be located in this area. We believe that very few trees will need to be removed from this area. Through discussions with Six Nations, the City has agreed to plant 10 new trees for every tree removed. The City would like to use these new tree plantings on *rare* lands to improve the ecological conditions on the property. The location can be decided by *rare* but could be planted along the riverbank to improve vegetation cover in this Very High Priority Protection Area, which currently provides a fairly narrow strip of riparian tree cover and appears to be part of some of *rare*'s ongoing restoration efforts.

7. Section 6.4.8.2 of *rare*'s EMP also notes the following:

The City is also working on a footbridge and trail connection between the Bob McMullen Linear Trail in Preston and the multi-use trails adjacent to Fountain Street, which is currently in the Environmental Assessment stage. This would include a footbridge across the Speed River and a trail that would cross rare property. While this may be desirable from the point of view of active transportation, there can be little benefit to habitats on rare property, and the City must remain aware of their obligations to minimize impact to Preston Flats after construction is completed.

We concur that impacts to Preston Flats should be minimized and habitats on *rare* property should be improved as a result of the project. Our aim is to accomplish that in the following ways:

a) Tree replacement will be at a 10:1 ratio. The exact number of trees will be determined during detailed design as some minor adjustments can be expected at that time. We expect fewer than 10 trees will need to be removed. The plantings can be located according to *rare*'s preference.

b) We expect that 1,856 m^2 of Bobolink habitat will be removed from the agricultural field. Under the *Endangered Species Act*, this habitat must be replaced with new or enhanced habitat. We understand that the agricultural field is intended to remain in agricultural uses. As such, habitat restoration will need to occur elsewhere. *Rare* has been working to create and enhance several tallgrass prairie habitats. Funds to be used for tallgrass prairie creation or enhancement can be used by *rare* for improvements on *rare* lands, thus increasing the size or enhancing the ecological function of prairie habitat.

c) As noted under Comment 1, trail construction can be used as an opportunity to remove invasive species for the Preston Flats area.

8. *Rare* has a strong relationship with the Six Nations of the Grand River and other Indigenous communities with treaty and aboriginal rights to the area. The City respects Indigenous rights and is working with Six Nations, HDI and the Mississaugas of the Credit to make additional project improvements to address Indigenous comments and concerns. Discussions are ongoing but commitments currently include:

a) Acknowledging Indigenous treaties and rights at the forefront of the EA.

b) Including more detail regarding the Indigenous cultural history of the area.

c) Describing current Indigenous uses of the area, including the Grand River as a source of drinking water for the Six Nations in the EA.

d) Planting trees at a 10:1 ratio any those removed.

e) Erecting a bat box for every 10 trees removed.

f) Providing interpretive signage along the trail route to highlight the importance of the area to Indigenous communities.

g) Plant, and create, a "trail marker tree" at the head of the trail.

h) Providing Indigenous-owned businesses with an opportunity to provide nursery stock for trail landscaping and project-related ecological restoration.

The City and Region of Waterloo have developed goals to improve active transportation and this trail would provide an important off-road linkage in the City's and Region's trail network. The City also has strong policies to protect natural features and ecological functions and support the protection of natural areas, including those on *rare* lands. We believe these goals are not mutually exclusive and both can be achieved through this project.

We look forward to pursuing these opportunities, and others you may identify, through further discussion during the EA process and beyond.

Regards,

Jamie Croft, M.A.Sc., P.Eng.
Manager of Infrastructure Engineering
Engineering & Transportation Services
Community Development
T: 519-623-1340 ext. 4761
www.cambridge.ca

Tricia Radburn, M.Sc.(PI), MCIP, RPP
Environmental Planner
R.J. Burnside & Associates Limited
T: 519-823-4995

cc: Marcos Kroker, Region of Waterloo (Via: Email)

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BURNSIDE
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Minutes of Meeting

Meeting Date: May 14, 2019 **Project No.:** 300043765.0000

Project Name: Blair-Preston Trail Environmental Assessment

Meeting Subject: Project Status Meeting with Region of Waterloo

Meeting Location: Cambridge City Hall, Erb Room B, 3rd Floor

Date Prepared: May 16, 2019

Those in attendance were:

Shane Taylor	City of Cambridge
Kathy Padgett	City of Cambridge
Scott MacDonald	City of Cambridge
Jason Lane	Region of Waterloo
Marcos Kroker	Region of Waterloo
Tom Woodcock	rare Charitable Research Reserve
Tricia Radburn	R.J. Burnside and Associates Ltd.
Meaghan Luis	R.J. Burnside and Associates Ltd.

	The following items were discussed	**Action by**
1.	**Introductions**	
1.1	Project team introductions were made to attendees	
1.2	MK indicated that the general interests of the Region include general connectivity, transit, and bridge design options.	
2.	**EA Work Plan**	
2.1	Alternatives to be Assessed TR noted that there are 3 alternatives as part of the EA process. There has been no Notice of Commencement circulated and no public meetings held on this project.	

The following items were discussed	Action by
These items will not take place until the ecological fieldwork is completed. Will complete a one- season vegetation survey and a four- season bird survey. One bird survey was completed this week. TR stated that there was a ToR made for the fieldwork. KP noted that this should be circulated to the Region for comment. TR confirmed that this EA will be completed as a Schedule B. Want to make sure that rare is on board before presenting to the public, all alternatives will be presented to rare for input. TR noted that hydraulic monitoring will be completed downstream of the houses, this may be helpful from a flooding perspective. SM noted that there is a pumping station downstream, and they may want to be notified of the project. TW stated that Alternative 2 is preferred by rare. Would like to limit public movement in the area and that the confluence of the Speed River is important for migratory birds. There is also PSW present in the area, and the wooded area should be avoided. KP confirmed that the appropriate setback for a PSW is 30 m. TR noted that this wetland boundary will be staked as part of the ecological fieldwork. Bridge Design Standards ST noted that the bridge design will follow CSA standards. TR asked if the design will need to consider 20 year floods? 50 years? SM noted that a pedestrian bridge may require different standards. This will be the decision of the GRCA with the risk of flooding and the nearby housing. TW noted that when the Grand floods, it may close sections of Blair, and fills the wetland. TR stated that flood modeling data will be obtained from the GRCA. MK stated that the width of the bridge would be about 3 to 4 m, possibly wider than the trail to accommodate for two- way traffic. TR asked if the trail design has standard design guidelines. SM stated that asphalt is low maintenance TW noted that stone dust is preferable by rare.	

The following items were discussed	Action by
SM stated that the bridges and trails are not maintained in the winter, not cleared, this may help with some of the traffic from the high school and Conestoga. TR noted that while detailed design of the bridge is not within the scope of the project, Burnside can provide clear recommendations in line with applicable guidelines. 2.2 **Ecological Fieldwork** TR noted that the wetland staking is approaching. There will be no in-water works for this project, as there will likely be no impacts. There are known archaeological sites within the study area. TW shared that there is evidence of early settlements, based on historical record, but have never been excavated. TR stated that once a preferred alternative is identified, a Stage 2 archaeological assessment will take place. 2.3 **Consultation** TR indicated that a contact list will be circulated to the project team for review. The project approach involved contacting interested First Nations early on in the process. There may be increased interest in this project due to archaeological potential and proximity to the river, which holds importance. Does the Region have an approach towards First Nation participation? MK noted that the Region has an informal approach, monitors are not paid. JL noted a recent project in which the monitors are retained through the consultant. The region will pay the consultant who will then pay the first Nation representatives. JL confirmed that there is no Notice of Commencement at this time. TR stated that the PIC is tentatively scheduled for next spring, but that there is no firm date. May be beneficial to complete modeling and fieldwork prior to public input. Late fall was suggested as an alternative time to hold the PIC by the group. SM stated that the notice could be sent in late September, and the PIC could be held at Preston High. Bill Blair from Transportation in the Region must also be circulated as the project progresses.	

The following items were discussed	Action by
TR noted that if there are any additional concerns or environmental commitments needed as directed by the Region, they will be addressed. May 27 is the upcoming meeting with rare. TW noted that the main concerns with the project is increased presence of people in the area. There may be ways to mitigate trespassing with plantings and signs. Something to be looked at.	
3. Next Steps TR summarized the next steps in the project. Including, meeting with rare on May 27. Ecological fieldwork is ongoing, with June 10 tentatively scheduled as the date for the wetland staking. The next meeting will be prior to the PIC, and a draft of the boards will be included.	

The preceding are the minutes of the meeting as observed by the undersigned. Should there be a need for revision, please advise Burnside within seven days of issuance. In the absence of notification to the contrary, these minutes will be deemed to be an accurate record of the meeting.

Minutes prepared by:

R.J. Burnside & Associates Limited

Meaghan Luis
Environmental Planner
ML:sgd

Distribution:

All Attendees

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Minutes of Meeting

Meeting Date: March 4, 2019 **Project No.:** 300043765.0000

Project Name: Blair-Preston Trail EA

Meeting Subject: Project Kick-off

Meeting Location: City of Cambridge Old City Hall, Hall of Fame Room

Date Prepared: March 6, 2019

Those in attendance were:

Shane Taylor	City of Cambridge	TaylorS@cambridge.ca
Paul Willms	City of Cambridge	willmsp@cambridge.ca
Kathy Padgett	City of Cambridge	padgettk@cambridge.ca
Scott MacDonald	City of Cambridge	macdonaldscott@cambridge.ca
Tom Woodcock	*rare* Charitable Research Reserve	Tom.woodcock@raresites.org
Tricia Radburn	R.J. Burnside & Associates Limited	tradburn@rjburnside.com
Chris Pfohl	R.J. Burnside & Associates Limited	cpfohl@rjburnside.com

The following items were discussed		**Action by**
1.	**Administrative Items**	
1.1	Tricia confirmed with Shane some administrative items relating to invoicing while waiting for others to join. It was confirmed that invoices would show % completed for each phase of the project and would be submitted monthly to Shane.	
2.	**Introductions**	
2.1	The group introduced themselves and noted their various roles on the project.	

	The following items were discussed	Action by
3.	**Availability of Background Information**	
3.1	There was a discussion about the type of background materials and documents available. Shane noted that the City's Trails Master Plan and other planning documents may have some relevance and can be provided. Tom noted that *rare* has collected a variety of data on the property, including ELC from 2011, bird observation records, and amphibian and benthic data for the on-site wetland. Tom noted that he has the ELC data, but bird, amphibian, and benthic records may take longer to compile. Information about the known archaeological site is also available. It was also noted that the MNRF has a report on eagles in the area that may provide useful information.	Tricia will contact Shane, Tom and MNRF to gather information. ASI will address archaeological issues.
4.	**First Nation Interests**	
4.1	There was a discussion about several indigenous communities who may have an interest in the project and who should be contacted. Six Nations, Mississaugas of the Credit First Nation and HDI were noted as communities with an interest. Tricia will compile a contact list for circulation to the City.	Tricia will contact MECP for a full list of interested communities and will prepare a draft contact list.
4.2	Shane noted that it is the City's policy not to pay indigenous field monitors. Tricia mentioned hearing about a job recently in which a municipal staff person noted that they had been given specific direction from a provincial agency to pay field monitors. **Follow-up note:** Since the meeting, Tricia has looked into this further and has not been able to find written documentation from a provincial agency with specific direction on this matter.	Tricia will keep the City apprised of any changes related to provincial policy.
5.	***rare* Interests**	
5.1	*rare* would like to be informed when any project-related activities or field studies are taking place on rare lands.	Tricia to let Tom know when any project staff will be on-site.
5.2	Tom noted that the agricultural fields on the site are currently in hay. *rare* has not confirmed how the lands will be used in the future. Significant flooding including ice flows on the site occurred last year and has raised questions about the type of use that is suitable for the site.	

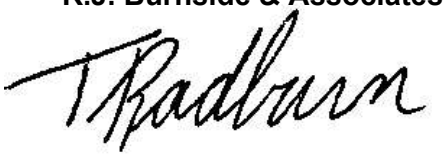
The following items were discussed		Action by
5.3	Tom noted that *rare* has concerns about pedestrians taking a short-cut through the pond area. He would like to see fencing options to limit access to the pond area. Other concerns regarding trash being left on-site were also noted.	
5.4	Tom noted that Environmental Advisory Committee should be consulted first before *rare*'s Board of Directors. The next Environmental Advisory Committee meeting will likely be held in May.	Tom to let Tricia know the meeting date, once confirmed.
6.	**Agency Contacts**	
6.1	Tricia noted that one of the first steps will be to prepare Terms of Reference (TOR) for the environmental field work. The TOR will be submitted to GRCA (John Brum, Tony Zammit), *rare*, Region of Waterloo (Jane Gurney), and the City (Shane and Kathy).	
6.2	There was a discussion about additional contacts who should be included on the EA project contact list. The following were identified: • City Councillors (Donna Reid, Mike Mann) • Public School Board (Shawn Callen, Leslie-last name unknown- board's active transportation coordinator) It was also noted that the City's Environmental Advisory Committee would have an interest in the project. The Region's EEAC would likely not have an interest.	Tricia will work with the City to confirm the EA contact list
7.	**Overall Project Purpose and Direction**	
7.1	The discussion moved to the overall purpose of the project and project benefits. It was noted that the bridge and trail will provide a major off-road connection to downtown Preston as well as a connection to the 401 pedestrian bridge linking Kitchener and the Doon area. The project will support active transportation in the community.	
7.2	Some concerns that will need to be addressed during the EA were discussed, including an increased number of people on *rare* lands. It is desirable to keep people on the trail and away from sensitive natural features. It was also noted that the design should avoid the creation of areas of limited visibility where people could congregate or hide. Tricia noted that the EA would not get into detailed design of the project, but these issues would be addressed in the EA.	

The following items were discussed		Action by
8.	**Meeting Conclusion**	
8.1	The meeting was concluded with a summary of next steps, including preparation of the TOR, contact list and Notice of Commencement. Tricia noted that upcoming spring migratory bird surveys will need to be started in the near future.	Tricia to move forward with preparation of documents and fieldwork planning. City to be circulated on all relevant correspondence and documents.

The preceding are the minutes of the meeting as observed by the undersigned. Should there be a need for revision, please advise Burnside within seven days of issuance. In the absence of notification to the contrary, these minutes will be deemed to be an accurate record of the meeting.

Minutes prepared by:

R.J. Burnside & Associates Limited



Tricia Radburn, M.Sc.(Pl), MCIP, RPP
Senior Environmental Planner
TR:sgd

Distribution:

All Attendees

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Appendix O
Consultation with MCFN

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Minutes of Meeting

Meeting Date:	September 12, 2019	**Project No.:**	300043765.000
Project Name:	Blair-Preston Trail EA		
Meeting Subject:	Project Introduction		
Meeting Location:	Mississaugas of the Credit First Nation Department of Consultation and Accommodation Office		
Date Prepared:	September 16, 2019		

Those in attendance were:

Megan DeVries	DOCA	Megan.DeVries@mncfn.ca
Hilary Harrison	DOCA	Hilary.Harrison@mncfn.ca
Marcos Kroker	Region of Waterloo	mkroker@regionofwaterloo.ca
Shane Taylor	City of Cambridge	TaylorS@cambridge.ca
Jenn Vandermeer	R.J. Burnside & Associates Ltd.	Jvandermeer@rjburnside.com
Tricia Radburn	R.J. Burnside & Associates Ltd.	Tradburn@rjburnside.com

The following items were discussed		**Action by**
1.	**Project Introduction**	
1.1	TR gave an introductory presentation describing the project and why it is being studied. The trail provides an import connection in the city and Region's off-road trail network, providing a missing link between Hespeler Village, Preston Towne Centre, downtown Cambridge, Blair and Kitchener. The trail will include a pedestrian bridge over the Speed River just upstream of its confluence with the Grand River.	
1.1.1	TR noted that a Draft Stage 1 Archaeological Assessment is currently undergoing an internal review. Once complete, the draft report will be available to MCFN for review prior to its submission to MTCS.	RJB to provide a draft to MCFN

The following items were discussed		Action by
		when available.
1.1.2	TR also noted that a Natural Environment Report is also being prepared. Fall and winter bird surveys are currently planned so this report won't be available until late winter 2020.	RJB to provide a draft to MCFN when available.
2.	**Field Liaison Representative Participation**	
2.1	MD gave an overview of the FLR program. It was noted that MCFN expects FLRs to be present for all Stage 2, 3 and 4 Archaeological Assessments and all ecological fieldwork. There was discussion about the province's archaeological guidelines which specify First Nation involvement in Stage 3 and 4 assessments but which don't specifically require involvement during Stage 2 assessments. MD noted that it is MCFNs policy to have participation early in the project during Stage 2 work.	
2.1.1	There was discussion regarding MCFN's contract. It was noted that it is the City and Region's preference for MCFN to be engaged by consultants rather than by the municipality. This is for liability reasons. MD noted that this may be possible. It is MCFN's preference to be contracted directly by the municipality as it is the municipality that has the duty to consult.; however, there may be some flexibility on this. There was discussion regarding the ongoing negotiation between MCFN, Stantec and the Region regarding the Stage 3 Archaeological Assessment for work to Fischer-Hallman Dr. MK will confirm the status of these discussions. MK noted that contracting with FLRs through consultant may only apply to archaeological work. Ecological work could potentially be contracted directly by the municipality. This is because of differences in the type of work being undertaken. Archaeological work includes digging which places it in a different category or work under Ministry of Labour guidelines.	MK to review status of discussions with Stantec.
2.1.2	MK noted that there are potential changes happening within the Region, with talk of municipal amalgamation. There are also policies that need to be applied consistently across the Region and lower tier municipalities. This makes it difficult for MK and ST to confirm the participation of FLRs. Both MK and ST will discuss participation with	

The following items were discussed		Action by
	their respective municipalities. It was noted that that FLR participation is still relatively new to the municipalities and they need time to review and develop policies.	
2.1.3	MD agreed to provide a copy of the FLR participation agreement for review. She noted that no future archaeological or ecological fieldwork should take place before an agreement is signed.	MD to provide FLR agreement.

The preceding are the minutes of the meeting as observed by the undersigned. Should there be a need for revision, please advise Burnside within seven days of issuance. In the absence of notification to the contrary, these minutes will be deemed to be an accurate record of the meeting.

Minutes prepared by:

R.J. Burnside & Associates Limited

Tricia Radburn
Senior Environmental Planner
TR:

Distribution:

All Attendees

Blair- Preston Pedestrian Trail and Pedestrian Bridge Environmental Assessment

Meeting with Mississaugas of the Credit First Nation
Department of Consultation and Accommodation

September 12, 2019

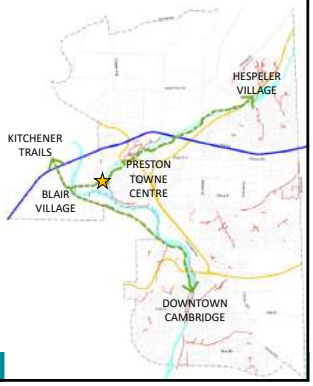
1

Where?

2

Why here?

- The bridge over the Speed River & trail across ***rare*** lands is the 'missing link' to providing off-road access between the three core areas, Blair and Kitchener.



3

Preliminary Proposed Alternatives

Alternative 1: Do Nothing
Alternative 2: Northern Crossing
Alternative 3: Dover St. South Crossing
Alternative 4: Southern Crossing

4

Proposed Ecological Baseline Data Collection	RJB Fieldwork	Rare Records
ELC	✓	✓
Wetland Boundary	✓	
Bat Maternity Habitat Survey	✓	
Aquatic Habitat	✓	
Amphibian Surveys		✓
Spring Migratory Waterfowl and Shorebird Survey	✓	✓
Spring Breeding Bird Survey	✓	
Fall Migratory Waterfowl and Shorebird Survey	✓	✓
Winter Raptor Survey	✓	✓
Wildlife Habitats/ Incidental Species Observations	✓	

5

Draft Evaluation Criteria

Natural Environment
- Impacts to existing trees and vegetation
- Impacts to migrating, breeding and wintering birds
- Impacts to small wetland on *rare* lands
- Impacts to Speed River wetland complex
- Impacts to Species at Risk
- Impacts to aquatic habitat
- Impacts to surface water quality

Social Environment/Public Health and Safety
- Pedestrian safety
- Route layout and connectivity
- Potential for trespassing/off-trail use
- Provision for emergency services

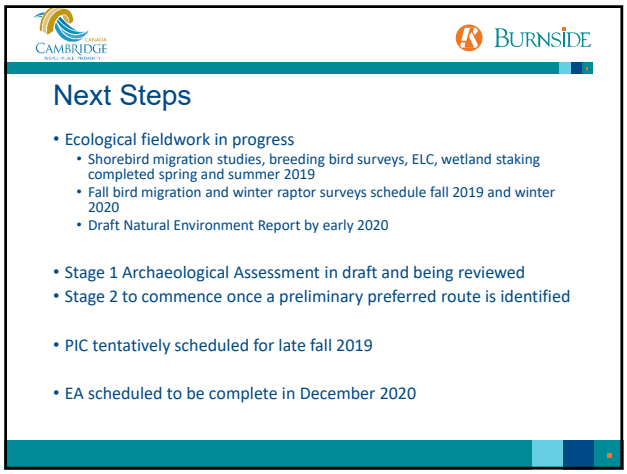
Cultural Environment
- Impacts to archaeological resources

Land Use
- Compatibility with City and Region policies and plans
- Area of *rare* lands affected
- Compatibility with *rare* land management plan and policies

Technical Factors
- Flood impacts to adjacent property
- Flood impacts to constructed trail and bridge
- Vulnerability to climate change
- Ease/complexity of construction
- Navigability

Economic Environment
- Comparative capital and operational costs
- Impacts to agricultural uses and income on *rare* lands

6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Next Steps
• Ecological fieldwork in progress
• Shorebird migration studies, breeding bird surveys, ELC, wetland staking completed spring and summer 2019
• Fall bird migration and winter raptor surveys schedule fall 2019 and winter 2020
• Draft Natural Environment Report by early 2020
• Stage 1 Archaeological Assessment in draft and being reviewed
• Stage 2 to commence once a preliminary preferred route is identified
• PIC tentatively scheduled for late fall 2019
• EA scheduled to be complete in December 2020

7

Mishaal Rizwan

From: Adrian Blake <Adrian.Blake@mncfn.ca>
Sent: Tuesday, October 05, 2021 10:15 AM
To: Tricia Radburn
Cc: Shane Taylor; Marcos Kroker; Megan DeVries
Subject: RE: Draft Blair-Preston Trail EA for Review

Good morning Tricia,

Thank you for sharing this report with us. I have now had time to complete the review and wanted to let you know that at this time MCFN-DOCA has no concerns or questions for you about what is in the report.

Regards,

Adrian Blake, MSc.
Field Archaeologist

Department of Consultation and Accommodation (DOCA)
Mississaugas of the Credit First Nation (MCFN)
4065 Highway 6 North, Hagersville, ON N0A 1H0
M: 905-979-3862
http://www.mncfn.ca

From: Tricia Radburn <Tricia.Radburn@rjburnside.com>
Sent: Wednesday, August 11, 2021 2:39 PM
To: Fawn Sault <Fawn.Sault@mncfn.ca>; Megan DeVries <Megan.DeVries@mncfn.ca>
Cc: Shane Taylor <TaylorS@cambridge.ca>; Marcos Kroker <MKroker@regionofwaterloo.ca>
Subject: Draft Blair-Preston Trail EA for Review

Fawn and Megan,

I hope you are doing well and enjoying the summer. Please see the link below for a draft copy of the Blair-Preston Trail EA for your review and comment. The project involves a pedestrian trail and bridge across the Speed River just upstream of its confluence with the Grand River. MCFN field liaisons were present for the Stage 2 Archaeological Assessment where a number of artifacts were uncovered. The City and/or Region will proceed with additional archaeological studies prior to any project-related disturbance at the site. MCFN will be contacted about this future work when it proceeds.

Please let us now if you have any additional questions or comments about the project or reports available at the link below.
https://rjburnside-my.sharepoint.com/:f:/p/tricia_radburn/Elge72B3LaZHgUbViIVJIAMBhJNgaRRD-aRX8eMS_wZ-xA?e=2l2Uin

We would appreciate comments by September 10 if possible. Please let us know if you will require additional time.

Kind Regards,

BURNSIDE

Tricia Radburn, MCIP, RPP
Senior Environmental Planner

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292 Speedvale Ave. W, Unit 20 Guelph ON
Office: 800-265-9662 Direct: 226-486-1778 www.rjburnside.com

COVID 19: We remain open for business

The health and safety of our employees and clients is of paramount importance. Most of our staff are working remotely and continue to serve clients using our well established collaborative technology platforms. For our full COVID 19 response please click here.

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Appendix P
Consultation with Six Nations

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Minutes of Meeting

Meeting Date: December 9, 2020 **Project No.:** 300043765.0000

Project Name: Blair-Preston Trail EA

Meeting Subject: Project Introduction to Six Nations of Grand River

Meeting Location: Six Nations of Grand River, Microsoft Teams

Date Prepared: December 15, 2020

Those in attendance were:

Lonny Bomberry	Six Nations of Grand River	lonnybomberry@sixnations.ca
Robin Linn	Six Nations of Grand River	rlinn@sixnations.ca
Tanya Hill-Montour	Six Nations of Grand River	tanyahill-montour@sixnations.ca
Marcos Kroker	Region of Waterloo	mkroker@regionofwaterloo.ca
Shane Taylor	City of Cambridge	TaylorS@cambridge.ca
Tricia Radburn	R.J. Burnside & Associates Limited	Tradburn@rjburnside.com
Sylvia Waters	R.J. Burnside & Associates Limited	Sylvia.waters@rjburnside.com

The following items were discussed		**Action by**
1.	**Project Introduction**	
1.1	Tricia Radburn (TR), opened the meeting with introductions of attendees, followed by an introductory presentation, describing the project and why it is being studied. The trail provides an important connection in the City and Region's off-road trail network, supporting outdoor recreation, moving persons out of cars and onto trails. Shane Taylor (ST) noted that this trail will provide the missing off-road link between Hespeler Village, Preston Town Centre, downtown Cambridge, Blair and Kitchener, and is a very big project for City of Cambridge and the Region of Waterloo. The trail will include a pedestrian bridge over the Speed River just upstream of its confluence with the Grand River.	

The following items were discussed		Action by
1.2	TR noted that the Project Team has been consulting with the rare Charitable Research Reserve (rare) who is the major landowner in this area.	
2.	**Discussion**	
2.1	Robin Linn (RL) asked why turtle studies did not occur if habitat may be present; TR noted that the overwintering habitat won't be directly affected and it was assumed that turtles are present. Measures to minimize impacts to the habitat were considered and included as part of the project design/mitigation recommendations.	
2.2	RL expressed their primary concern to be the impact on the natural environment and species observed in the area (mentioned specifically Chimney Swift and Osprey). When humans are allowed access to an area, they do not have the needed respect for nature. RL mentioned that it would be detrimental to put a trail by a Great Blue Heron nesting area. TR corrected that staff did not see Great Blue Heron nesting, but only flying over the site. **Additional clarification**: No Chimney Swift or Osprey nests have been observed on the site; however, both species have been recorded flying overhead of the property during spring and fall migration seasons.	
2.3	RL questioned how impacts due to the presence of humans would be addressed. TR mentioned that rare have also expressed concerns about this and have suggested a living fence (i.e., thick shrubbery) and signage to keep trail users out of natural areas. TR also noted that there is some existing foot traffic in the area. To which RL expressed concern that this trail would open the area up to even more foot traffic. ST noted that the City maintains other trails on rare lands. City of Cambridge bylaw enforcement staff have been able to respond well to previous instances of trespassing.	
2.4	RL asked what the mitigation measures would be for the project. She noted that when new habitat is created to replace habitat that is removed species may not necessarily use the new habitat. RL questioned which compensation ratio is planned. To which TR noted that for Bobolink mitigation there are specific guidelines under the Endangered Species Act. RL said the community has been requesting a 10:1 tree compensation ratio, and destruction of habitat would be similar (i.e., 10 trees planted for every tree removed or 10 ha of habitat created for every 1 ha removed). RL would like to	

	The following items were discussed	Action by
	see this for the area. TR expressed that the quantification of compensation could not be calculated until detailed design. The City can take the communities request into consideration.	
2.5	Tanya Hill-Montour (THM) enquired of the status of the archaeological work. TR noted that a relatively large number of materials were observed during the field surveys. Based on preliminary information, ASI believes a Stage 3 Archaeological Assessment will be required. The Project Team will contact the community prior to starting Stage 3. The draft Stage 2 report will be circulated when available, sometime in the new year.	Burnside to provide report when available.
2.6	RL asked whether rare would be sent the minutes of this meeting, to which TR noted that meeting minutes and all comments received throughout the EA process would be included in the EA documentation and will be sent to rare for review.	
2.7	As a final comment RL reiterated the communities concern of the removal of habitat. TR noted that the project is intended to have an overall benefit to the environment. ST noted that the project is being developed to encourage active transportation (walking and cycling rather than vehicle-based travel) and promote outdoor recreation, also noted that the lands being considered for a trail are actively managed and monitored by rare Charitable Research Reserve.	
3.	**Next Steps**	
3.1	TR summarized the meeting. Various draft reports will be available for review by Six Nations in the new year, including the Stage 2 Archaeological Assessment, updated Natural Heritage Report (updated with fall and winter bird surveys) and draft EA document. TR questioned how long Six Nations staff may need to review the reports. RL could not commit to until seeing the length of reports. The project team thanked Six Nations' staff for their involvement in the project and participation on the call.	Burnside to provide draft reports to Six Nations of Grand River when available.

The preceding are the minutes of the meeting as observed by the undersigned. Should there be a need for revision, please advise Burnside within seven days of issuance. In the absence of notification to the contrary, these minutes will be deemed to be an accurate record of the meeting.

Minutes prepared by:

R.J. Burnside & Associates Limited

Sylvia Waters
EPA, Technical Administrator
SW:sd

Distribution:

All Attendees

Blair-Preston Pedestrian Bridge and Trail Schedule B Municipal Class Environmental Assessment

Welcome

Meeting with Six Nations of the Grand River
December 9, 2020

1

STUDY DESCRIPTION

The City of Cambridge is undertaking a Municipal Class Environmental Assessment to study a future pedestrian bridge and trail to connect the communities of Blair and Preston.

Routes are being considered through lands owned by the rare Charitable Research Reserve. The new off-road trail will connect the B. McMullen Linear Trail to the existing multi-use trail on Fountain Street via a bridge over the Speed River. The bridge and trail will provide a major off-road connection to downtown Preston as well as a connection to the 401 pedestrian bridge linking Kitchener and the Doon area.

2

3

STUDY SCOPE

The Environmental Assessment (EA) process is triggered by the need for a pedestrian bridge over the Speed River.

A series of technical studies (including ecological, archaeological and floodplain investigations) will be completed and used to evaluate various alternative bridge locations and associated trail routing.

An option to "do nothing" will also be considered.

At the conclusion of the study, a preferred alternative will be selected, and a Project File Report will be prepared for public review.

4

STUDY AREA

The Study Area is approximately 25ha in size. The majority of the Study Area is owned by the rare Charitable Research Reserve (rare) and is located within an area known locally as the Junction (or Confluence) of the Speed and Grand Rivers.

The Study Area broadly includes:

- Fountain Street to the west
- A natural area to the north
- The Linear Trail near Preston High School to the east
- The Grand River to the south

5

NEEDS AND JUSTIFICATION

The City of Cambridge Trails Master Plan (2010) identified the need for a connection between the villages of Preston and Blair.

The Region of Waterloo's Active Transportation Master Plan (2014) also identifies the potential for a trail and bridge in the Study Area. The Study Area associated with this EA is mapped as a Special Study Area in the Region's Master Plan.

The City's recent Cycling Master Plan (2020) also identifies a trail in this location as a short-term priority.

Further support for the trail in the area was identified through the Class EA for Fountain / King St/ Shantz Hill Improvements. This document recommended that the Region of Waterloo, in conjunction with the City of Cambridge, should explore the feasibility of an off-road multi-use trail with new pedestrian/cycling bridge across the Speed River and trail connection from Fountain Street South to the City of Cambridge Linear Trail.

The bridge over the Speed River & trail across rare lands is the 'missing link' to providing off-road access between the three core areas, Blair and Kitchener.

The trail and bridge will support active transportation in the community.

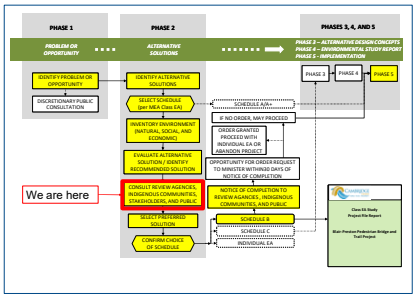
6

MUNICIPAL CLASS EA PROCESS

The pedestrian bridge location and connecting trail alternatives are being studied through the EA process.

This process will:
- study possible solutions to the problem statement,
- predict potential impacts, and
- identify a preferred solution.

We are currently consulting with agencies and the public to receive feedback on the Problem Statement, Alternatives and preliminary preferred Alternative.



7

PROBLEM/OPPORTUNITY STATEMENT

The first step in an EA is to identify the problem to be solved by the study.

The Problem or Opportunity Statement for this project is:

The purpose of this study is to identify the preferred location for pedestrian bridge and connecting trail to link the neighbourhoods of Preston and Blair. The Study will draw from input received through a comprehensive consultation and engagement program with public, review agencies and Indigenous communities.

Above: Walter Bean Trail Bridge over the Grand River

8

EXISTING CONDITIONS – NATURAL ENVIRONMENT

The existing vegetation within the Study Area includes a mix of:
- Cultural Meadow/Thicket
- Shallow Marsh
- Lowland Forest

A Section of the Speed River Provincially Significant Wetland (PSW) Complex is present on the northern edge of the Site along the western side of the Speed River

The entire Study Area is within a Significant Valley that incorporates the floodplain and valley slopes associated with the Speed and Grand Rivers.

9

WILDLIFE HABITAT

Confirmed Significant Wildlife present within Study Area:
- Monarch

Additional types of habitat that were not confirmed present but could also not be confirmed absent include:
- Turtle Wintering Areas
- Reptile Hibernaculum
- Turtle Nesting Areas
- Amphibian Breeding Habitat
- Marsh Breeding Bird Habitat
- Terrestrial Crayfish

A number of Endangered or Threatened species were found to have habitat requirements which could be provided on, or adjacent to the study area:
- Barn Swallow;
- Bank Swallow;
- Bobolink;
- Chimney Swift;
- Eastern Meadowlark;
- Little Brown Myotis;
- Northern Myotis;
- Tri-coloured Bat;
- Silver Shiner;
- Wavy-rayed Lampmussel;
- American Chestnut; and
- Blanding's Turtle



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FISH HABITAT

The Speed River flows from north to south through the Study Area in a single thread channel. The banks are densely vegetated with grasses, forbs, shrubs as well as areas of mature riparian vegetation. Spawning nests were observed in select locations. Fish species such as Smallmouth bass, Rock bass, darter, cyprinid, and young-of-the-year were all observed in the Speed River throughout the study area. The Speed River was found to be suitable habitat for Wavy-rayed Lampmussel and Silver Shiner, both species are identified as Species as Risk.



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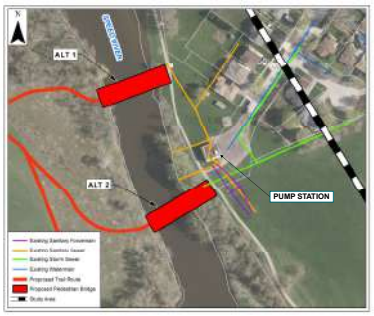
INFRASTRUCTURE

A sanitary pump station is located at the end of Dover St.

A variety of below-ground infrastructure is located in the area.



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ALTERNATIVE SOLUTIONS

BURNSIDE

An Environmental Assessment is a step-by-step process that evaluates a series of alternatives, each of which are able to meet the project objectives outlined in the Problem/Opportunity Statement. For this project, three alternative pedestrian bridge and connecting trails were identified. Each alternative has the potential to provide a major off-road connection to downtown Preston as well as a connection to the 401 pedestrian bridge linking Kitchener and the Doon area. As required by the Environmental Assessment process, an alternative to "do nothing" is also being considered. The "do nothing" option would not include any new bridge or trail.

The pros and cons of each alternative are being examined through the evaluation process.

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DO NOTHING (MAINTAIN THE STATUS QUO)

BURNSIDE

Doing nothing, or maintaining the status quo is a mandatory alternative in the Class EA process. This alternative would involve the continued operation of the current trail network without any additional connecting trail/bridge development in the Blair Preston area.

Advantages:
- No impact to natural environment or potential habitat.
- No costs to implement.

Disadvantages:
- Does not address the problem statement.

Under this scenario, no bridge or trail will be built. The study area and Speed River shown in the photos will remain unchanged.

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ALTERNATIVE #1: NORTHERN ROUTE

BURNSIDE

Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting to the B. McMullen Linear Trail to the north of Dover Street South.

Advantages:
- Creates the shortest connection between Fountain St. and the Linear Trail.
- Provides a route that is the least likely to encourage trail users to veer off-trail and trespass on rare lands.
- The bridge and trail are the farthest distance from the confluence of the Speed and Grand Rivers, a sensitive waterfowl wintering area.

Disadvantages:
- The bridge is the closest option to the Speed River PSW.
- The bridge is close to potential turtle nesting habitat.
- The bridge is close to a sanitary sewer line.
- The bridge will need to be longer than the bridge in Alternative 3 but shorter than the bridge in Alternative 2. This option therefore has a moderate cost relative to the other options.

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ALTERNATIVE #2: DOVER STREET SOUTH ROUTE

BURNSIDE

Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting the to the Linear Trail at Dover Street South near the Dover Street Pump House Building.

Advantages:
- The trail provides a direct link with Dover St. S.
- The bridge ends close to the school property. Students are expected to be among the trail users.
- The bridge is farther from the Speed River PSW than Alternative 1.

Disadvantages:
- The route results in more disturbance to Bobolink and Monarch habitat than Alternative 1.
- The route includes a 90 degree bend which is likely to lead trail users to "cut the corner" and trespass on rare lands.
- Trail is close to the sanitary pump station and related below-ground infrastructure.
- This route has the longest bridge and therefore the highest cost.

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ALTERNATIVE #3: SOUTHERN ROUTE

BURNSIDE

Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land with a pedestrian bridge across the Speed River connecting to the Linear Trail to the south of Dover Street South, west of the Preston High School field.

Advantages:
- This option crosses at the narrowest point and therefore a shorter bridge is required.
- This is the least costly option.
- The bridge is farther from the Speed River PSW than Alternatives 1 and 2.
- No nearby below-ground infrastructure is present.

Disadvantages:
- This bridge is closest to the sensitive waterfowl wintering area at the confluence of the Speed and Grand Rivers.
- Two 90 degree angles in the trail route are likely to encourage trail users to "cut the corners" and travel off-trail, potentially damaging natural features and agricultural lands.
- This is the longest trail route.

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EVALUATION PROCESS

BURNSIDE

To formally evaluate the advantages and disadvantages of each Alternative, a series of evaluation criteria were developed. Each Alternative and the "Do Nothing" option were compared.

NATURAL ENVIRONMENT
- Impacts to existing trees and vegetation
- Impacts to wetlands
- Impacts to migrating, breeding and wintering birds
- Impacts to surface water quality
- Impacts to Significant Wildlife Habitats
- Impacts to Species at Risk
- Impacts to aquatic habitat

SOCIAL ENVIRONMENT
- Route layout and external connectivity
- Potential for trespassing/off trail uses

CULTURAL ENVIRONMENT
- Impacts to archaeological resources
- Impacts to cultural heritage landscapes

LAND USE AND POLICY
- Compatibility with City and Region policies and plans
- Area of rare lands affected
- Compatibility with rare land management plan

TECHNICAL ENVIRONMENT
- Flood impacts to adjacent property
- Flood impacts to constructed trail and bridge
- Ease/complexity of construction

ECONOMIC ENVIRONMENT
- Comparative capital and operational costs
- Impacts to agricultural uses on rare lands

PROBLEM STATEMENT
- How well does it address the overall Problem/Opportunity Statement?

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EVALUATION OF ALTERNATIVE SOLUTIONS

ORDER OF PREFERENCE	
Most Preferred	○
More Preferred	◔
Somewhat Preferred	◑
Less Preferred	◕
Least Preferred	●

CRITERIA FOR EVALUATING ALTERNATIVES	Do Nothing	Alternative 1 – Northern Route	Alternative 2 – Dover Street South Route	Alternative 3 – Southern Route
NATURAL ENVIRONMENT				
Impacts to existing trees and vegetation	○	◔	◑	◕
Impacts to migrating, breeding and wintering birds	○	◔	◑	◕
Impacts to small wetland on rare turtle/amphibian habitat	○	◔	◔	◔
Impacts to the Provincially Significant Speed River Wetland Complex	○	◑	◔	◔
Impacts to Significant Wildlife Habitat	○	◕	◑	◔
Impacts to Species at Risk	○	◔	◑	◕
Impacts to aquatic habitat in the Speed River	○	◔	◑	◕
Impacts to surface water quality	○	◑	◑	◑
SUMMARY NATURAL ENVIRONMENT	○	◔	◔	◑
SOCIAL ENVIRONMENT				
Route layout and connectivity within the City's trail network	●	○	○	○
Potential for trespassing/off trail uses	○	◔	◑	●
SUMMARY SOCIAL ENVIRONMENT	◑	◔	◑	●
CULTURAL ENVIRONMENT				
Impacts to Built Heritage and Cultural Heritage Landscapes	○	◑	◑	◑
Impacts to archaeological resources	○	◕	◕	◕
SUMMARY CULTURAL ENVIRONMENT	○	◑	◑	◑

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EVALUATION OF ALTERNATIVE SOLUTIONS

ORDER OF PREFERENCE	
Most Preferred	○
More Preferred	◔
Somewhat Preferred	◑
Less Preferred	◕
Least Preferred	●

CRITERIA FOR EVALUATING ALTERNATIVES	Do Nothing	Alternative 1 – Northern Route	Alternative 2 – Dover Street South Route	Alternative 3 – Southern Route
LAND USE/POLICY				
Compatibility with City and Region policies and plans	●	○	○	○
Area of rare lands affected	○	◔	◑	◕
Compatibility with rare land management plan	○	◑	◕	●
SUMMARY LAND USE/POLICY	○	◔	◑	◑
TECHNICAL ENVIRONMENT				
Flood impacts to adjacent property	○	◔	◔	◔
Flood impacts to constructed trail and bridge	○	◑	◕	●
Ease/complexity of construction	○	◑	◕	◔
SUMMARY TECHNICAL ENVIRONMENT	○	◔	◑	◑
ECONOMIC ENVIRONMENT				
Comparative capital and operational costs	○	◕	●	◔
Impacts to agricultural uses and income on rare lands	○	◔	◑	◕
SUMMARY ECONOMIC ENVIRONMENT	○	◑	◕	◑
PROBLEM STATEMENT				
Addresses Problem Statement?	No	Yes	Yes	Yes
OVERALL SUMMARY	Not Preferred	Most Preferred	Somewhat Preferred	Least Preferred

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REDUCING IMPACTS

Based on the initial evaluation, Alternative 1 appears to be preferred.

This Alternative will include:

- Development of a trail along the northern boundary of the agricultural field on the rare Charitable Research Reserve land
- A pedestrian bridge across the Speed River connecting to the B. McMullen Linear (BML) Trail to the north of Dover Street South.

The final design will include measures to reduce impacts to the natural environment

These measures are being developed and may include:

- Tree planting and ecological restoration to compensate for trees lost;
- Avoiding any in-water work to reduce impacts to watercourses and fish habitat;
- Installation of fencing or living fences (i.e., shrub lines) and signage to minimize trespassing into natural areas.
- Completion of additional archaeological studies.
- Additional measures to reduce impacts are currently in development and will be identified in the Project File Report.

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EA PROJECT TIMELINE

Municipal Class EA, Blair-Preston Pedestrian Bridge and Trail

Notice of Commencement	Complete Studies Develop Bridge and Alternatives Consult with Stakeholders	Evaluate Alternative Solutions Prepare Public Consultation Materials	Public Consultation	Consult with Stakeholders Select Preferred Alternative	Document Project Findings in a Project File Report (PFR)	Notice of Completion
	Spring 2019-Summer 2020	Winter 2019/20	We are here	Fall /Winter 2020	Winter 2020	

Next Steps….

- Review comments generated from the online survey and other public, agency and Indigenous community comments;
- Select Preferred Alternative;
- Issue Notice of Study Completion and provide Project File Report for final public review and comment for a period of 30 days.

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Thank you for reading.
Help shape decisions made in this Study

Please feel free to contact one of the project team members below:

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Environmental Assessment Coordinator
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BURNSIDE
[THE DIFFERENCE IS OUR PEOPLE]

Minutes of Meeting

Meeting Date: October 28, 2021 **Project No.:** 300043765.0000

Project Name: Blair-Preston Trail Municipal Class EA

Meeting Subject: Review of Draft EA with Six Nations of the Grand River

Meeting Location: Video Conference

Date Prepared: November 1, 2021

Those in attendance were:

Shane Taylor	City of Cambridge	taylors@cambridge.ca
Jamie Croft	City of Cambridge	croftj@cambridge.ca
Kevin De LeeBeek	City of Cambridge	deleebeeckk@cambridge.ca
Marcos Kroker	Region of Waterloo	Kmarcos@region.waterloo.on.ca
Tanya Hill-Montour	Six Nations of the Grand River	tanyahill-montour@sixnations.ca
Lonny Bomberry	Six Nations of the Grand River	lonnybomberry@sixnations.ca
Anthony McLean	Six Nations of the Grand River	tlguest1@uwaterloo.ca
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Peter Graham	Six Nations of the Grand River	N/A
Bethany Kuntz-Wakefield	Six Nations of the Grand River	wildlife@sixnations.ca
Robin Vanstone	Six Nations of the Grand River	rvanstone@sixnations.ca
Tayler Hill	Six Nations of the Grand River	tayler.hill@sixnations.ca
Tricia Radburn	R.J. Burnside & Associates Limited	tradburn@rjburnside.com

The following items were discussed	**Action by**
1. Meeting Opening and Introductions The meeting began with introductions. Tricia briefly noted the history of the project, the previous meeting with Six Nations in December of 2020 and the current status of the EA, noting that the	

The following items were discussed		Action by
	EA is now in draft form and comments are being requested prior to issuing the Notice of Completion.	
2.	**Comments and Discussion**	
2.1	Six Nations' staff noted concerns with the environmental sensitivity of the area and identified concerns with littering, pollution and trespassing off the trail. It was noted that some of the existing trails on Rare lands have experienced problems. Shane noted that the City maintains a regular maintenance schedule for all City trails. Shane has also had discussions with the principal of Preston High School. There is a plan to enact a stewardship group at the high school to increase awareness of environmental issues. Part of the mandate of the group would be to clean up litter and promote stewardship of the trail.	
2.2	There was a question about garbage receptacles and whether garbage, recycling and compost bins could be provided. Shane noted that the City does provide regular maintenance on all City trails however, it can be problematic, operationally, to access bins along trails so they are typically only provided at trail heads. There is currently no plan to include bins along this trail.	
2.3	There was a discussion about whether other options or locations for the trail had been considered. Shane noted the importance of a trail in this location to improve trail connectivity across the City, provide access to the high school and trail crossing Hwy 401 and beyond. The project has significant benefits as it is projected to improve active transportation, provide more opportunities to reduce travel by motorized vehicle and improve public health with more outdoor recreational opportunities. There was a question about whether the existing bridge at King St. could be used as an alternative. It was noted that several previous studies have pointed to a pedestrian/cycling connection in the current study area, including the City's Trails Master Plan and Cycling Master Plan as well as the Region's Active Transportation Master Plan. Marcos noted that the Region's Class EA for Fountain St.-King St. improvements had considered the option for active transportation along the existing King St. bridge but the area is very narrow with	Marcos/Tricia to provide a copy of the

	The following items were discussed	Action by
	existing infrastructure, buildings and residences and it would be difficult to widen the bridge and road right-of-way through this area. The EA pointed to the Rare lands as a better alternative for an off-road connection. Six Nations' staff requested a copy of the EA. Several Six Nations' staff noted that they had not been provided with an opportunity to participate in the various Master Plans or EA.	EA to Six Nations.
2.4	Several Six Nations' staff felt that insufficient consideration had been given to the "Do Nothing" option and that the impacts of the project may outweigh the benefits. City staff noted that the project is intended to be designed and constructed with as little impact as possible. The EA outlines many measures that will be taken to minimize impacts. For example, no work will take place within the river and any work on the banks will use standard measures that have been proven through past use to minimize erosion and sedimentation into the river. Therefore, no impacts are expected. Robin noted that the use of mitigation measures does not mean there is no impact. During the previous meeting, there was discussion that Six Nations' guidance is to plant trees at a ratio of 10:1 for each tree removed. Even with this ratio, impacts are expected as the trees planted are not equivalent to the trees removed. Tricia shared the project evaluation table and noted that the symbols used to evaluate each option do acknowledge that there will be some impacts. The preferred option was selected because it will have fewer impacts than other options. Overall, "Do Nothing" was not selected because of the many benefits of having a trail through this area.	
2.5	Bethany noted that the Six Nations never surrendered their rights to the river and continue to use the river for drinking water, fish, medicine, harvesting and spiritual uses. The cultural, spiritual and economic use of the river to the Six Nations should be documented in the report. It was also noted that the Grand River is subject to ongoing litigation and this should be documented. Traditional knowledge has not been included in the report. Robin also pointed out the use of the word "refugees" to describe the Six Nations people after the American Revolution and their settlement in the Haldimand Tract. She suggested this word is	Tricia will reach out to Bethany to obtain cultural, economic and treaty-related information for incorporation into the

	The following items were discussed	Action by
	inaccurate because the Haudenosaunee did previously reside in southern Ontario, in and around, this area.	report. Wording related to Six Nations' migration will be reviewed and revised.
2.6	There was a discussion about detailed design and some of the elements that would be included or not included. There was a question about whether the trail would be accessible. Shane noted that AODA requirements and City requirements for accessibility would be met. There was also a question about the trail surface and whether it would be gravel or asphalt. It was noted that the City's design standard is for a gravel surface with some asphalt where specific circumstances require e.g. on steep slopes. The surface type will be confirmed during detailed design. There was a question about the impacts to surface water because the trail will create an impermeable surface that will not allow water to infiltrate. Tricia noted that grading and water flow will need to be addressed during detailed design. Consideration will be given to whether any measures are needed to direct flows. Lighting was also discussed. There is currently no plan to light the trail.	
2.7	Several Six Nations staff expressed concern that the EA could assess impacts for a particular project i.e. a trail without lighting, but political will could change or the EA process could change and the trail could ultimately be designed differently or be altered in the future without consultation. Tricia noted that significant changes to the project would require an Addendum to the EA which would include additional consultation. What is considered to be a "significant" change is not explicitly outlined in the Municipal Class EA document as it would not be practical to list all potential possible changes to a project.	
2.8	There was a question regarding the frequency of flooding in the area. Tricia noted that the area is located within a floodplain. Modeling has been completed to help guide the design of the bridge to ensure that it will not cause increased flooding upstream. Further review of this will occur during detailed design.	
2.9	Bethany noted several concerns with the report, including:	

The following items were discussed	Action by
• The need to include Indigenous cultural heritage in the report; • The fact that recreational value is noted as a cultural benefit of the project but the benefits of recreation should be better balanced against impacts to Indigenous cultural heritage value; • Six Nations obtains their drinking water supply from the Grand River. There is concern that the project could affect drinking water; • The report should recognize Six Nations' traditional harvesting rights in this area; • There was concern about the number of field studies undertaken and the protocols used. Bethany noted that she was unable to find the bat habitat monitoring protocol online. It was noted that all provincial standards were followed. Anthony mentioned that there is nothing in the EA process that prohibits the study from going beyond minimum standards. • Whether Six Nations' monitors had been invited to participate in environmental fieldwork. Responses to each concern were not provided as the meeting was approaching two hours in length and many participants needed to leave but it was suggested that all concerns should be provided in writing to ensure that they will be properly documented.	Tricia to forward the bat monitoring protocol to Bethany.
3. Next Steps Robin and Bethany to provide written comments on the draft report. Tricia to reach out to Bethany to arrange a call to discuss cultural heritage values and traditional knowledge. Tricia to provide: • The Fountain/King St Improvements EA; • The bat habitat monitoring protocol referenced in the EA; Responses to written comments will be provided and a follow-up meeting can be held, if required.	

The preceding are the minutes of the meeting as observed by the undersigned. Should there be a need for revision, please advise Burnside within seven days of issuance. In the absence of notification to the contrary, these minutes will be deemed to be an accurate record of the meeting.

Minutes prepared by:

R.J. Burnside & Associates Limited

Tricia Radburn
Environmental Planner
TR:

Enclosure(s)

Distribution:

All Attendees

Six Nations Wildlife and Stewardship Office
1721 Chiefswood Road, Ohsweken ON N0A 1M0
Tel: 519-445-0330
Fax: 519-753-3449

14 December 2021

To: Tricia Radburn
Senior Environmental Planner
R.J. Burnside & Associates Limited

Via: Email

RE: Blair Preston Pedestrian Bridge and Trail Schedule B EA

Dear Tricia Radburn,

Thank you for sharing the "Blair-Preston Trail and Pedestrian Bridge Municipal Class Environmental Assessment Schedule B Project File Report (PFR)" document. Our comments and questions are listed below. Please answer at your earliest convenience.

Section: 5.3.1 Methodology for Characterizing the Natural Environment

Table 5-1: Field Investigations Summary table – Bat Maternity Habitat Survey

The Proponent has not completed adequate baseline studies to determine the abundance or presence/absence of bat Species at Risk within the study area. Best Practice Management protocols dictate that a minimum of 10 site visits take place 90 minutes before sunset to 15 minutes before sunrise in the month of June (Ontario Ministry of Natural Resources, 2017; Haliburton Highlands Land Trust, 2018). Acoustic Monitoring is the Best Practice methodology to differentiate Ontario bat species, including those considered Species at Risk (Ontario Ministry of Natural Resources, 2017; Haliburton Highlands Land Trust, 2018). At least 10 visits on nights with appropriate weather conditions with no SAR bat activity are required to confirm their absence (Ontario Ministry of Natural Resources, 2017). How can the proponent assert that little to no accommodations are necessary for bat species, if SAR bat presence and population data are unknown within the study area?

Should the proponent find Species at Risk bats within the study area, we expect that avoidance tactics be used to prevent harms. We encourage a conservative approach to maintaining bat habitat to account for both roosting and foraging. Should bat habitat impacts occur, we expect the proponent to provide mitigation to assist in recovery of SAR bats.

Table 5-1: Field Investigations Summary table – Aquatic

What aquatic surveys took place within the study area? What protocol was used to assess aquatic baseline characteristics? Please forward a synopsis of these surveys to Six Nations Wildlife and Stewardship for comment.

Table 5-1: Field Investigations Summary table – Spring/Fall Migratory Waterfowl and Shorebird Survey

The proponent has not completed adequate baseline studies to determine the abundance or presence/absence of waterfowl and shorebird species in the study area. Most Migratory Waterfowl and Shorebird assessment protocols dictate that multiple site-specific and targeted surveys must be completed for proper assessment. Protocol involves prioritizing and selecting specific sites most likely to contain Waterfowl and Shorebirds (Credit Valley Conservation, 2021). Surveys should take place once every 10 days throughout the migration period, which extends from mid-March to early May, and early September to early December (Credit Valley Conservation, 2021). Study Results should be compared to results acquired from previous years to confirm data.

Table 5-1: Field Investigations Summary table – Winter Raptor and Waterfowl Habitat Use Survey

The proponent has not completed adequate baseline studies to properly determine the abundance or presence/absence of Winter Raptors in the study area. Best Management Practices dictate that at least two surveyors must take part in each site visit, with site visits taking place only in December, January or February (Hawk Migration Association of North America Winter Raptor Survey Protocol, 2021). If only one survey is completed, this survey should be done in January (Hawk Migration Association of North America, 2021). Study results should be compared to results of previous years to confirm data.

Section 5.3.2 Terrestrial Environment - Vegetation

"No rare vegetation communities were identified."

No dedicated surveys for rare vegetation communities took place according to "Table 5-2: Field Investigation Summary table." What was the survey effort to determine the presence/absence of rare plant species in the study area? What was the total area covered? Lack of incidental sightings of rare plants is not an acceptable methodology to prove that no rare vegetation communities are present. Please complete dedicated robust baseline surveys for rare plant communities within the study area. We expect that surveyors complete multiple site visits within multiple seasons to ensure rare plant communities are unharmed during development and throughout the lifecycle of the structure. Six Nations asks that plant species traditionally important to Indigenous communities for medicines and sustenance be included in these survey efforts.

Section 5.3.2 Terrestrial Environment – Provincially Significant Wetlands

Please clarify the rationale for not evaluating the small Cattail marsh to the north of the farm field. How can the proponent assert that limited to no harms to the environment will occur without baseline assessment of all environmental characteristics?

Section 5.3.2 – Terrestrial Environment – Landscape Features

"Several unique features outside of the Study Area including Bald Eagle wintering habitat and a limestone cliff along the Grand River south of the proposed trail site."

Despite being located outside of the Study Area, Bald Eagles may still feel effects of the bridge construction and operation. Construction noise or disturbance by the public can result in increased energy expenditure for avoidance tactics and altered food acquisition. We encourage the proponent to take these effects into consideration by allowing for spatial and temporal buffers. We prefer that a spatial buffer length of at least 800 meters is implemented per Armstrong (2014.) Temporal buffers should be tailored to the individual species' habitat uses and considered while choosing construction schedules and while making management decisions for the trail and pedestrian bridge.

Section 8.0 – Potential Impacts and Mitigation Associated with the Preferred Solution

"Conservative tree protection measures will be put in place and routing of path will allow limitation of removal of trees to the "extent possible.""

Will the proponent implement a target for maximum number of trees removed? What happens if more trees have been removed than intended? Six Nations requires that trees be replaced at a 10:1 ratio using native species and considering biodiversity. This ratio accounts for (1) reduced survivability of young trees, (2) the significantly lower habitat value that young trees provide in comparison to a more mature woodland, and (3) our requirement that every impact results in a net benefit.

Section 8.0 – Potential Impacts and Mitigation Associated with the Preferred Solution – Table 8.2: Potential Impacts and Mitigation – Nests of Migratory Birds

"If a nesting migratory bird (or SAR protected under ESA. 2007) is identified or adjacent to the construction site, all activities will stop."

What is the threshold of distance to the construction site which would initiate stopping procedures? Is the person in charge of implementing stopping procedures experienced with avian species? Is this person an impartial third party uninfluenced by

proponent deadlines and construction pressures? If this species was not previously identified during initial surveys, will you adapt your plan accordingly, as the preferred option in this case would have been chosen based on incomplete information?

Section 8.0 – Potential Impacts and Mitigation Associated with the Preferred Solution – Table 8.2: Potential Impacts and Mitigation – Bobolink Habitat

"Loss should be minimized to the extent possible."

Will the proponent implement a maximum acceptable limit for habitat loss? What happens when and if this limit is exceeded? Will bobolink habitat loss offset take place if too much habitat is removed? Six Nations requires a habitat offset ratio of 10:1 to aid in the recovery of Bobolink populations within their lands.

Section 8.0 – Potential Impacts and Mitigation Associated with the Preferred Solution – Table 8.2: Potential Impacts and Mitigation – Wooded Area/Candidate Bat Habitat

"The trail and bridge should be located to avoid removal of potential bat maternity roosting trees to the extent possible."

Avoidance of potential bat maternity roosting habitat should be considered in the "Determining Alternatives" stage of a project. What are the criteria for determining if and how much potential bat roosting habitat is removed? What are the mitigation plans should SAR Maternity bat habitat be removed? We expect that if maternity bat roosting habitat is removed, that appropriately built bat boxes be constructed and maintained indefinitely within existing bat habitat, assuming an appropriate bat species is present. These bat boxes should be erected and usage ensured, before the destruction of initial roosting habitat. Bat boxes should be located away from artificial lighting features, built within an existing bat flight path free of obstacles, within a short distance to foraging grounds and in a sunny, wind-sheltered area (Haliburton Highlands Land Trust, 2018). Follow-up studies monitoring continued usage of bat boxes should also be created and implemented to assist in recovery strategies. Secondary plans should this mitigation measure fail, should be put into place.

Section 8.0 – Potential Impacts and Mitigation Associated with the Preferred Solution – Table 8.2: Potential Impacts and Mitigation – Natural Areas

Please forward a completed robust re-vegetation plan when it becomes available. We prefer that this plan employ diverse site-appropriate native species as re-vegetation material and that equipment be properly and frequently cleaned prior to arriving on site to prevent introduction of invasive species into the area. Continued management of invasive species to prevent invasion should occur in the Study Area after construction has been completed.

Niá:wen/nya:wẹh and kind regards,

B. Wakefield

Bethany Kuntz-Wakefield
Wildlife and Stewardship Manager

Lauren Jones
Wildlife and Stewardship Management Assistant

Six Nations Wildlife and Stewardship - part of the Lands and Resources Department of Six Nations of the Grand River Elected Council

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Six Nations Comments on EA

Item		Topic/Section	Six Nation's Comment	Study Team Response
Six Nations Wildlife and Stewardship Office				
Bethany Kuntz-Wakefield, Wildlife and Stewardship Manager and Lauren Jones, Wildlife and Stewardship Management Assistant				
Methodology for Characterizing the Natural Environment (Section 5.3.1) Comments				
1	1	Table 5-1: Field Investigations Summary table - Bat Maternity Habitat Survey	The Proponent has not completed adequate baseline studies to determine the abundance or presence/absence of bat Species at Risk within the study area. Best Practice Management protocols dictate that a minimum of 10 site visits take place 90 minutes before sunset to 15 minutes before sunrise in the month of June (Ontario Ministry of Natural Resources, 2017; Haliburton Highlands Land Trust, 2018). Acoustic Monitoring is the Best Practice methodology to differentiate Ontario bat species, including those considered Species at Risk (Ontario Ministry of Natural Resources, 2017; Haliburton Highlands Land Trust, 2018). At least 10 visits on nights with appropriate weather conditions with no SAR bat activity are required to confirm their absence (Ontario Ministry of Natural Resources, 2017). How can the proponent assert that little to no accommodations are necessary for bat species, if SAR bat presence and population data are unknown within the study area? Should the proponent find Species at Risk bats within the study area, we expect that avoidance tactics be used to prevent harms. We encourage a conservative approach to maintaining bat habitat to account for both roosting and foraging. Should bat habitat impacts occur, we expect the proponent to provide mitigation to assist in recovery of SAR bats.	To determine the presence/absence of bat habitat, Burnside used the protocol listed in the document "Survey Protocol for Species at Risk Bats within Treed Habitat, MNRF, April 2017)". Staff completed Phases I and II of the protocol which is used to determined whether suitable habitat may be present for bat maternal roosting. Using the information collected, Burnside identified seven trees in the vicinity of the project which may provide roosting habitat. Burnside did not complete Phase III of the protocol which involves acoustic monitoring to determine if SAR bats are using the roosting trees. This is because new provincial guidance has been provided since the time of the 2017 guidance document. The province's more updated guidance (Attachment 1), and our approach, is to assume that SAR bats are present and roosting in the trees that are scheduled to be removed. The approach is to then maintain or create new suitable habitat to support SAR bats. We have proposed several ways to mitigate potential impacts. Trees will be removed outside of the bat roosting season which runs from April 1 to Sept 30 of any given year. The City will replace trees that are 10cm dbh and greater at a 10:1 ratio. Smaller trees (seedlings and whips) will be replaced at a 1:1 ratio as they will be replaced with something of similar size. The exact number of trees to be removed will be confirmed once further design details are developed. We expect that this project will affect only a small number of trees. Of the seven potential bat roosting trees most, if not all, of them will be maintained. Background studies (Recovery Strategy, MECP, 2019) have shown that bats have a relatively high fidelity (they will repeatedly return) to specific woodlands but not necessarily to specific trees. They may change roosting trees multiple times within a season. Therefore the loss of individual trees is not a significant concern as long as additional trees remain. As part of this project, the City will commit to installing one bat box for every 10 bat roosting trees that are removed (i.e. for the removal 1-10 trees, 1 bat box will be installed; if a larger area than expected is needed to be cleated, an additional bat box will be installed for the removal of between 11 and 20 trees). The City has also committed to having Six Nations representees attend a trail route field staking exercise during the detailed design phase to map out the exact route in the field.
2	2	Table 5-1: Field Investigations Summary table - Aquatic	What aquatic surveys took place within the study area? What protocol was used to assess aquatic baseline characteristics? Please forward a synopsis of these surveys to Six Nations Wildlife and Stewardship for comment.	The aquatic habitat assessment was completed using the MTO/DFO/MNRF Protocol (MTO 2018) recommended for watercourse crossings at 3 cross sections and also included a visual survey of specific aquatic features (spring spawning surveys) from the banks of the Speed River. The survey documented the type of substrate present on the river bottom as well as aquatic macrophytes and riparian areas along the banks and near shore areas. Smallmouth bass and Chub (sp.) spawning areas were observed. There are also many existing MNRF records of fish species and fish habitat for the Speed and Grand River as both have been widely studied. Existing records were compiled, including the fact that this section of river is considered occupied habitat for Wavy-rayed Lampmussel (Special Concern) and Silver Shiner (Threatened) based on DFO SAR Mapping (2022). Documentation of the surveys conducted and findings is provided in the Natural Heritage Report which forms Appendix A of the EA. Please refer to Section 4.1.4. No work will occur within the river (i.e. no equipment will enter the water and no structures will be built in the water), therefore aquatic habitat will not be altered in anyway. Any work occurring near the banks will not affect the watercourse because sediment and erosion control fencing/mitigation will be installed and wet weather/seasonal restrictions will be in place, among other measures.
3	3	Table 5-1: Field Investigations Summary table - Spring/Fall Migratory Waterfowl and Shorebird Survey	The proponent has not completed adequate baseline studies to determine the abundance or presence/absence of waterfowl and shorebird species in the study area. Most Migratory Waterfowl and Shorebird assessment protocols dictate that multiple site-specific and targeted surveys must be completed for proper assessment. Protocol involves prioritizing and selecting specific sites most likely to contain Waterfowl and Shorebirds (Credit Valley Conservation, 2021). Surveys should take place once every 10 days throughout the migration period, which extends from mid-March to early May, and early September to early December (Credit Valley Conservation, 2021). Study Results should be compared to results acquired from previous years to confirm data.	The protocol referenced in the comment was issued in 2021. Unfortunately, our surveys were completed in 2019 and 2020 and therefore could not use this protocol. Waterfowl surveys were conducted in the spring, fall and winter (one day each for a total of just under 11 hours of surveys). Surveys were conducted using area searches along the proposed trail route, in the woodlands and wetlands to the north and along the river banks and river confluence. This was supplemented with data records from ebird (www.ebird.org) which holds over 2000 records for the area around the confluence of the Grand and Speed River. Data from Rare was also reviewed. Rare volunteers have been surveying the area for many years and have kept records of bird observations. Records were reviewed from surveys that had taken place from 2013 to 2017. These records identified 126 bird species, of which 10 were waterfowl. Based on this information and information available from provincial mapping, it was concluded that an important Winter Waterfowl Concentration Area is present at the confluence of the Speed and Grand Rivers. The entire area around the confluence and up- and downstream reaches of the Speed and Grand Rivers has been well studied and has been previously identified by both the Region of Waterloo and province as a waterfowl concentration area. Attachment 2 shows an approximation of the highest use areas for waterfowl. The northern bridge location was selected because it is the location that is the greatest distance from the waterfowl concentration area.
4	4	Table 5-1: Field Investigations Summary table – Winter Raptor and Waterfowl Habitat Use Survey	The proponent has not completed adequate baseline studies to properly determine the abundance or presence/absence of Winter Raptors in the study area. Best Management Practices dictate that at least two surveyors must take part in each site visit, with site visits taking place only in December, January or February (Hawk Migration Association of North America Winter Raptor Survey Protocol, 2021). If only one survey is completed, this survey should be done in January (Hawk Migration Association of North America, 2021). Study results should be compared to results of previous years to confirm data.	In order to confirm the presence of raptor wintering areas, multiple years of data are required. A Burnside avian ecologist conducted area searches for four hours on November 24, 2020. This was primarily to search for Bald Eagles which are known to overwinter along the Grand River from mid-November to late February. We acknowledge that this is insufficient to confirm habitat presence or absence of this type of habitat. However, as noted in the previous comment, there are extensive records of bird presence along the Grand River in this area. Rare volunteers formally tracked wintering Bald Eagles on Rare lands for many years. Several years ago, Rare also participated in a study with MNRF staff to track Bald Eagles and identify Significant Wildlife Habitat associated with Eagles. That significant habitat has been mapped within the Region's Environmentally Significant Policy Area (ESPA). As a result of these studies, Bald Eagles are known to winter in the woodlands along the river between Hwy 401 and Fountain St. to the north of the Study Area as well as the cliffs on Rare lands south of the project site (See Attachment 2). The extensive records from ebird were also reviewed. These years of data collection and thousands of records formed the basis for the assessment used in this EA. Data regarding other raptors was reviewed but they were not present in significant numbers in this location

Blair Preston Trail, Environmental Assessment
Six Nations Comments on EA

Item		Topic/Section	Six Nation's Comment	Study Team Response
5	5	Section 5.3.2 Terrestrial Environment - Vegetation	“No rare vegetation communities were identified.” No dedicated surveys for rare vegetation communities took place according to “Table 5-2: Field Investigation Summary table.” What was the survey effort to determine the presence/absence of rare plant species in the study area? What was the total area covered? Lack of incidental sightings of rare plants is not an acceptable methodology to prove that no rare vegetation communities are present. Please complete dedicated robust baseline surveys for rare plant communities within the study area. We expect that surveyors complete multiple site visits within multiple seasons to ensure rare plant communities are unharmed during development and throughout the lifecycle of the structure. Six Nations asks that plant species traditionally important to Indigenous communities for medicines and sustenance be included in these survey efforts.	"Rare Vegetation Communities" refers to a grouping of plants (i.e. Silver Maple Forest or Cattail Marsh) which are characterized using the Ecological Land Classification process. There were no rare vegetation communities found within, and immediately adjacent to, the proposed location of the trail and bridge. With respect to individual plants, most of the trail route is located within an agricultural field that does not contain any rare plants. Searches were conducted for rare species using wandering transects in the areas of the bridge abutments that are outside of the agricultural field. These surveys took place in the spring of 2019. Additional observations were made throughout the spring and fall seasons in conjunction with other wildlife surveys. No provincially rare plant species were observed. A list of plant species identified along the trail route is provided in Attachment 3. The list is relatively short due to the agricultural nature of much of the route. We have tentatively identified plants which may have some traditional use or cultural significance to Indigenous communities. We acknowledge that there may be inaccuracies and we respectfully ask that you correct any errors.
6	6	Section 5.3.2 Terrestrial Environment – Provincially Significant Wetlands	Please clarify the rationale for not evaluating the small Cattail marsh to the north of the farm field. How can the proponent assert that limited to no harms to the environment will occur without baseline assessment of all environmental characteristics?	The Ontario Wetland Evaluation System is an evaluation system used to determine if wetlands meet the criteria for provincial significance. Under the system, wetlands smaller than 0.5 ha are typically not evaluated. The small wetland pocket on site is approximately 0.2 ha. Nonetheless, portions of the evaluation system process were used to confirm the boundaries of the wetland. The boundaries of the cattail marsh were staked with City, GRCA and rare staff in addition to the boundaries of the Provincially Significant Wetland to the north. Both wetlands were assessed in a similar manner regardless of their provincial status. Both wetlands are regulated by the GRCA. Burnside ecologists did complete a survey of the wetland. They documented vegetation and habitats supported by the wetland. The wetland is dominated almost entirely by Narrow Leaf Cattail with a few scattered Blue Flag (*Iris versicolor*) and sedges (*Carex* sp.) found in the margins not subject to inundation. It has mineral soils (as opposed to organic soils) and was likely created as a result of the berm that once supported a railway line through the area. The wetland provides habitat for amphibians. There is a small channel that provides an outlet from the cattail marsh through to the wetland to the north where it connects with a stormwater outlet and then flows to the Speed River. The channel does not appear to hold water throughout the entire year; however, fish may be able to migrate to the wetland from time to time. There will be no direct removal of any portion of the wetland or its surrounding woodland. There will also be no change to the water flowing to or from the wetland. As such, the habitats provided by the wetland will not be changed. Impacts may be experienced as a result of trail users trespassing beyond the trail and into the wetland. Because the area is wet we do not anticipate that a significant number of trail users will venture off the trail and into the wetland. Nonetheless, measures are being developed to limit any trespassing that may occur, including plantings of thick shrubbery and solid fencing along Fountain St. As a result, we do not believe that the wetland will be affected.
7	7	Section 5.3.2 – Terrestrial Environment – Landscape Features	“Several unique features outside of the Study Area including Bald Eagle wintering habitat and a limestone cliff along the Grand River south of the proposed trail site.” Despite being located outside of the Study Area, Bald Eagles may still feel effects of the bridge construction and operation. Construction noise or disturbance by the public can result in increased energy expenditure for avoidance tactics and altered food acquisition. We encourage the proponent to take these effects into consideration by allowing for spatial and temporal buffers. We prefer that a spatial buffer length of at least 800 meters is implemented per Armstrong (2014.) Temporal buffers should be tailored to the individual species’ habitat uses and considered while choosing construction schedules and while making management decisions for the trail and pedestrian bridge.	A Bald Eagle wintering area is located along the Grand River between Hwy 401 and Fountain St.(see Attachment 2). The closest portion of the trail is approximately 730m from this wintering area. There is significant existing development between the wintering area and the proposed trail, including Fountain St. which is a relatively high-traffic road, a multi-use trail with existing pedestrian and cycling use and other adjacent development. All of these elements provide existing noise levels that are typical of urban environments. Hwy 401 is also present along the northern extent of the wintering area which provides another significant noise source to the wintering area. Any construction noise from the trail project will be dampened by this existing noise. The human presence along the trail will have no impact on the wintering area as there is significant human presence much closer to the area. There is another key wintering area along the cliffs along the Grand River approximately 1.7km south of the site. It is important to note that there are different types of wintering habitat. Feeding perches are used by Eagles to locate prey. As noted in the Significant Wildlife Habitat Mitigation Support Tool (MNRF, 2014), "Feeding perches are important, but less critical to eagles. If an eagle is disturbed from a perch, it may simply fly to another.... a buffer of 300 m is recommended from Bald Eagle winter perches. This is the distance that was recommended by Timmerman and Halyk (2001) for eagles wintering in the City of Cambridge. This distance was based on a detailed review of the literature. These eagles appeared to be habituated to human disturbance and approached buildings, roads, and pedestrians at much closer distances than 300 m. However, 300 m is recommended as this distance should be sufficient to protect perching eagles even in areas where they are not accustomed to human activity (Stalmaster and Kaiser 1998)." Nocturnal roosts are more important than perches. The Mitigation Support Tool recommends that pedestrians should not be allowed within 400m of a nocturnal roost. It is also important to note that roosts are only used at night. As noted in the Mitigation Support Tool, "This eliminates some of the human disturbance factors as there are likely to be fewer pedestrians, etc. when the roost is occupied." Bald Eagles will fly through the study area and forage all along the Grand River and Speed River through this area. However, the most critical habitats are well away from the trail and will not be affected. In this case, trail construction and use is proposed within 730m and 1.7 km of the two key Bald Eagle wintering areas, respectively. With regard to construction schedules, it is preferable to remove trees during the fall and winter outside the nesting and roosting seasons for birds and bats, respectively. Other elements of

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Item		Topic/Section	Six Nation's Comment	Study Team Response
Bethany Kuntz-Wakefield, Wildlife and Stewardship Manager and Lauren Jones, Wildlife and Stewardship Management Assistan				
Section 8.0 - Potential Impacts and Mitigation Associated with the Preferred Solution				
8	8	Section 8.0 - Potential Impacts and Mitigation Associated with the Preferred Solution	"Conservative tree protection measures will be put in place and routing of path will allow limitation of removal of trees to the "extent possible." Will the proponent implement a target for maximum number of trees removed? What happens if more trees have been removed than intended? Six Nations requires that trees be replaced at a 10:1 ratio using native species and considering biodiversity. This ratio accounts for (1) reduced survivability of young trees, (2) the significantly lower habitat value that young trees provide in comparison to a more mature woodland, and (3) our requirement that every impact results in a net benefit.	The City will replace trees that are 10cm dbh and greater at a 10:1 ratio. Smaller trees (seedlings and whips) will be replaced at a 1:1 ratio as they will be replaced with something of similar size. The trail route is within the agricultural field and will not require any tree removals. Typically, an area of about 10x10m is required to be cleared around the bridge abutments for construction. Based on this, a target to remove fewer than 10 mature trees can be set. A commitment will be included in the EA to include Six Nations' staff in staking the trail route in the field during the detailed design phase to limit tree remove.
9	9	Section 8.0 – Potential Impacts and Mitigation Associated with the Preferred Solution – Table 8.2: Potential Impacts and Mitigation – Nests of Migratory Birds	"If a nesting migratory bird (or SAR protected under ESA. 2007) is identified or adjacent to the construction site, all activities will stop." What is the threshold of distance to the construction site which would initiate stopping procedures? Is the person in charge of implementing stopping procedures experienced with avian species? Is this person an impartial third party uninfluenced by proponent deadlines and construction pressures? If this species was not previously identified during initial surveys, will you adapt your plan accordingly, as the preferred option in this case would have been chosen based on incomplete information?	This measure is intended to be a contingency only. It is intended that all tree removal will take place outside of the breeding bird and bat roosting window (April 1-September 30). However, if something comes up which delays the clearing and it must occur within that window, there is a contingency that allows for it as long as no nests are present and this is confirmed by a qualified avian ecologist, as noted in Table 8.2. There is no specific professional designation for avian ecologists but it must be someone with expertise who has professional and/or Indigenous knowledge of bird species, their identification and the identification of active nests. This is typically done by a consulting ecologist. The ecologist would be part of the construction inspection/monitoring team that are generally third party. The exact distance would be determined by the ecologist and it is typically species specific, spending on the sensitivity of the species. Some guidance is available from CWS at this link: https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/reduce-risk-migratory-birds.html A commitment will be added to the EA to note that Six Nations' staff will be notified if any tree removal is proposed within the breeding bird season. Six Nations' staff will be invited to view the site with the consulting ecologist to determine if any active nests are present and whether tree clearing can occur.
10	10	Section 8.0 – Potential Impacts and Mitigation Associated with the Preferred Solution – Table 8.2: Potential Impacts and Mitigation – Bobolink Habitat	"Loss should be minimized to the extent possible." Will the proponent implement a maximum acceptable limit for habitat loss? What happens when and if this limit is exceeded? Will bobolink habitat loss offset take place if too much habitat is removed? Six Nations requires a habitat offset ratio of 10:1 to aid in the recovery of Bobolink populations within their lands.	The amount of Bobolink habitat to be removed will be limited to the footprint of the trail through the agricultural field. Impacts have been minimized by locating the trail along the edge of the field to avoid bisecting the habitat. Bobolink habitat will be replaced in accordance with the Endangered Species Act which requires project proponents to replace more habitat than the area being removed. We expect that approximately 1,856 m^2 (0.186 ha) of Bobolink habitat will need to be removed. The total area of habitat present is approximately 21.5 ha. We will be working with Rare to determine if there is a suitable location on the property where new habitat can be created. If no suitable location can be identified, an alternative location within the Grand River watershed will be sought, including possible locations within Six Nations of the Grand River lands.
11	11	Section 8.0 – Potential Impacts and Mitigation Associated with the Preferred Solution – Table 8.2: Potential Impacts and Mitigation – Wooded Area/Candidate Bat Habitat	"The trail and bridge should be located to avoid removal of potential bat maternity roosting trees to the extent possible." Avoidance of potential bat maternity roosting habitat should be considered in the "Determining Alternatives" stage of a project. What are the criteria for determining if and how much potential bat roosting habitat is removed? What are the mitigation plans should SAR Maternity bat habitat be removed? We expect that if maternity bat roosting habitat is removed, that appropriately built bat boxes be constructed and maintained indefinitely within existing bat habitat, assuming an appropriate bat species is present. These bat boxes should be erected and usage ensured, before the destruction of initial roosting habitat. Bat boxes should be located away from artificial lighting features, built within an existing bat flight path free of obstacles, within a short distance to foraging grounds and in a sunny, wind-sheltered area (Haliburton Highlands Land Trust, 2018). Follow-up studies monitoring continued usage of bat boxes should also be created and implemented to assist in recovery strategies. Secondary plans should this mitigation measure fail, should be put into place.	The route was selected to cross an area along the river bank with a very narrow band of trees so as to minimize the number of tree removals required. The route was originally located to the north but was moved slightly southward to minimize tree removal. Refer to comment #1 above for additional information about bat habitat and mitigation measures. Plans for bat boxes will be included on re-vegetation plans to be submitted during detailed design. Six Nations will be given an opportunity to comment on he location of bat box placement.
12	12	Section 8.0 – Potential Impacts and Mitigation Associated with the Preferred Solution – Table 8.2: Potential Impacts and Mitigation – Natural Areas	Please forward a completed robust re-vegetation plan when it becomes available. We prefer that this plan employ diverse site-appropriate native species as re-vegetation material and that equipment be properly and frequently cleaned prior to arriving on site to prevent introduction of invasive species into the area. Continued management of invasive species to prevent invasion should occur in the Study Area after construction has been completed.	A re-vegetation plan will be developed during the detailed design stage of the project following completion of the EA. A commitment to using native species will be included in the EA document. The re-vegetation plan will include measures to enhance and restore any areas disturbed by construction and will create a net benefit by including additional plantings along both sides of the Speed River and to improve natural heritage functions and limit trail users from accessing the watercourse. A draft re-vegetation plan will be provided to Six Nations and rare staff for comment when it is available.

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Attachment 1

Bat Habitat Guidance

Bat Survey Standards Note 2021

The purpose of this note is to support compliance with Ontario's *Endangered Species Act, 2007* (ESA) by providing consistent and practical survey guidance for species at risk bats.

Where a project or activity is planned in a manner that pro-actively avoids adverse effects to bats (does not contravene s. 9 or s. 10 of the ESA), there is no need to conduct species at risk bat surveys. For more information on the interpretation of ESA s. 9 and s. 10 prohibitions, see Policy Guidance on Harm and Harass under the Endangered Species Act | Ontario.ca and Categorizing and Protecting Habitat under the Endangered Species Act | Ontario.ca, respectively. Ultimately, it is the proponent's responsibility to assess potential impacts of their planned activity on species at risk bats and take the appropriate steps to achieve compliance with the ESA.

Hibernacula

- Avoidance considerations: Tree clearing activities located more than 200 m from hibernacula entrances are considered unlikely to damage or destroy hibernacula. Activities producing loud noises and/or vibrations (e.g., blasting, drilling, movement of heavy equipment, etc.) that occur more than 500 m from a bat hibernaculum are unlikely to harm or harass hibernating bats.
- Protocol here (in Appendix A): https://www.ontario.ca/page/bats-and-bat-habitats-guidelines-wind-power-projects#section-4.
- Important additions and exceptions to the above protocol:
    - Bat surveys and analysis should be conducted by a person experienced with determining presence/absence of *species at risk* bats.
    - The statements *"Visual and acoustic monitoring surveys only need to be conducted until evidence of bat presence is found. Should evidence be found on the initial surveys, then further monitoring is not required"* require qualification: Identification of species at risk bats through acoustic monitoring will be necessary under a permitting scenario. The total number of passes/calls recorded for each at risk bat species over the 10 acoustic monitoring nights should be used by the proponent to assess the impact of any work or activity on the hibernacula.

Treed Habitats (Maternity and Day Roosts)

- Avoidance considerations: If a proposed activity will avoid impairing or eliminating the function of habitat for supporting bat life processes (e.g. remove, stub, etc. a small number of potential maternity or day roost trees in treed habitats) but the timing of tree removal will avoid the bat active season (April 1 – September 30 in Southern Ontario / May 1 to August 31 in Northern Ontario), then there is no need to conduct species at risk bat surveys of treed habitats. The damage and destruction assessment may vary geographically as the availability of other nearby maternity and day roost trees differs across the province of Ontario. For further guidance please contact SAROntario@ontario.ca.
- Protocol attached: "Treed Habitats – Maternity Roost Surveys"
- Important additions and exceptions to this protocol:

- In Step 1, the Ecological Land Classification (ELC) codes listed are meant to provide guidance, however any area with suitable roost trees should be considered potential maternity or day roost habitat. In areas where ELC is unavailable, the project area will need to be mapped by a qualified professional experienced in ecosite classification.
- There are numerous peer-reviewed publications demonstrating that trees measuring less than 25 cm DBH (diameter at breast height) support maternity and day roosts of little brown myotis, northern myotis and tri-colored bat. Detailed descriptions of tree species, size and age composition and physical attributes are very helpful for evaluating the value of specific treed habitats to species at risk bats.
- Step 2: Snag Density Calculations – Field visits to determine the best locations for deploying Acoustic Monitoring Systems are encouraged. However, snag density may also be calculated by following methods in Step 5: Detailed Mapping of Snag/Cavity Trees and does not necessarily need to precede acoustic monitoring (Steps 3 and 4).
- Note that Step 5: Detailed Mapping of Snag Cavity Trees is important to quantify the magnitude of impacts to bat species at risk under an ESA permitting scenario. This information may also be used to inform activity alternatives that reduce and/or completely avoid impacts to bat species at risk.
- For large projects impacting greater than 10 ha of treed habitat, we recognize following this protocol is likely not feasible. In these situations, we fully expect clients to apply some method of sampling/sub-sampling landscapes, where ELC plots, snag density calculations, and acoustic monitoring occur in randomly selected or representative locations. Information obtained from the sample may then be extrapolated to the entire project footprint to inform the evaluation of project alternatives and the final impact assessment. In cases where acoustic monitoring surveys are not performed, MECP will assume species at risk bat presence in all habitats containing potentially suitable roost trees.

Buildings and Other Anthropogenic Structures (Maternity and Day Roosts)

- If a proposed activity or project will remove or alter an anthropogenic structure in a way that would negatively affect use of the structure by species at risk bats then bat surveys are warranted. This applies whether the structure provides potential species at risk bat habitat, or was known to provide bat habitat historically. Apply professional experience to judge whether any anthropogenic structure has the potential to provide bat maternity or day roost habitat.
- Protocol attached: “SAR Bat Building Exit and Roost Survey Protocols”
    - This protocol provides minimum survey effort expectations. Surveyors may discover multiple pre- and post-volant surveys are necessary to collect accurate abundance estimates at exit points as the time when pups become volant, weather and other variables may be difficult to predict.

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Attachment 2

Key Bird Habitat Locations

Study Area

Preferred Alternative Bridge

Preferred Alternative Trail

RARE Trails

City of Cambridge Trails

RARE Property Boundary

Key Habitats

Sources:

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.

Disclaimer:

R.J. Burnside & Associates Limited and the above mentioned sources and agencies are not responsible for the accuracy of the spatial, temporal, or other aspects of the data represented on this map. It is recommended that users confirm the accuracy of the information represented.

This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.

Datum: North American 1983 CSRS	
Coord. System: NAD 1983 CSRS UTM Zone 17N	
Projection: Transverse Mercator	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: 0°	Scale Factor: 0.99960

N

Grid North

0 100 200 300 400 500

Metres

BURNSIDE

Client

CITY OF CAMBRIDGE

Figure Title

BLAIR PRESTON TRAIL EA

KEY HABITATS AND TRAIL ROUTES

Drawn	Checked	Date	Figure No.
SV	MR	2022/01/31	3
Scale		Project No.	
1:15,000		300043765	

Print Date: 2022/01/31 Time: 09:33 AM

File Path: C:\Users\SVandenberg\OneDrive - RJB\Documents\ArcGIS\Projects\043765 (Blair Preston)\043765_Trail_Network_Existing\043765_Trail_Network_Existing.aprx

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Attachment 3

Plant List

Plant Inventory
Trail Route Only

June 10, 2019

COMMON NAME	*ALTERNATIVE COMMON N*	*SCIENTIFIC NAME*	SRank	OESA Status	SARA Schedule	SARA Status	Introduced	Interpreted Indigenous Cultural/ Medicinal/ Traditional Use
Box Elder	Manitoba Maple	*Acer negundo*	S5					
Red Maple		*Acer rubrum*	S5					
Sugar Maple		*Acer saccharum ssp. saccharum*	S5					Y
Common Yarrow		*Achillea millefolium ssp. millefolium*	SNA				I	
Garlic Mustard		*Alliaria petiolata*	SE5				I	
Annual Ragweed (Common Ragweed)		*Ambrosia artemisiifolia*	S5					
Common Burdock		*Arctium minus ssp. minus*	SE5				I	
Kansas Milkweed	Common Milkweed	*Asclepias syriaca*	S5					Y
Awnless Brome (Smooth Brome)		*Bromus inermis ssp. inermis*	SE5				I	
Ox-eye Daisy		*Chrysanthemum leucanthemum*	SE5				I	
Canada Thistle		*Cirsium arvense*	SE5				I	
Orchard Grass		*Dactylis glomerata*	SNA				I	
Common Teasel		*Dipsacus fullonum ssp. sylvestris*	SE5				I	
Daisy Fleabane		*Erigeron annuus*	S5					
Dame's Rocket		*Hesperis matronalis*	SE5				I	
Orange Hawkweed		*Hieracium aurantiacum*	SE5				I	
Black Walnut		*Juglans nigra*	S4					Y
Tartarian Honeysuckle		*Lonicera tatarica*	SE5				I	
Crabapple Species		*Malus sp*						
Black Medick		*Medicago lupulina*	SE5				I	
Alfalfa		*Medicago sativa ssp. sativa*	SE5				I	

Virginia Creeper		*Parthenocissus quinquefolia*	S4?					
Reed Canary Grass		*Phalaris arundinacea*	S5					
Timothy		*Phleum pratense*	SE5				I	
Eastern White Pine		*Pinus strobus*	S5					
Kentucky Blue Grass		*Poa pratensis ssp. pratensis*	S5					
Trembling Aspen		*Populus tremuloides*	S5					
Choke Cherry		*Prunus virginiana ssp. virginiana*	S5					Y
White Oak		*Quercus alba*	S5					
Common Buckthorn		*Rhamnus cathartica*	SE5				I	
Staghorn Sumac		*Rhus typhina*	S5					Y
Multiflora Rose		*Rosa multiflora*	SE4				I	
Black Raspberry		*Rubus occidentalis*	S5					Y
White Willow		*Salix alba*	SE4				I	
Canada Goldenrod		*Solidago canadensis*	S5					
Common Dandelion		*Taraxacum officinale*	SE5				I	
Red Clover		*Trifolium pratense*	SE5				I	
Cow Vetch		*Vicia cracca*	SE5				I	
Riverbank Grape		*Vitis riparia*	S5					

Rank Definitions

SRANK (NatureServe Ranking System)

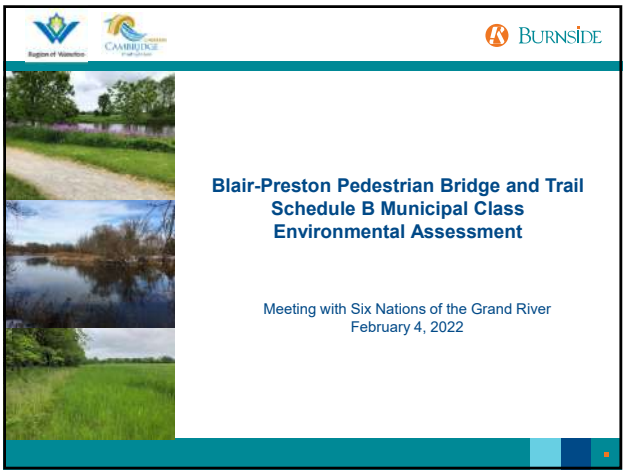
Presumed Extirpated—Species or community is believed to be extirpated from the nation or state/province.	**SX**
Possibly Extirpated (Historical)—The NH or SH rank is reserved for species for which some effort has been made to relocate occurrences.	**SH**
Critically Imperiled—Extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation.	**S1**

Imperiled—Due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation.	**S2**
Vulnerable—Due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.	**S3**
Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or	**S4**
Secure—Common, widespread, and abundant in the nation or state/province.	**S5**
Unranked—Nation or state/province conservation status not yet assessed.	**SNR**
Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or	**SU**
Not Applicable—A conservation status rank is not applicable because the species is not a suitable target for conservation activities.	**SNA**
Ontario Endangered Species Act (OESA) Status	
Endangered. Any native species that is at risk of extinction or extirpation throughout all or a significant portion of its Ontario range if the limiting factors are not reversed. Protected under the Endangered Species Act.	**END**

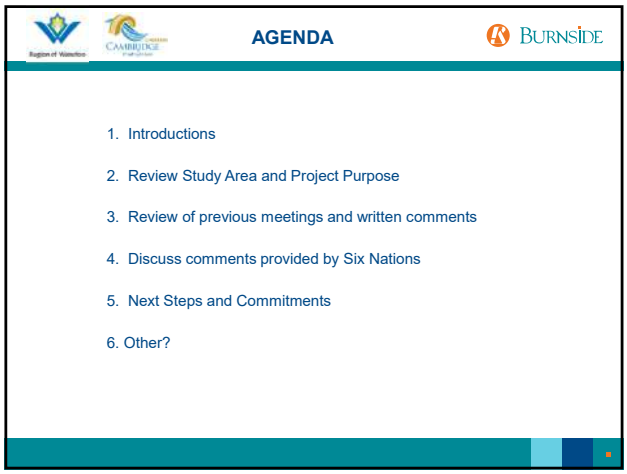
Extirpated. Any native species no longer existing in the wild in Ontario, but existing elsewhere in the wild.	**EXP**
Extinct. Any species formerly native to Ontario that no longer exists.	**EXT**
Threatened. Any native species that is at risk of becoming endangered throughout all or a significant portion of its Ontario range if the limiting factors are not reversed.	**THR**

SARA Status

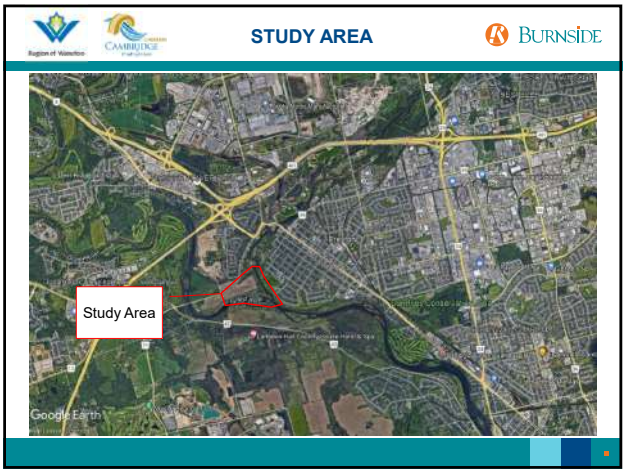
	END
Endangered. A species facing imminent extirpation or extinction throughout its range.	
Extirpated. A species no longer existing in the wild in Canada, but occurring elsewhere in the wild.	**EXP**
	EXT
Extinct. A species that no longer exists.	
Special Concern. A species of special concern particularly sensitive to human activities or natural events. Does not include an extirpated, endangered or threatened species.	**SC**
Threatened. A species likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.	**THR**


Blair-Preston Pedestrian Bridge and Trail
Schedule B Municipal Class
Environmental Assessment
Meeting with Six Nations of the Grand River
February 4, 2022

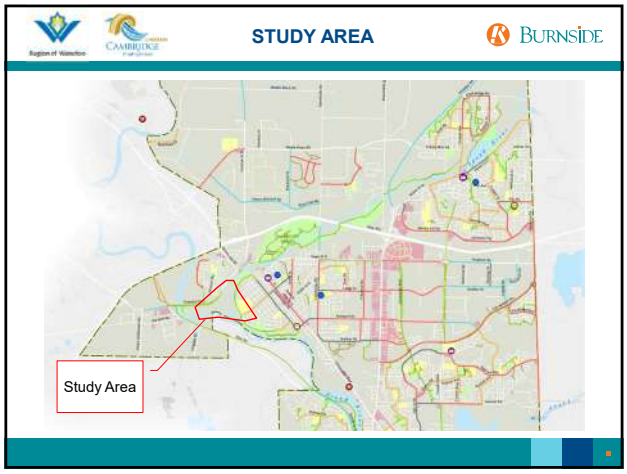
1


AGENDA
1. Introductions
2. Review Study Area and Project Purpose
3. Review of previous meetings and written comments
4. Discuss comments provided by Six Nations
5. Next Steps and Commitments
6. Other?

2


STUDY AREA
Study Area

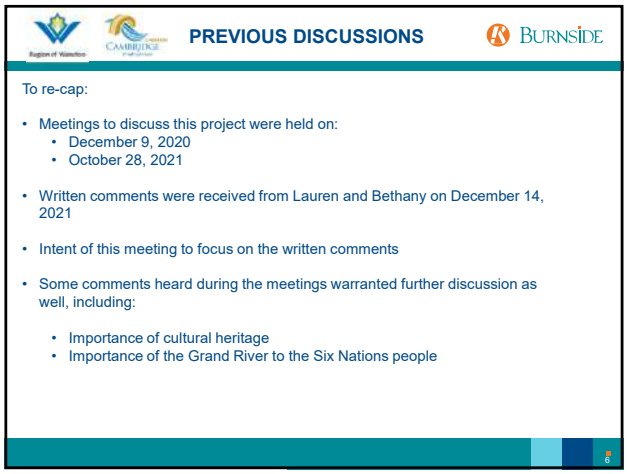
3


STUDY AREA
Study Area

4


ALTERNATIVE SOLUTIONS
To re-cap:
• The EA assessed three potential routes on property owned by the Rare Charitable Research Reserve
• A fourth option was considered but was discarded.
• We believe the preferred route is the northern route with the modified bridge location is preferred.
• EA is ongoing and doing nothing is still considered

5


PREVIOUS DISCUSSIONS
To re-cap:
• Meetings to discuss this project were held on:
• December 9, 2020
• October 28, 2021
• Written comments were received from Lauren and Bethany on December 14, 2021
• Intent of this meeting to focus on the written comments
• Some comments heard during the meetings warranted further discussion as well, including:
• Importance of cultural heritage
• Importance of the Grand River to the Six Nations people

6

COMMENTS

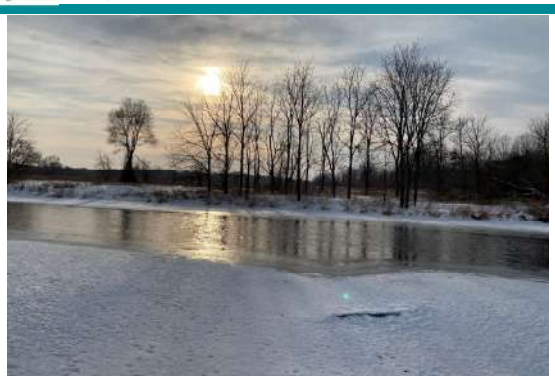
Q: At Risk Bats? Could they be present? What studies were completed? How will they be protected? Can bat boxes be installed?

Answer:

- No tree removal except at bridge location
- Trees near bridge assessed for roosting habitat
- 7 potential roosting trees found, not all will be removed
- Removal to occur outside of roosting season
- Trees to be replaced at 10:1 ratio
- A bat box can be installed for every 10 trees removed

7

COMMENTS



8

COMMENTS

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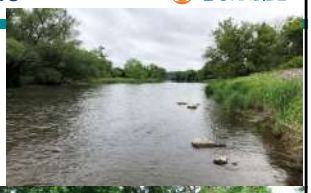
COMMENTS

Q: Aquatic Surveys? Survey Protocols? Impacts to the Speed River?

Answer:

- MTO/DFO/MNRF Protocol for Transportation Undertakings along with visual surveys for critical habitat (Aquatic SAR and Spawning) was completed in June 2019
- Included characterization of substrate, bank conditions and vegetation, in-water habitats
- No work will occur within the Speed River
- The river will be protected during construction by sediment fencing, wet weather restrictions, locating material stockpiles away from the river



10

COMMENTS

Smallmouth Bass Spawning

Creek Chub Spawning

11

COMMENTS

Q: Waterfowl and Shorebirds? What Surveys Were Done? How will birds be impacted?

Answer:

- Bird surveys were conducted in the spring, fall and winter (one day each for a total of just under 11 hours of surveys)
- This was supplemented with data from Rare (Records from 2013-2017)
- Records identified 126 bird species, of which 10 were waterfowl
- Area along Grand River just upstream of confluence is an important stopover for migrating waterfowl
- Northern bridge selected to be farthest from this area

12

13

COMMENTS

Q: Wintering Raptors? What Surveys Were Done? How will birds be impacted?

Answer:

- Wintering sites along the Grand River are well studied and well known
- There are two known areas close to the trail:
  1. Between Hwy 401 and Fountain St. (730m from project)
  2. Along cliffs on southern portion of Rare property (1.7km from project)
- There is existing noise from Fountain St. traffic and the schools adjacent to the project
- No impacts are expected

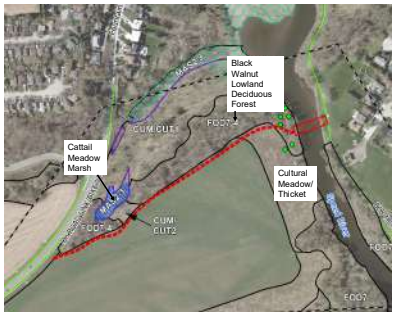
14

COMMENTS

Q: Rare Vegetation Communities? Surveys for Rare Plants? Plants important to Indigenous Communities?

Answer:

- Communities refers an area of vegetation e.g. Cattail marsh, black walnut forest
- No rare communities are present
- Trail primarily cross agricultural field
- Cultural meadow/thicket and black walnut forest were surveyed for rare plants in the area of the trail and bridge
- None were identified
- Let's discuss Indigenous medicinal and cultural plants



15

COMMENTS

Q: Rare Vegetation Communities? Surveys for Rare Plants? Plants important to Indigenous Communities?

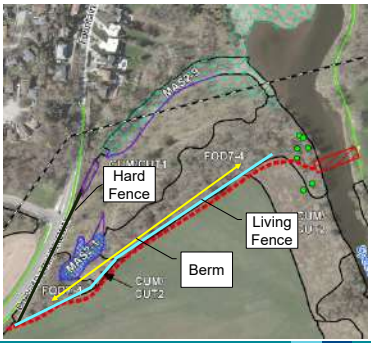
16

COMMENTS

Q: Evaluation of the cattail marsh? How was it studied? How will it be impacted?

Answer:

- Marsh was surveyed for plants
- Berm is present between field and marsh from historical railway line
- No vegetation to be removed
- No changes to the water flowing to or from the wetland
- Because habitat won't be changed, species within the habitat won't be affected
- Measures to be implemented to discourage trespassing



17

COMMENTS

18

COMMENTS

Male Green Frog observed, expected that common amphibian species such as Spring Peeper, Green frog, Leopard Frog and American Toad use this feature.

19

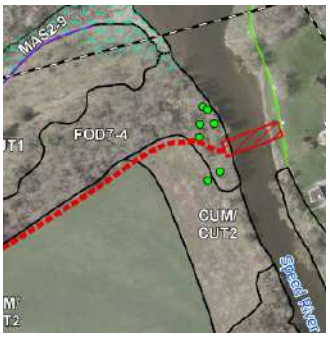
19

COMMENTS

Q: How much tree removal will occur? Can trees be replaced at a 10:1 ratio?

Answer:

- We expect only a small number of trees along the river bank will be removed
- Trees will be replaced at a 10:1 ratio
- We will work with Rare to find locations on the Rare property to plant them
- Areas disturbed around the bridge during construction will be replanted



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COMMENTS

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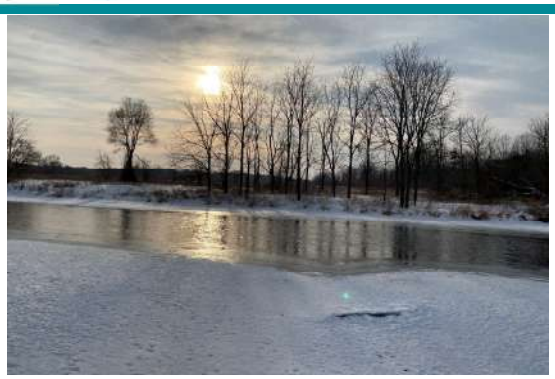
COMMENTS



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COMMENTS

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COMMENTS

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COMMENTS

Q: What if an active nest is found? Who will decide if construction is stopped? At what distance will construction be stopped?

Answer:

- This measure is intended to be a contingency only
- Tree removal will take place outside of the breeding bird and bat roosting window (April 1-September 30)
- If contingency is required, an avian ecologist will search for nests first (no specific designation, could be someone with expertise who has professional and/or Indigenous knowledge of bird species, their identification and the identification of active nests)
- This is typically done by a consulting ecologist. The ecologist would be part of the construction inspection/monitoring team that are generally third party.
- The exact distance would be determined by the ecologist and it is typically species specific, spending on the sensitivity of the species.
- Some guidance is available from CWS at this link: https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/reduce-risk-migratory-birds.html

25

25

COMMENTS

Q: How much Bobolink habitat removal will occur? Can it be replaced at a 10:1 ratio?

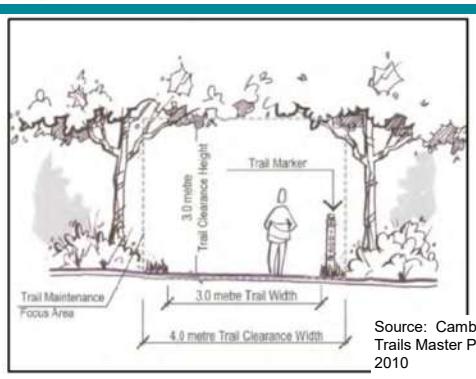
Answer:

- Estimate the 1,856 m^2 (0.186 ha) will be removed
- Total habitat area is approx. 21.5 ha
- Removal along edge of habitat rather than through centre
- Under the Endangered Species Act, more habitat needs to be created than removed
- Habitat will be replaced on Rare lands if possible

26

26

COMMENTS



Source: Cambridge Trails Master Plan, 2010

27

27

COMMENTS

Q: Can Six Nations review the re-vegetation plan? Will native species be used? Invasive species management?

Answer:

- A re-vegetation plan will be prepared during the detailed design phase
- A commitment will be included in the EA to ensure a draft plan is reviewed by Six Nations before completion
- A commitment will be included in the EA to require the use of native species in all restoration plans
- Restoration to occur as soon as possible to prevent invasive species from establishing

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CULTURAL HERITAGE

To be added:

- An acknowledgement of the cultural importance of the Grand and Speed Rivers to the Haudenosaunee and Mississaugas of the Credit
- Evidence of occupation of the area by the original inhabitants dates back at least 10,000 years
- Both the Speed and Grand Rivers and their tributaries were always important to the original people of these lands and were used for sustenance, harvesting medicines, travel and spiritual connection
- Today these rivers continue to be important to the economy and cultural heritage of the Six Nations and Mississaugas of the Credit
- The river continues to be used for fishing, harvesting and gathering of medicinal and traditional plants, recreation, drinking water and spiritual practice
- There are currently 29 active land claims associated with the Haldimand Tract
- Traditional hunting and harvesting rights continue to be practiced in this area

29

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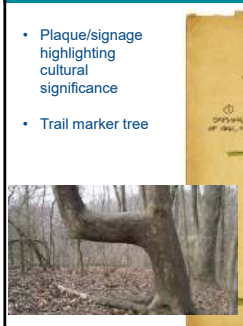
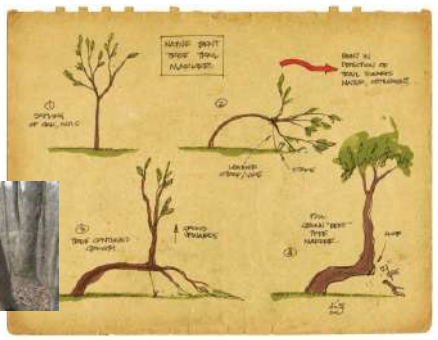
CULTURAL HERITAGE

- Plaque/signage highlighting cultural significance
- Trail marker tree





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NEXT STEPS
BURNSIDE
Commitments and Next Steps:
Send written responses to comments
Update the EA text to:
Recognize the economic and cultural importance of the river to the Six Nations and Mississaugas of the Credit
Include a commitment to ensure that Six Nations' staff will have any opportunity to review and comment on the detailed design and restoration/planting plans
Include a commitment to use native species in all restoration/planting plans
Update the EA report and re-submit for further review and input
Can information about medicinal and traditional plants be provided?
Follow-up meetings?
Commitments to further meetings to discuss participation?
31

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R.J. Burnside & Associates Limited 292 Speedvale Avenue West Unit 20 Guelph ON N1H 1C4 CANADA
telephone (519) 823-4995 **fax** (519) 941-8120 **web** www.rjburnside.com

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Minutes of Meeting

Meeting Date: February 4, 2022 **Project No.:** 300043765.0000

Project Name: Blair-Preston Trail Municipal Class EA

Meeting Subject: Review of Draft EA with Six Nations of the Grand River

Meeting Location: Video Conference

Date Prepared: February 4, 2022

Those in attendance were:

Shane Taylor	City of Cambridge	taylors@cambridge.ca
Jamie Croft	City of Cambridge	croftj@cambridge.ca
Kevin De LeeBeeck	City of Cambridge	deleebeeckk@cambridge.ca
Marcos Kroker	Region of Waterloo	Kmarcos@region.waterloo.on.ca
Tanya Hill-Montour	Six Nations of the Grand River	tanyahill-montour@sixnations.ca
Lonny Bomberry	Six Nations of the Grand River	lonnybomberry@sixnations.ca
Lauren Jones	Six Nations of the Grand River	laurenjones@sixnations.ca
Bethany Kuntz-Wakefield	Six Nations of the Grand River	wildlife@sixnations.ca
Robbin Vanstone	Six Nations of the Grand River	rvanstone@sixnations.ca
Tayler Hill	Six Nations of the Grand River	tayler.hill@sixnations.ca
Tricia Radburn	R.J. Burnside & Associates Limited	tricia.radburn@rjburnside.com
Philip Rowe	R.J. Burnside & Associates Limited	philip.rowe@rjburnside.com
Kevin Butt	R.J. Burnside & Associates Limited	kevin.butt@rjburnside.com
Chris Pfohl	R.J. Burnside & Associates Limited	chris.pfohl@rjburnside.com
Mishaal Rizwan	R.J. Burnside & Associates Limited	Mishaal.rizwan@rjburnside.com

The following items were discussed		Action by
1.	**Meeting Opening and Introductions**	
	The meeting began with introductions. The City and Burnside gave opening remarks and an overview of the project thus far.	
	Concern was raised regarding the scheduled length of the meeting. The City noted that they are open to an additional meeting or meetings, as required, to continue the discussions.	
2.	**Presentation**	
	Tricia provided a presentation with project background, work to date and initial responses to Six Nations' concerns. The presentation is attached.	
	Concern was expressed that the presentation did not exactly match the questions posed by Six Nations or answer them fully. Tricia acknowledged that questions were paraphrased to meet space constraints. More fulsome, written responses to questions will be provided.	Burnside to provide written responses
3.	**Discussion**	
3.1	Bat Maternity Habitat	
	Bethany questioned the bat survey methodology. Tricia noted that roosting trees were identified according to Ministry guidelines. Most recent guidance from the Ministry will be forwarded. In this case, it is assumed roosting habitat for bats is present and measures are recommended to create a net benefit. This will include planting trees at a 10:1 ratio for those being removed and by erecting a bat box or two depending on the final number of trees to be removed. Bethany noted that the Ministry's guidelines may not be the most effective method to study bat habitats.	Burnside to provide most recent Ministry guidance
3.2	Aquatic Habitat	Burnside to share aquatic methodology with comment responses.
	Aquatic habitat survey methodologies were explained. Bethany indicated this was the first time they were seeing aquatic methodology.	
3.3	Spring/Fall Migratory Waterfowl and Shorebird Survey	

The following items were discussed		Action by
	Bethany would like to confirm if the field is going to be used by rare for livestock grazing in the future. If this is correct, Bethany believes this landscape may be problematic if there is trespassing especially by dogs and children. Burnside is not aware of any plans for grazing on that field but will confirm with rare.	Burnside to confirm if rare field will be converted into grazing.
3.4	Winter Raptor Habitat	
	Tricia noted that raptor wintering areas are fairly well studied in the area and are known to exist between Hwy 401 and Fountain St. and along the cliffs south of the site. The closest area to the trail project is approximately 730m. In between the wintering area and the proposed trail is Fountain St. and existing multi-use path as well as significant development. Noise from the trail will be dampened by all the existing noise and human presence. Bethany indicated that the 730 m is below the recommended 800 m setback from wintering areas regardless of existing development.	Burnside to provide clarification on assessment methods and setbacks
3.5	Vegetation	
	The City will commit to replacing trees removed at a 10:1 ratio. Six Nations accepts this commitment. Bethany indicated that she was pleased that the City was committed to a 10:1 replacement ratio.	
3.6	Public Safety	
	Tricia noted that there is anecdotal evidence that some students and local residents crossing the Speed River in the winter time when the river is frozen. This creates an unsafe situation. Bethany would like to know the distance between the unofficial crossing to the proposed bridge. **Clarification: there is no single unofficial crossing point. Crossings have been noted in the general area around the proposed bridge location**.	Burnside to provide approximate walking distance to cross at King St.
3.7	Potential Impacts and Mitigation Associated with the Preferred Solution	
	Robbin noted the use of the word “minimal” often to describe effects– this refers to what the study team/government guidance accepts as minimal. Six Nations prefers to identify specific goals and maximum impacts allowed, noting that it is difficult to evaluate	

The following items were discussed	Action by
options if there are no limits for what is acceptable. This was noted by the Study Team.	
3.8 Bat Habitat Lauren felt that the protocols to identify bat habitat were not correctly used and that the data may not be accurate. Tricia confirmed that the provincial protocols were used. Burnside didn't confirm SAR bats are present, but rather took an approach to assuming they are and take those steps to mitigate impact. Robbin indicated she is concerned about removing any bat habitat at all, even out of the roosting season, as bats may come back and search for the missing trees. Kevin explained that research appears to show that bats do return to woodlands but fidelity to specific trees is low if other woodlands remain. Robbin requested this kind of evidence in our documents.	Burnside to provide further backup to support conclusions.
3.9 Alternatives Bethany indicated that the value of the project is not clear and that there does not appear to be a need for the trail. She also felt that a net benefit cannot be achieved. Bethany may consider offsets for impact, but her opinion is people don't need to be everywhere and should instead cross at King St. Tricia explained that King St. crossing is not ideal for cyclists as it is very narrow and high school kids would have an increased distance to travel with this option. Access to other trails in the area is also reduced by lack of direct route in an east-west direction. Shane added that the Cycle and Trail Committee has long known Fountain Street is a very busy and is not safe for cyclists. Shane explained that expanding the Fountain St. road right-of-way was considered but there is no room for expansion. Bethany asked if there is any way to modify the road. Marcos indicated that there are severe limitations, such as the pump station, dam, and railway track which all limit ability to create a safe cycling route or multi-use path. Bethany asked why the City doesn't take the dam out and do something there. Jamie explained that this was considered but pedestrian crossing at the north side of King St. doesn't address the	

The following items were discussed		Action by
	constrained corridor for pedestrian and cyclist safety. Fountain St. and Shantz Hill is all constrained and addressing this would require acquiring frontage across a significant number of private properties which is not possible. This is a high traffic area, and the purpose of the project is to get people off the road and use active transportation Shane described issues at Highway 401 to the west - the pedestrian and cycling crossing at 401 which is a huge funnel for off road connections for hikers and cyclists who are getting stuck at a dead end. This is a significant safety concern. Bethany asked what the process is to get more frontage on Fountain St. Marcos explained this would require a buy out from homeowners as the slope is too significant. Bethany asked why not buy out the homes and turn this area into a trail instead of just acquiring frontages. Marcos explained that would be very unpalatable socially and politically. Bethany explained that river health is paramount to Six Nations, and they recognize this option is not practical, but restoring the riparian buffer would be a significant improvement for the buffer. She indicated she is just referring to the east side of the street. Bethany recognized that the social and economic impacts are significant to residents but is thinking about impacts to Six Nations. The watershed is extremely important to Indigenous people and not having a buffer is not good for the river. The river needs to be healthy as Six Nations relies on it. The study team needs to consider this option equitably so Six Nations can see the comparison. Marcos agreed to adding an option of putting the trail along the street and add this scenario to our evaluation. Philip indicated that Burnside will circle back to Bethany as we address pros and cons for Indigenous people regarding health of river and have a discussion to address socio-economic impacts to Indigenous peoples.	Burnside to add an on-street option to the evaluation and touch base with Bethany regarding impacts to Six Nations.
4.	**Next Steps** Bethany indicated the main issue is that Six Nations disagree on what methodology for flora and fauna studies is acceptable and are not comfortable with current methods used. They see the Ministry standards as often insufficient. Evidence based responses would make them more comfortable with our decisions. Bethany's second	

The following items were discussed	Action by
takeaway is that Six Nations is not convinced trail is necessary and that it would stop unofficial crossings. Phillip confirmed that Burnside will make responses to Six Nations questions more comprehensive, and we may need to go back and revisit our studies on site. Philip stated that this meeting was meant to bring Six Nations up to speed with the project to show what we've done and continue the discussion to move forward. Shane added that internally they have discussed how conversation can continue with Six Nations after the EA is completed and into the detailed design phase of the project. This discussion would include amongst many things, saving trees, refining the alignment and protection measures of surrounding the rare property Bethany indicated they appreciate being included at this stage and that this area is one of the wild areas remaining in Cambridge, there are Indigenous people who rely on this area for food and medicine and intrinsically who's perspective and rights should be considered. Bethany agrees with Tricia's proposal to visit the site this season to see wintering raptors and waterfowl habitat.	

The preceding are notes of the meeting as observed by the undersigned. Should there be a need for revision, please advise Burnside within seven days of issuance. In the absence of notification to the contrary, these minutes will be deemed to be an accurate record of the meeting.

Minutes prepared by:

R.J. Burnside & Associates Limited

Mishaal Rizwan
Environmental Planner
MR:

Distribution:

All Attendees

Six Nations Wildlife and Stewardship Office
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18 March 2022

To: Tricia Radburn
Senior Environmental Planner
R.J. Burnside & Associates Limited

Via: Email

RE: Blair Preston Pedestrian Bridge and Trail Schedule B EA

Dear Tricia Radburn,

Thank you for sharing the "Blair Preston Trail, Environmental Assessment Six Nations Comments on EA" document. Our comments and questions are listed below. Please answer at your earliest convenience.

Item number	Subject Topic	Burnside Study Team Response	Six Nations Wildlife and Stewardship Office (SNWSO) response
1	Table 5-1: Field Investigations Summary 1 table - Bat Maternity Habitat Survey	As part of this project, the City will commit to installing one bat box for every 10 bat roosting trees that are removed (i.e. for the removal 1-10 trees, 1 bat box will be installed; if a larger area than expected is needed to be cleated, an additional bat box will be installed for the removal of between 11 and 20 trees). The City has also committed to having Six Nations representees attend a trail route field staking exercise during the detailed design phase to map out the exact route in the field.	SNWSO expects a robust maintenance and monitoring plan is created and implemented to ensure continued usage of bat boxes by SAR bats. Bat boxes should be constructed and maintained using best practices, including ensuring this structure is located within existing flight paths, near foraging sites and away from external light sources and disturbances (Haliburton Highlands Trust, 2018). Please construct these bat boxes and monitor to ensure usage by bats species prior to the destruction of original habitat. Please refrain from destruction of original habitat until this usage has been observed. Other original SNWSO comments regarding tree replacement are addressed.
2	Table 5-1: Field Investigations Summary table - Aquatic	No work will occur within the river (i.e. no equipment will enter the water and no structures will be built in the water), therefore aquatic habitat will not be altered in anyway. Any work occurring near the banks will not affect the watercourse because sediment and erosion control fencing/mitigation will be installed and wet weather/seasonal restrictions will be in place, among other measures.	Addressed
3	Table 5-1: Field Investigations Summary table - Spring/Fall Migratory Waterfowl and Shorebird Survey	… Data from Rare was also reviewed. Rare volunteers have been surveying the area for many years and have kept records of bird observations. Records were reviewed from surveys that had taken place from 2013 to 2017. These records identified 126 bird species, of which 10 were waterfowl. Based on this information and information available from provincial mapping, it was concluded that an important Winter Waterfowl Concentration Area is present at the	Addressed

		confluence of the Speed and Grand Rivers. The entire area around the confluence and up- and downstream reaches of the Speed and Grand Rivers has been well studied and has been previously identified by both the Region of Waterloo and province as a waterfowl concentration area. Attachment 2 shows an approximation of the highest use areas for waterfowl. The northern bridge location was selected because it is the location that is the greatest distance from the waterfowl concentration area.	
4	Table 5-1: Field Investigations Summary table – Winter Raptor and Waterfowl Habitat Use Survey	In order to confirm the presence of raptor wintering areas, multiple years of data are required. A Burnside avian ecologist conducted area searches for four hours on November 24, 2020. This was primarily to search for Bald Eagles which are known to overwinter along the Grand River from mid-November to late February. We acknowledge that this is insufficient to confirm habitat presence or absence of this type of habitat. However, as noted in the previous comment, there are extensive records of bird presence along the Grand River in this area. Rare volunteers formally tracked wintering Bald Eagles on Rare lands for many years. Several years ago, Rare also participated in a study with MNRF staff to track Bald Eagles and identify Significant Wildlife Habitat associated with Eagles. That significant habitat has been mapped within the Region's Environmentally Significant Policy Area (ESPA). As a result of these studies, Bald Eagles are known to winter in the woodlands along the river between Hwy 401 and Fountain St. to the north of the Study Area as well as the cliffs on Rare lands south of the project site (See Attachment 2). The extensive records from ebird were also reviewed. These years of data collection and thousands of records formed the basis for the assessment used in this EA. Data regarding other raptors was reviewed but they were not present in significant numbers in this location.	Please note, the eagle is of particular importance to Six Nations (and many other Indigenous Nations) as a cultural symbol and clan animal. Please complete follow up monitoring of bald eagles within the Study Area to account for uncertainties and assist in quantifying impact to this species as a result of trail/bridge construction and use. This information would assist in addressing SNWSO concerns regarding the well-being of this animal and could potentially be used in future management or recovery plans. Please include measurements of habitat use and species presence of other underrepresented raptors in these assessments.
5	Section 5.3.2 Terrestrial Environment - Vegetation	"Rare Vegetation Communities" refers to a grouping of plants (i.e. Silver Maple Forest or Cattail Marsh) which are characterized using the Ecological Land Classification process. There were no rare vegetation communities found within, and immediately adjacent to, the proposed location of the trail and bridge. With respect to individual plants, most of the trail route is located within an agricultural field that does not contain any rare plants. Searches were conducted for rare species using wandering transects in the areas of the bridge abutments that are outside of the agricultural field. These surveys took place in the spring of 2019. Additional observations were made throughout the spring and fall seasons in conjunction with other wildlife surveys. No provincially rare plant species were observed.	Addressed. Please include the following list of additional plants noted for possible inherent cultural importance, medicinal, crafting or sustenance uses (historical and/or current). Box elder Common yarrow Common burdock Canada thistle Common teasel Daisy fleabane Crabapple species Eastern White Pine Trembling Aspen White Oak

		A list of plant species identified along the trail route is provided in Attachment 3. The list is relatively short due to the agricultural nature of much of the route. We have tentatively identified plants which may have some traditional use or cultural significance to Indigenous communities. We acknowledge that there may be inaccuracies and we respectfully ask that you correct any errors.	Please note that this is not an extensive list. All plant species playing a beneficial ecological role are of concern to SNWSO.
6	Section 5.3.2 Terrestrial Environment – Provincially Significant Wetlands	The Ontario Wetland Evaluation System is an evaluation system used to determine if wetlands meet the criteria for provincial significance. Under the system, wetlands smaller than 0.5 ha are typically not evaluated. The small wetland pocket on site is approximately 0.2 ha. Nonetheless, portions of the evaluation system process were used to confirm the boundaries of the Wetland..... ...There will be no direct removal of any portion of the wetland or its surrounding woodland. There will also be no change to the water flowing to or from the wetland. As such, the habitats provided by the wetland will not be changed. Impacts may be experienced as a result of trail users trespassing beyond the trail and into the wetland. Because the area is wet we do not anticipate that a significant number of trail users will venture off the trail and into the wetland. Nonetheless, measures are being developed to limit any trespassing that may occur, including plantings of thick shrubbery and solid fencing along Fountain St. As a result, we do not believe that the wetland will be affected.	Addressed
7	Section 5.3.2 – Terrestrial Environment – Landscape Features	A Bald Eagle wintering area is located along the Grand River between Hwy 401 and Fountain St.(see Attachment 2). The closest portion of the trail is approximately 730m from this wintering area. There is significant existing development between the wintering area and the proposed trail, including Fountain St. which is a relatively high-traffic road, a multi-use trail with existing pedestrian and cycling use and other adjacent development. All of these elements provide existing noise levels that are typical of urban environments. Hwy 401 is also present along the northern extent of the wintering area which provides another significant noise source to the wintering area. Any construction noise from the trail project will be dampened by this existing noise. The human presence along the trail will have no impact on the wintering area as there is significant human presence much closer to the area. There is another key wintering area along the cliffs along the Grand River approximately 1.7km south of the site. It is important to note that there are different types of wintering habitat. Feeding perches are used by Eagles to locate prey. As noted in the Significant Wildlife Habitat Mitigation Support Tool (MNRF, 2014), "Feeding perches are important, but less critical to eagles. If an eagle is disturbed	Please note that SNWSO prefers the most conservative buffers be used as indicated by recent scientific studies and best management practices. More conservative buffers give confidence to SNWSO that impacts to all living beings using the habitat are avoided as much as possible by using a more holistic ecosystem approach. In addition, the eagle is of particular importance to Six Nations (and many other Indigenous Nations) as a cultural symbol and clan animal. What monitoring activities are in place to confirm that no negative impacts will occur to this species as a result of construction and trail use? (Please refer to item 4)

		from a perch, it may simply fly to another.... a buffer of 300 m is recommended from Bald Eagle winter perches. This is the distance that was recommended by Timmerman and Halyk (2001) for eagles wintering in the City of Cambridge. This distance was based on a detailed review of the literature. These eagles appeared to be habituated to human disturbance and approached buildings, roads, and pedestrians at much closer distances than 300 m. However, 300 m is recommended as this distance should be sufficient to protect perching eagles even in areas where they are not accustomed to human activity (Stalmaster and Kaiser 1998)." Nocturnal roosts are more important than perches. The Mitigation Support Tool recommends that pedestrians should not be allowed within 400m of a nocturnal roost. It is also important to note that roosts are only used at night. As noted in the Mitigation Support Tool, "This eliminates some of the human disturbance factors as there are likely to be fewer pedestrians, etc. when the roost is occupied." Bald Eagles will fly through the study area and forage all along the Grand River and Speed River through this area. However, the most critical habitats are well away from the trail and will not be affected. In this case, trail construction and use is proposed within 730m and 1.7 km of the two key Bald Eagle wintering areas, respectively. With regard to construction schedules, it is preferable to remove trees during the fall and winter outside the nesting and roosting seasons for birds and bats, respectively. Other elements of the project will be constructed outside of the winter season when there is no snow on the ground, avoiding the raptor wintering season.	
8	Section 8.0 - Potential Impacts and Mitigation Associated with the Preferred Solution	The City will replace trees that are 10cm dbh and greater at a 10:1 ratio. Smaller trees (seedlings and whips) will be replaced at a 1:1 ratio as they will be replaced with something of similar size. The trail route is within the agricultural field and will not require any tree removals. Typically, an area of about 10x10m is required to be cleared around the bridge abutments for construction. Based on this, a target to remove fewer than 10 mature trees can be set. A commitment will be included in the EA to include Six Nations' staff in staking the trail route in the field during the detailed design phase to limit tree remove.	Addressed
9	Section 8.0 – Potential Impacts and Mitigation Associated with the Preferred Solution – Table 8.2: Potential	This measure is intended to be a contingency only. It is intended that all tree removal will take place outside of the breeding bird and bat roosting window (April 1-September 30). However, if something comes up which delays the clearing and it must occur within that window, there is a contingency that allows for it as long as no nests are present and this is confirmed by a qualified avian ecologist, as noted in Table 8.2. There is no specific professional designation for avian ecologists but it must be someone with expertise	Addressed

	Impacts and Mitigation – Nests of Migratory Birds	who has professional and/or Indigenous knowledge of bird species, their identification and the identification of active nests. … …A commitment will be added to the EA to note that Six Nations' staff will be notified if any tree removal is proposed within the breeding bird season. Six Nations' staff will be invited to view the site with the consulting ecologist to determine if any active nests are present and whether tree clearing can occur	
10	Section 8.0 – Potential Impacts and Mitigation Associated with the Preferred Solution – Table 8.2: Potential Impacts and Mitigation – Bobolink Habitat	Bobolink habitat will be replaced in accordance with the Endangered Species Act which requires project proponents to replace more habitat than the area being removed. We expect that approximately 1,856 m2 (0.186 ha) of Bobolink habitat will need to be removed. The total area of habitat present is approximately 21.5 ha….	What is the ratio of habitat replacement for use by bobolink? SNWSO encourages the proponent to go above and beyond requirements of the Endangered Species Act. SNWSO prefers the use of more conservative ratios to ensure no harm comes to bobolink or the other non-human people that may inhabit the same habitat but are of equal importance from an Indigenous perspective. As such, SNWSO encourages a 1:1 habitat replacement should offset be located on-site and 2:1 habitat offset should this habitat be located off-site.
11	Section 8.0 – Potential Impacts and Mitigation Associated with the Preferred Solution – Table 8.2: Potential Impacts and Mitigation – Wooded Area/Candidate Bat Habitat	The route was selected to cross an area along the river bank with a very narrow band of trees so as to minimize the number of tree removals required. The route was originally located to the north but was moved slightly southward to minimize tree removal. Refer to comment #1 above for additional information about bat habitat and mitigation measures. Plans for bat boxes will be included on re-vegetation plans to be submitted during detailed design. Six Nations will be given an opportunity to comment on he location of bat box placement.	Addressed
12	Section 8.0 – Potential Impacts and Mitigation Associated with the Preferred Solution – Table 8.2: Potential Impacts and Mitigation – Natural Areas	A re-vegetation plan will be developed during the detailed design stage of the project following completion of the EA. A commitment to using native species will be included in the EA document. The re-vegetation plan will include measures to enhance and restore any areas disturbed by construction and will create a net benefit by including additional plantings along both sides of the Speed River and to improve natural heritage functions and limit trail users from accessing the watercourse. A draft re-vegetation plan will be provided to Six Nations and rare staff for comment when it is available	SNWSO looks forward to receiving future plans regarding reseeding activities. Please endeavour to source building and reseeding materials from Six Nations businesses when possible. Please allow and notify Six Nations community members of harvesting opportunities in the area prior to construction.

Thank you and kind regards,

B. Kuntz-Wakefield

Bethany Kuntz-Wakefield
Wildlife and Stewardship Manager

Lauren Jones
Wildlife and Stewardship Management Assistant

Six Nations Wildlife and Stewardship - part of the Lands and Resources Department of Six Nations of the Grand River Elected Council

Reference

Haliburton Highlands Land Trust (2018) *Best management practices for bats.* Available at: https://www.haliburtonlandtrust.ca/wp-content/uploads/2018/01/Best-Management-Practices-for-Bats-January-2018.pdf (Accessed: 21 March 2021).

Community Development
Engineering and Transportation Services
The City of Cambridge
Croftj@cambridge.ca

August 12, 2022

Robbin Vanstone
Consultation Supervisor
Six Nations of the Grand River
1721 Chiefswood Road
Ohsweken ON N0A 1M0

Dear Robbin:

Re: Blair Preston Trail and Pedestrian Bridge, City of Cambridge
Project No.: 300043765.0000

We are writing in response to the March 18, 2022 letter from Bethany and Lauren and in response to discussions during the site visit on April 7, 2022. We understand that you continue to have concerns about the proposed trail and the potential impacts of trail users who may trespass and cause damage or disturbance to the surrounding natural areas. We understand that you are also concerned about how potential environmental impacts may subsequently affect your Treaty Rights.

Through this letter we wish to provide further explanation of our decision-making process and why we feel that this project is necessary and environmentally beneficial.

We acknowledge that human activities over the past centuries have had a detrimental effect on the natural environment. The effect is so significant that our planet's climate is in jeopardy. In 2019, the City of Cambridge declared a Climate Emergency. It is clear that the way we live and develop land cannot continue as it has in the past. The City and Region of Waterloo have committed to making long-term transformative changes, including how residents move from place to place.

Across the Region, 49% of greenhouse gas emissions are emitted from transportation and vehicle-related fuel consumption. This must change in order to help heal the planet. The City and Region have committed to taking action so that, by 2050, most trips in the Region are taken using active transportation (i.e., walking, cycling and other non-motorized means), with the support of a robust public transit system. That goal is achievable but only with a comprehensive and well-connected trail network that makes active transportation an easy choice.

Why is a trail needed in this location?

The Speed and Grand Rivers run through the City, creating a barrier between various neighbourhoods. The focus of the current study is on how to move people between the communities of Preston Centre, Preston Heights, Blair and beyond to Kitchener without the use of gas-burning vehicles. The challenge is that these communities are separated by the Grand and Speed Rivers. Crossing these rivers is only possible at bridge locations. Currently there are only two bridges along the Speed and Grand Rivers between Speedsville Road and Park Hill Road W., as distance of approximately 9.5 km. The two existing bridges are a pedestrian bridge in Riverside Park and the King Street bridge. As discussed previously, the King Street bridge does not support cycling. Widening the bridge and road and improving the intersection at Shantz Hill would be very difficult due to the large number of existing buildings close to the road. Therefore, currently the only safe crossing of the river for active transportation purposes is the pedestrian bridge in Riverside Park.

This leaves an 8.7 km stretch of river with no means of crossing the river safely by foot or bicycle. Furthermore, even using the Riverside Park bridge, travel to many key destinations requires walkers or cyclists to navigate the King Street/Shantz Hill/Fountain Street area that has heavy traffic and narrow shoulders.

To encourage active transportation, travel by foot or cycling must be made as easy and safe as possible. The proposed trail and bridge would significantly shorten many key trips between Preston, Blair, and the Doon Valley community in Kitchener, with destinations such as Preston High School, Conestoga College, and the bridge over Highway 401 with links north throughout Kitchener. A trail through this area would be highly beneficial.

Were Other Locations Considered?

Crossing downstream along the Grand River were considered. However, much of the land downstream is also owned by the *rare* Charitable Research Reserve (*rare*) and is much more ecologically significant than the current proposed location. A crossing could be possible south of *rare* lands; however, this would not shorten the route between Preston and Conestoga College, the trail over Highway 401 or the connecting trail routes through Kitchener. A crossing south of *rare* lands would have fewer useful connections to key destinations.

How Do We Balance Benefits and Impacts?

Most of the actions we take as humans have some impact on the world around us. Through the EA process, we have assessed whether the benefits of the trail will outweigh the impacts. We do believe that the urgency to act to address climate change outweighs the potential effects of the trail. We have reached this conclusion because the trail can have significant environmental benefits. It will be in a key location that will encourage active transportation and reduced reliance on travel by car. The impacts of the trail will be relatively minimal and can be reduced with additional measures. We have heard your concerns and as a result of your input, the following additional measures to minimize impacts have been added to the project:

- Tree removal will be limited to fewer than 10 trees and all trees removed will be replaced at a 10:1 ratio.
- Vegetation clearing will be completed during the season least likely to affect wildlife.
- One or two bat boxes will be installed (subject to the final number of trees removed).

- A commitment to removing invasive species will be made in the EA. Measures will be taken to prevent the spread or introduction of new invasive species during construction. The construction area will be monitored for one year after construction to ensure that invasive species have not established. If invasive species have been introduced, they will be removed by the City.
- The City has committed to carrying out winter waterfowl surveys in the winter of 2022/2023 to further build our understanding of current waterfowl presence. Surveys will then be carried out for three years after construction. Should the trail cause a significant decrease in wintering waterfowl, the trail will be closed during winter months. Six Nations can be involved in the surveys and the development of specific triggers (level of population decline) that, if reached, would necessitate the closure of the trail during the key waterfowl wintering season. Criteria will also be established to identify when, and how, the trail could subsequently be reopened in the winter months. This may include additional exclusion measures and/or monitoring.
- The City has also committed to conducting additional winter raptor surveys in the winter of 2022/2023. You will also be contacted to participate in those surveys. The intent will be to confirm the extent of raptor wintering activities occurring on the site and its immediate vicinity. As with waterfowl, wintering raptor habitats will be surveyed for three years post-construction. If significant impacts are observed due to the trail, additional mitigation can be implemented, such as winter trail closures, if required. As with wintering waterfowl, Six Nations would also be consulted on the conditions and measures required to allow for the trail to reopen.
- In addition to the solid fence proposed along Fountain Street and “living fence” of thick shrubbery along the edge of the agricultural field, the City’s by-law office has committed to work with rare to develop an inspection schedule and protocol for responding to complaints. This may include regular visits by by-law officers, additional by-law blitzes and community clean-up events. *Rare* will not be left to monitor and manage trespassing on their own.

This project has the potential to support key programs to change the way people live, move about the City and impact the environment. We view this as a project that will have a positive impact on health, air quality, climate, and the natural world. We appreciate your insights and note that your input to date has helped to add more measures to reduce the impacts of the project.

We hope the information in this letter has helped to provide an understanding of our decision-making process. The City wishes to proceed with this project in the most environmentally sensitive manner possible. The Environmental Assessment will be updated to include all the commitments listed in this letter as well as a commitment to continue to work with Six Nations throughout the remainder of the EA process, detailed design, monitoring, and beyond. We greatly appreciate your contributions to the project thus far and look forward to continuing the discussion with you soon.

Attached is a summary table with your outstanding comments and our responses. Please note that comments which you had previously noted as having been addressed were removed from this version of the table.

Regards,

Jamie Croft, M.A.Sc., P.Eng.
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Environmental Planner
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Enclosure(s) Comment-Response Table

cc: Marcos Kroker, Region of Waterloo (Via: Email)

Blair Preston Trail, Environmental Assessment
Six Nations Comments on EA

Item	Topic/Section	Six Nation's Comment (December 14, 2021)	Study Team Response (February 25, 2022)	Six Nation's Response (March 18, 2022)	Study Team Response (July 25, 2022)
1	Table 5-1: Field Investigations Summary table - Bat Maternity Habitat Survey	The Proponent has not completed adequate baseline studies to determine the abundance or presence/absence of bat Species at Risk within the study area. Best Practice Management protocols dictate that a minimum of 10 site visits take place 90 minutes before sunset to 15 minutes before sunrise in the month of June (Ontario Ministry of Natural Resources, 2017; Haliburton Highlands Land Trust, 2018). Acoustic Monitoring is the Best Practice methodology to differentiate Ontario bat species, including those considered Species at Risk (Ontario Ministry of Natural Resources, 2017; Haliburton Highlands Land Trust, 2018). At least 10 visits on nights with appropriate weather conditions with no SAR bat activity are required to confirm their absence (Ontario Ministry of Natural Resources, 2017). How can the proponent assert that little to no accommodations are necessary for bat species, if SAR bat presence and population data are unknown within the study area? Should the proponent find Species at Risk bats within the study area, we expect that avoidance tactics be used to prevent harms. We encourage a conservative approach to maintaining bat habitat to account for both roosting and foraging. Should bat habitat impacts occur, we expect the proponent to provide mitigation to assist in recovery of SAR bats.	To determine the presence/absence of bat habitat, Burnside used the protocol listed in the document "Survey Protocol for Species at Risk Bats within Treed Habitat, MNRF, April 2017)". Staff completed Phases I and II of the protocol which is used to determined whether suitable habitat may be present for bat maternal roosting. Using the information collected, Burnside identified seven trees in the vicinity of the project which may provide roosting habitat. Burnside did not complete Phase III of the protocol which involves acoustic monitoring to determine if SAR bats are using the roosting trees. This is because new provincial guidance has been provided since the time of the 2017 guidance document. The province's more updated guidance (Attachment 1), and our approach, is to assume that SAR bats are present and roosting in the trees that are scheduled to be removed. The approach is to then maintain or create new suitable habitat to support SAR bats. We have proposed several ways to mitigate potential impacts. Trees will be removed outside of the bat roosting season which runs from April 1 to Sept 30 of any given year. The City will replace trees that are 10cm dbh and greater at a 10:1 ratio. Smaller trees (seedlings and whips) will be replaced at a 1:1 ratio as they will be replaced with something of similar size. The exact number of trees to be removed will be confirmed once further design details are developed. We expect that this project will affect only a small number of trees. Of the seven potential bat roosting trees most, if not all, of them will be maintained. Background studies (Recovery Strategy, MECP, 2019) have shown that bats have a relatively high fidelity (they will repeatedly return) to specific woodlands but not necessarily to specific trees. They may change roosting trees multiple times within a season. Therefore the loss of individual trees is no significant concern as long as additional trees remain. As part of this project, the City will commit to installing one bat box for every 10 bat roosting trees that are removed (i.e. for the removal 1-10 trees, 1 bat box will be installed; if a larger area than expected is needed to be cleated, an additional bat box will be installed for the removal of between 11 and 20 trees). The City has also committed to having Six Nations representees attend a trail route field staking exercise during the detailed design phase to map out the exact route in the field.	SNWSO expects a robust maintenance and monitoring plan is created and implemented to ensure continued usage of bat boxes by SAR bats. Bat boxes should be constructed and maintained using best practices, including ensuring this structure is located within existing flig paths, near foraging sites and away from external light sources and disturbances(Haliburton Highlands Trust, 2018). Please construct these bat boxes and monitor to ensure usage by bats species prior to the destruction of original habitat. Please refrain from destruction o original habitat until this usage has been observed. Other original SNWSO comments regarding tree replacement are addressed.	The proposed project is considered to have very limited impact on at risk bat species. As noted in the EA report, very few trees that support bat roosting are present. Fewer than five of these (and potentially none of them) will need to be removed. As noted, bats are known to find alternative roosting sites if trees used in previous years have been removed. There are numerous suitable trees in the area and the loss of fewer than five roosting trees will not cause harm to bat species. The City has agreed to install a bat box as a precautionary measure based on Six Nations' concerns. however, an extensive monitoring program is not warranted in this case.
4	Table 5-1: Field Investigations Summary table – Winter Raptor and Waterfowl Habitat Use Survey	The proponent has not completed adequate baseline studies to properly determine the abundance or presence/absence of Winter Raptors in the study area. Best Management Practices dictate that at least two surveyors must take part in each site vis with site visits taking place only in December, January or February (Hawk Migration Association of North America Winter Raptc Survey Protocol, 2021). If only one survey is completed, this survey should be done in January (Hawk Migration Association of North America, 2021). Study results should be compared to results of previous years to confirm data.	In order to confirm the presence of raptor wintering areas, multiple years of data are required. A Burnside avian ecologist conducted area searches for four hours on November 24, 2020 This was primarily to search for Bald Eagles which are known to overwinter along the Grand River from mid-November to late February. We acknowledge that this is insufficient to confirm habitat presence or absence of this type of habitat. However, as noted in the previous comment, there are extensive records of bird presence along the Grand River in this area Rare volunteers formally tracked wintering Bald Eagles on rare lands for many years. Several years ago, Rare also participated in a study with MNRF staff to track Bald Eagles and identify Significant Wildlife Habitat associated with Eagles. That significant habitat has been mapped within the Region's Environmentally Significant Policy Area (ESPA). As a result of these studies, Bald Eagles are known to winter in the woodlands along the river between Hwy 401 and Fountain St. to the north of the Study Area as well as the cliffs on rare lands south of the project site (See Attachment 2). The extensive records from ebird were also reviewed. These years of data collection and thousands of records formed the basis for the assessment used in this EA. Data regarding other raptors was reviewed but they were not present in significant numbers in this location.	Please note, the eagle is of particular importance to Six Nations (and many other Indigenous Nations) as a cultural symbol and clan animal. Please complete follow up monitoring of bald eagles within the Study Area to account for uncertainties and assist in quantifying impact to this species as a result of trail/bridge construction and use. This information would assist in addressing SNWSO concerns regarding the well-being of this animal and could potentially be used in future management or recovery plans. Please include measurements of habitat use and species presence of other underrepresented raptors in these assessments.	We understand and have noted in the importance of the eagle to Indigenous Nations. The City has committed to conducting additional winter raptor surveys in the winter of 2022/23. You will also be contacted to participate in those surveys. The intent will be to confirm the extent of raptor wintering activities occurring on the site and its immediate vicinity. As with waterfowl, wintering raptor habitats will be surveyed for three years post-construction. If significant impacts are observed due to the trail, additional mitigation can be implemented, such as winter trail closures, if required. Six Nations would also be consulted on the conditions and measures required to allow for the trail to reopen.
5	Section 5.3.2 Terrestrial Environment - Vegetation	"No rare vegetation communities were identified." No dedicated surveys for rare vegetation communities took place according to "Table 5-2: Field Investigation Summary table." What was the survey effort to determine the presence/absence of rare plant species in the study area? What was the total area covered? Lack of incidental sightings of rare plants is not an acceptable methodology to prove that no rare vegetation communities are present. Please complete dedicated robust baseline surveys for rare plant communities within the study area. We expect that surveyors complete multiple site visits within multiple seasons to ensure rare plant communities are unharmed during development and throughout the lifecycle of the structure. Six Nations asks that plant species traditionally important to Indigenous communities for medicines and sustenance be included in these survey efforts.	"Rare Vegetation Communities" refers to a grouping of plants (i.e. Silver Maple Forest or Cattail Marsh) which are characterized using the Ecological Land Classification process. There were no rare vegetation communities found within, and immediately adjacent to, the proposed location of the trail and bridge. With respect to individual plants, most of the trail route is located within an agricultural field that does not contain any rare plants. Searches were conducted for rare species using wandering transects in the areas of the bridge abutments that are outside of the agricultural field. These surveys took place in the spring of 2019. Additional observations were made throughout the spring and fall seasons in conjunction with other wildlife surveys. No provincially rare plant species were observed. A list of plant species identified along the trail route is provided in Attachment 3. The list is relatively short due to the agricultural nature of much of the route. We have tentatively identified plants which may have some traditional use or cultural significance to Indigenous communities. We acknowledge that there may be inaccuracies and we respectfully ask that you correct any errors.	Addressed. Please include the following list of additional plants noted for possible inherent cultural importance, medicinal, crafting or sustenance uses (historical and/or current). Box elder Common yarrow Common burdock Canada thistle Common teasel Daisy fleabane Crabapple species Eastern White Pine Trembling Aspen White Oak Please note that this is not an extensive list. All plant species playing a beneficial ecological role are of concern to SNWSO.	We appreciate the information. These species will be added to our list of culturally important species.
7	Section 5.3.2 – Terrestrial Environment – Landscape Features	"Several unique features outside of the Study Area including Bald Eagle wintering habitat and a limestone cliff along the Grand River south of the proposed trail site." Despite being located outside of the Study Area, Bald Eagles may still feel effects of the bridge construction and operation. Construction noise or disturbance by the public can result in increased energy expenditure for avoidance tactics and altered food acquisition. We encourage the proponent to take these effects into consideration by allowing for spatial and temporal buffers. We prefer that a spatial buffer length of at least 800 meters is implemented per Armstrong (2014.) Temporal buffers should be tailored to the individual species' habitat uses and considered while choosing construction schedules and while making management decisions for the trail and pedestrian bridge.	A Bald Eagle wintering area is located along the Grand River between Hwy 401 and Fountain St.(see Attachment 2). The closest portion of the trail is approximately 730m from this wintering area. There is significant existing development between the wintering area and the proposed trail, including Fountain St. which is a relatively high-traffic road, a multi-use trail with existing pedestrian and cycling use and other adjacent development. All of these elements provide existing noise levels that are typical of urban environments. Hwy 401 is also present along the northern extent of the wintering area which provides another significant noise source to the wintering area. Any construction noise from the trail project will be dampened by this existing noise. The human presence along the trail will have no impact on the wintering area as there is significant human presence much closer to the area. There is another key wintering area along the cliffs along the Grand River approximately 1.7km south of the site. It is important to note that there are different types of wintering habitat. Feeding perches are used by Eagles to locate prey. As noted in the SWH Mitigation Support Tool (MNRF, 2014), "Feeding perches are important, but less critical to eagles. If an eagle is disturbed from a perch, it may simply fly to another.... a buffer of 300 m is recommended from Bald Eagle winter perches. This is the distance that was recommended by Timmerman and Halyk (2001) for eagles wintering in the City of Cambridge. This distance was based on a detailed review of the literature. These eagles appeared to be habituated to human disturbance and approached buildings, roads, and pedestrians at much closer distances than 300 m. However, 300 m is recommended as this distance should be sufficient to protect perching eagles even in areas where they are not accustomed to human activity (Stalmaster and Kaiser 1998)." Nocturnal roosts are more important. The Mitigation Support tool recommends that pedestrians should not be allowed within 400m of a nocturnal roost. It is also important to note that roosts are only used at night. As noted in the Mitigation Support tool, "This eliminates some of the human disturbance factors as there are likely to be fewer pedestrians, etc. when the roost is occupied." Bald Eagles will fly through the study area and forage all along the Grand River and Speed River through this area. However, the most critical habitats are well away from the trail and will not be affected. In this case, trail construction and use is proposed within 730m and 1.7 km of the two key Bald Eagle wintering areas. With regard to construction schedules, it is preferable to remove trees during the fall and winter outside the nesting and roosting seasons for birds and bats, respectively. Other elements of the project will be constructed outside of the winter season when there is no snow on the ground, avoiding the raptor wintering season.	Please note that SNWSO prefers the most conservative buffers be used as indicated by recent scientific studies and best management practices. More conservative buffers give confidence to SNWSO that impacts to all living beings using the habitat are avoided as much as possible by using a more holistic ecosystem approach. In addition, the eagle is of particular importance to Six Nations (and many other Indigenous Nations) as a cultural symbol and clan animal. What monitoring activities are in place to confirm that no negative impacts will occur to this species as a result of construction and trail use? (Please refer to item 4)	As noted above, the City has committed to carrying out additional studies and will take action to further minimize impacts if significant adverse effects are observe once the trail is in use.

Blair Preston Trail, Environmental Assessment
Six Nations Comments on EA

Item	Topic/Section	Six Nation's Comment (December 14, 2021)	Study Team Response (February 25, 2022)	Six Nation's Response (March 18, 2022)	Study Team Response (July 25, 2022)
10	Section 8.0 – Potential Impacts and Mitigation Associated with the Preferred Solution – Table 8.2: Potential Impacts and Mitigation – Bobolink Habitat	"Loss should be minimized to the extent possible." Will the proponent implement a maximum acceptable limit for habitat loss? What happens when and if this limit is exceeded? Will bobolink habitat loss offset take place if too much habitat is removed? Six Nations requires a habitat offset ratio of 10:1 to aid in the recovery of Bobolink populations within their lands.	The amount of Bobolink habitat to be removed will be limited to the footprint of the trail through the agricultural field. Impacts have been minimized by locating the trail along the edge of the field to avoid bisecting the habitat. Bobolink habitat will be replaced in accordance with the Endangered Species Act which requires project proponents to replace more habitat than the area being removed. We expect that approximately 1,856 m^2 (0.186 ha) of Bobolink habitat will need to be removed. We are working with rare to determine if there is a suitable location on the property where new habitat can be created. If no suitable location can be identified, an alternative location within the Grand River watershed will be sought, including possible locations within Six Nations of the Grand River lands.	What is the ratio of habitat replacement for use by bobolink? SNWSO encourages the proponent to go above and beyond requirements of the Endangered Species Act. SNWSO prefers the use of more conservative ratios to ensure no harm comes to bobolink or the other non-human people that may inhabit the same habitat but are of equal importance from an Indigenous perspective. As such, SNWSO encourages a 1:1 habitat replacement should offset be located on-site and 2:1 habitat offset should this habitat be located off-site.	Bobolink habitat will be replaced at a ratio of 1.5:1
12	Section 8.0 – Potential Impacts and Mitigation Associated with the Preferred Solution – Table 8.2: Potential Impacts and Mitigation – Natural Areas	Please forward a completed robust re-vegetation plan when it becomes available. We prefer that this plan employ diverse site-appropriate native species as re-vegetation material and that equipment be properly and frequently cleaned prior to arriving on site to prevent introduction of invasive species into the area. Continued management of invasive species to prevent invasion should occur in the Study Area after construction has been completed.	A re-vegetation plan will be developed during the detailed design stage of the project following completion of the EA. A commitment to using native species will be included in the EA document. The re-vegetation plan will include measures to enhance and restore any areas disturbed by construction and will create a net benefit by including additional plantings along both sides of the Speed River and to improve natural heritage functions and limit trail users from accessing the watercourse. A draft re-vegetation plan will be provided to Six Nations and rare staff for comment when it is available.	SNWSO looks forward to receiving future plans regarding reseeding activities. Please endeavour to source building and reseeding materials from Six Nations businesses when possible. Please allow and notify Six Nations community members of harvesting opportunities in the area prior to construction.	SNWSO will be circulated on future reseeding/restoration plans developed during the detailed design phase of the project after the EA has been completed. A commitment will be included in the EA to ensure that this occurs. A commitment to provide harvesting opportunities prior to construction will also be included (with approval from Rare). The City of Cambridge procurement policies do not allow for preferred contractor or material sources. The City cannot require contractors bidding on the construction to use material from Six Nations. However, we are well aware that Kanyanase and potentially other Six Nations businesses are well suited and more than capable of providing plant material and undertaking restoration-related tasks. The EA will note Six Nations' interest in participating in business opportunities.

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Appendix Q
Consultation with HDI

Blair-Preston Trail Summary of Consultation				
Conact Initiato	**Date**	**Contact Type**	**Recipient**	**Contact Summary**
Burnside (Meaghan Luis)	31-May-19	Email	Leroy Hill jocko@sixnationsns.com	Burnside sent Notice with attached Study Area map prior to the release of a formal NOCm, staff have identified the community as having potential interest in the project and Study Area, and are seeking input to help understand whether any Aboriginal or Treaty Rights may be affected by the project or its location; and any other areas of concern or interest you may have related to this project.
Burnside (Meaghan Luis)	7-Jul-19	Phone Message	Leroy Hill 519-445-4222	Burnside left a message for L. Hill, on behalf of City of Cambridge, Re Blair-Preston Trail EA; and whether FN has any interest or concerns regarding the project, ahead of NOCm and indicated to follow up if anymore information is needed. Direct contact number was left.
Burnside (Sylvia	23-Apr-20	Email	Leroy Hill jocko@sixnationsns.com	Burnside sent project Notice of Commencement
Burnside (Meaghan Luis)	7-May-20	Phone Message	Leroy Hill 519-445-4222 519-717-7326	Burnside left a message for L. Hill, enquiring whether NOCm had been received, whether community would like to be engaged, have any issues/ concerns/ comments.
Burnside (Sylvia Waters)	14-May-20	Email sent through "Contact Us" on HDI website	HDI general email	Burnside sent an email through website to confirm email & phone number.
Burnside (Sylvia Waters)	22-Jun-20	Phone Message	Cell and general HDI line 519-445-4222 519-717-7326 905-765-1749	Burnside left a message on both numbers inquiring about whether the Notice of Commencment had been received.
Burnside (Tricia Radburn)	24-Jun-20	Email	Leroy Hill jocko@sixnationsns.com Misty Hill hdi2@bellnet.ca	Burnside sent email to follow-up on recent NOCm sent in April. Burnside working with City on the potential to create a trail and pedestrian bridge over the Speed River just north of its confluence with the Grand River. Study will consider three options (see figure). Wish to confirm whether community has an interest in Project and would like to participate.
Burnside (Tricia Radburn)	13-Oct-20	Phone Message	519-445-4222	Burnside left a message for either Misty or Leroy, for confirmation of receipt of notice, whether community has any interest/ concerns/ comments/ issues regarding the project, Email and number contacts were left.

Burnside (Sylvia Waters)	2-Nov-20	Email	Leroy Hill jocko@sixnationsns.com Misty Hill hdi2@bellnet.ca Todd Williams williams.todde@gmail.com	Burnside sent attached NoPIC. PIC will be held virtually on City's engagement platform. Presentation & short survey can be found at www.engagewr.ca/Blair-Preston starting October 30, 2020; City encourages residents to visit the platform to view the PIC & provide feedback. At this time, we request your feedback be provided by November 27, 2020.
Burnside (Tricia Radburn)	July 2020-November 2020	Various Emails	Todd Williams williams.todde@gmail.com Wanye Hill tworowarchaeology@gmail.com Janice Bomberry janicehdi@gmail.com	Various emails to coordinate HDI participation in archaeological fieldwork. HDI staff were present for fieldwork occuring on November 4 5 and 10, 2020
Burnside (Tricia Radburn)	11-Aug-21	Email	Leroy Hill jocko@sixnationsns.com Misty Hill hdi2@bellnet.ca	Please see the link below for a draft copy of the Blair-Preston Trail EA for your review and comment. The project involves a pedestrian trail and bridge across the Speed River just upstream of its confluence with the Grand River. HDI field liaisons were present for the Stage 2 Archaeological Assessment where a number of artifacts were uncovered. The City and/or Region will proceed with additional archaeological studies prior to any project-related disturbance at the site. HDI will be contacted about this future work when it proceeds. Please let us now if you have any additional questions or comments about the project or reports available at the link below.
Burnside (Mishaal Rizwan)	30-Aug-21	Phone Message	519-445-4222 (voicemail box full) 519-717-7326 905-765-1749	Burnside left a message for Leroy Re Blair-Preston EA and whether FN has interest in providing comments and/or needs any additional time to review. Misty's inbox (Haundenosaunee Resource Centre mailbox) has been full since Friday Aug 27 so could not leave message.
Burnside (Mishaal Rizwan)	14-Sep-21	Phone Message	519-717-7326	Burnside left a voicemail message for Leroy Re Blair-Preston EA and whether FN has interest in providing comments and/or needs any additional time to review.
Leroy Hill	14-Sep-21	Text	Burnside (Mishaal Rizwan)	Leroy texted back asking for reason for call as he was busy until 1 pm. Mishaal explained the reason for call and Leory indicated that he will forward info to HDI as they will handle any review.

Aaron Detlor	28-Sep-21	Email	Tricia Radburn Tracy General Brian Doolittle Todd Williams Wayne Hill Janice HDI communications Kahsenniyo Williams	We have significant concerns with respect to the proposed project particularly where RJ Burnside has not submitted an application so that we may review the project and where we have no funds to review and/or comment on the proposed project. Certainly nothing has been done to obtain consent which is required for this project. Please feel free to contact me at your convenience to discuss how and when we can participate meaningfully on this project which is going to impair and interfere with rights.
Burnside (Tricia Radburn)	5-Oct-21	Email	Aaron Detlor Shane Taylor Marcos Kroker Tracy General Brian Doolittle Todd Williams Wayne Hill Janice HDI communicationns Kahsenniyo Williams	Thank you for your email regarding the Blair Preston Trail Environmental Assessment. We are happy to meet with you to talk more about the project. Are you available at any of the following times: •Oct 13, 1-3pm •Oct 19, 11-2pm •Oct 20, 10-12pm If these dates do not work, could you please provide a few options that work better for you?
Burnside (Tricia Radburn)	5-Oct-21	Email	Aaron Detlor	Aaron, further to my email below with regard to a meeting, could you please provide us with some details about your application process and fees so that we can get that back to you as soon as possible?
Burnside (Tricia Radburn)	12-Oct-21	Email	Aaron Detlor Tracy General Brian Doolittle Todd Williams Wayne Hill Janice HDI communications Kahsenniyo Williams	Aaron, I am just checking in again regarding the permit application that you mentioned. The City is open to that but we do not have any of the details. Would you be able to provide us with some information about the application and fees? Also, please let us know if you would like to have a meeting. I had listed some potential dates in my email below but please let me know if another date works better for you.

Burnside (Mishaal Rizwan)	13-Oct-21	Phone Message	519-445-4222	Burnside left a message asking for Aaron Detlor's contact information to follow up or and asking for HDI's contract and fees for review.
Burnside (Tricia Radburn)	19-Oct-21	Email	Aaron Detlor Shane Taylor Jamie Croft Marcos Kroker Tracy General Brian Doolittle Todd Williams Wayne Hill Janice HDI communications Kahsenniyo Williams	Aaron, I am writing again to touch base on the review of the Blair-Preston Trail EA. I understand from your email that you have some concerns about the project. We would like to hear about your concerns and discuss options to resolve them. You mentioned an HDI permit application. Could you please provide us with more information about that, including any forms or fees so the City can address that? If you are able to meet with us to talk about this project, please provide us with some potential dates when you are available. We are having difficulty contacting you. We have tried calling the HDI office but we haven't been able to reach anyone and some voicemail boxes seem to be full. We would appreciate it if someone could get back to us at your earliest convenience.
Burnside (Tricia	25-Oct-21	Phone Message	519-445-4222 (voicemail box full)	Burnside called but voicemail box is full and cannot accept further messages.

R.J. Burnside & Associates Limited 292 Speedvale Avenue West Unit 20 Guelph ON N1H 1C4 CANADA
telephone (519) 823-4995 **fax** (519) 941-8120 **web** www.rjburnside.com

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Meeting Notes

Meeting Date: March 9, 2022 **Project No.:** 300043765.0000

Project Name: Blair-Preston Trail EA

Meeting Subject: Call with HDI

Meeting Location: Teams Meeting

Date Prepared: March 9, 2022

Those in attendance were:

Jamie Croft	City of Cambridge
Philip Rowe	R.J. Burnside & Associates Limited
Tricia Radburn	R.J. Burnside & Associates Limited
Aaron Detlor	HDI
Gloria Thomas	HDI
Raechelle Williams	HDI
Todd Williams	HDI
Kahsenniyo Williams	HDI

The following items were discussed:

1. Aaron noted concerns with the Municipal Class EA consultation process and the delegation of the duty to consult from the province to the municipality.
    - Aaron referenced that, as per the MCEA EA process, during the Phase 1 of the process the City should have engaged HDI and discussed the following:
        - ownership and treaty rights associated with the land;
        - value of the project;
        - potential compensation;
        - scoping and parameters of engagement; and,
        - scope of environmental work.
    - Tricia indicated that there were a number of attempts to contact HDI during Phase 1 of the EA process; however, HDI did not respond.

- Aaron stated that HDI is frustrated by their inability to address someone of authority. As a Nation, their communication with the federal Crown has been delegated to the Province, who then delegated to the City, who subsequently delegated engagement to their consultant. HDI considers this unacceptable and are seeking an arrangement that allows them to communicate regularly with someone with whom they can build long-term relationships, with the authority to make City-wide decisions beyond individual projects. Working through consultants does not allow for discussions that go beyond the narrow scope of an individual project.

2. Concerns with land title were expressed. Aaron suggested that EAs should include land title information and should identify lands subject to a treaty as well as lands which were never ceded, if present.

3. Concerns with the completion and submission of HDI's application form were identified, as follows:
    - The application form was submitted by Burnside, however Aaron indicated it should instead be submitted directly from the City.
    - It was acknowledged that the City did sign the application form and the City is identified as the applicant. Although the form provides a box to identify an agent or consultant working for the City (Burnside was listed in this section), Aaron indicated that Burnside should not be identified and that the application should be between the City and HDI only.
    - HDI would like to see the application re-issued directly by the City without Burnside information. It was noted that HDI had already processed the application fee.

4. With regard to the consultation process, HDI would prefer to have a formal process in place to review all projects with the City rather than having individual meetings with multiple staff.

5. HDI would like to see improved relationship with the City, and have more formal acknowledgement of HDI's Treaty Rights encapsulated in City procedures and plans.

6. There was a brief discussion about what accommodation the Blair-Preston Trail project could include.
    - Two HDI staff noted that they may not have significant concerns with a small trail project. The project itself is relatively minor but HDI may request some small accommodation.
    - The exact nature of the accommodation would be confirmed at a later date through further discussions.
    - HDI staff also indicated they are familiar with the project site and do walk this area using existing trails to harvest tradition plants and medicine.

7. Concerns were raised with regard to the participation of Six Nations of the Grand River in the EA process.
    - Aaron indicated that only HDI should be consulted and that Six Nations should not be part of the consultation process. He indicated that consultation with Six Nations should cease.

Notes prepared by:

R.J. Burnside & Associates Limited

Tricia Radburn

TR/PR/sd

Community Development
The City of Cambridge
croftj@cambridge.ca

January 17th, 2023

Raechelle Williams
Haudenosaunee Development Institute
16 Sunrise Ct, Suite 600
PO Box 174
Oshweken, ON, N0A 1M0

Re: Blair-Preston Trail Environmental Assessment, Follow -up to March 2022 Meeting

Dear Ms. Williams,

We are writing to follow-up on the meeting we had on March 9, 2022 regarding the proposed Blair-Preston trail in the City of Cambridge. The trail will provide an important active transportation link between the communities of Blair and Preston. The route crosses property owned by the *rare* Charitable Research Reserve and includes a cycling and pedestrian bridge over the Speed River just north of its confluence with the Grand River.

We appreciated the discussion we had back in March 2022 and the City and Region have been carefully considering your comments.

The focus and scope of this project has always been to review and assess the potential impacts of the proposed trail on the natural environment, cultural resources and Indigenous treaty rights, among other concerns. During our discussion, it was noted that members of the Haudenosaunee Confederacy visit properties owned by *rare* and do collect plants from the property for medicinal, traditional and crafting purposes.

We have tentatively identified plants from within the trail footprint which may have some traditional use or cultural significance to Indigenous communities, including the following:

- Box Elder
- Sugar Maple
- Common Yarrow
- Common Burdock
- Common Milkweed
- Canada Thistle
- Common Teasel
- Daisy Fleabane
- Black Walnut
- Crabapple Species
- Eastern White Pine
- Trembling Aspen
- Choke Cherry
- White Oak
- Staghorn Sumac
- Black Raspberry

The list is relatively short due to the agricultural nature of much of the route. We acknowledge that there may be inaccuracies in this list and we respectfully ask that you correct any errors.

We wish to ensure that the ability of your community members to continue to collect plants is not impacted by the project. A commitment will be included in the EA to permit members of the Haudenosaunee Confederacy to harvest plants from within the construction footprint prior to the start of the project (with approval from *rare*). If there is interest, HDI can also be consulted on the landscape and restoration plan to be developed during the detailed design phase of the project, after the Environmental Assessment is complete. There are opportunities to incorporate culturally significant plants into the restoration plans for any disturbed areas.

We understand that HDI may have additional concerns regarding treaty rights which are beyond the scope of this Environmental Assessment. The City and Region are open to continuing those discussions in an alternative forum, outside of the EA process.

Please reach out if you have any additional comments or questions about the proposed Blair-Preston trail project.

Yours truly,

Jamie Croft

Manager of Infrastructure Engineering
Engineering & Transportation Services
T: 519-623-1340 ext. 4761
E: croftj@cambridge.ca

Cc: Tricia Radburn, R.J. Burnside & Associates Limited; Aaron Detlor, Haudenosaunee Development Institute (HDI); Kahsenniyo Williams, HDI; Todd Williams (HDI)

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Appendix R
Consultation with CEAC

Meeting Date: **06/28/23** **Report #:** CEAC-01-2023

To: **Cambridge Environmental Advisory Committee (CEAC)**

Report Date: **06/12/2023**

Report Author: **Kathy Padgett, Senior Planner – Environment**

Department: **Community Development**

Division: **Planning Services**

Report Title: **Blair-Preston Trail and Pedestrian Bridge Municipal Class Environmental Assessment**

File No: **A/00910-20**

Ward No: **Wards 1 and 3**

RECOMMENDATION

THAT the Cambridge Environmental Advisory Committee (CEAC) forward Report No. CEAC-01-23 to the Project Engineer as its comments on the Blair-Preston Trail and Pedestrian Bridge Municipal Class Environmental Assessment.

SUMMARY

- The City of Cambridge is undertaking a Municipal Class Environmental Assessment to establish a new trail and pedestrian bridge across the Speed River between Blair and Preston.
- The Cambridge Environmental Advisory Committee is providing comments to the Project Engineer on the Blair-Preston Trail and Pedestrian Bridge Municipal Class Environmental Assessment.

BACKGROUND

The City of Cambridge is undertaking a Municipal Class Environmental Assessment (EA) to establish a new trail and pedestrian bridge across the Speed River to connect the communities of Blair and Preston. The EA process is triggered by the need for a pedestrian bridge over the Speed River. The new off-road link is proposed to connect

the B. McMullen Linear Trail to the existing multi-use trail on Fountain Street South via a bridge over the Speed River. See map below for the approximate extent of the Study Area and the three alternatives being assessed through the EA process.

The purpose of the EA is to identify the preferred location for a pedestrian bridge and connecting trail.

ANALYSIS

Existing Policy/By-Law:

The need for a connection between the villages of Preston and Blair was identified as a short-term priority in the City of Cambridge Cycling Master Plan, completed in 2020.

Financial Impact:

The Region of Waterloo is funding the Environmental Assessment.

Public Input:

A Public Information Centre was held on the City's public engagement platform from October 30 to November 27, 2020 to share the preliminary preferred solution and receive feedback from the public.

Internal/External Consultation:

A variety of stakeholders have been engaged in the EA process including: Indigenous communities, rare Charitable Research Reserve (*rare*), the public, and government agencies including the Grand River Conservation Authority.

Comments/Analysis:

The Cambridge Environmental Advisory Committee (CEAC) has reviewed the Project File Report (PFR) dated March 27, 2023 and are generally supportive of the project. The selection of the preferred route (Alternative 1: Northern Route) considered a number of criteria including: natural environment; social environment; cultural environment; technical environment; economic environment; and land use/policy.

CEAC is supportive of the following aspects of the project:

- That the bridge design will avoid having structures in the water and no in-water works are proposed.
- The thoughtfulness that went into the conceptual design for the trails including the "living fence" to deter off-trail trespassing and the inclusion of educational signage.
- Removing invasive species in the Study Area.

CEAC provides the following comments on the PFR:

1. **Methodology**

   a) Can the project team clarify why mammalian considerations and impacts were excluded from the evaluation methodology?

   b) In Section 6.2 for Evaluation Criteria, 'proximity' is used as an indicator. In general, proximity is one of the least robust indicators that can be used, particularly because proximity does not actually characterize the impact itself but rather notes a general possibility for impact. Can the project team clarify why better, more scientifically robust indicators that would characterize the impacts were not used for the evaluation methodology?

2. **Bridge design**

   a) As noted on page 65, the entire project is located within the floodplain. This is concerning in general since we're seeing the widespread economic impacts of a history of building on floodplains, but additionally because of changing climatic conditions from land-use changes and climate change.

      CEAC suggests more explicit language be included to address that the bridge design process include deep consideration of proactive and protective measures based on worst-case climate change scenarios that surpass current Grand River

Conservation Authority Regulations. This is described briefly as a general concern somewhere in the conceptual design portion of the EA and more in-depth on page 62, but the measures suggested to implement in response to climate change impacts are negligible. This is also in line with the comments received from the Ministry of Environment, Conservation and Parks during the consultation period, noted on page 83.

3. **Habitat protection/restoration and impacts to wildlife**

a) CEAC would like to see more explicit language that this land has been allocated first and foremost for conservation land and will remain so. It should be expected that trail users must coexist with that allocation and that wild inhabitants take precedence over trail users. If there are wildlife conflicts or unanticipated impacts to wildlife, CEAC recommends that the City works with *rare* to determine appropriate next steps. This may mean impromptu trail closures and not just in winter months. Animal trapping and relocation are too often the first line of defense when human/wildlife conflicts occur.

b) Page 60 discusses restoration activities. There did not appear to be any notes about how pre-site conditions were assessed. If impacts are not being characterized there is concern that restoration activities will not be robust or effective. Can the project team please clarify how meaningful restoration activities would be undertaken for “areas disturbed during construction”?

c) CEAC recommends further consultation with an ecologist and the Ministry of Natural Resources and Forestry on the proposed removal of the snags identified as bat maternity roosts to more accurately determine the number of bats making use of them, the recommended timing and procedure for safe removal, and that an appropriate number of bat boxes are being installed to compensate for tree removals.

d) CEAC supports that lighting is not being recommended along the trail route as lighting could have an adverse effect on wildlife movement, breeding, nesting, foraging, etc.

e) Cash-in-lieu is mentioned on pages 60 and 69 and should be used as a last resort. Cash does not compensate for habitat loss of threatened species and this loss should not be economically quantified in this way. Cash-in-lieu that goes to general habitat protection means this habitat will not be ensured and/or exist within our City and that is an intolerable loss. It is also how species become endangered. CEAC has a strong preference for habitat restoration, in this case with the Bobolink habitat.

f) CEAC would like the opportunity to review the “living fence” design that will be developed in consultation with *rare*, when it is available.

4. **Monitoring**

    a) In Table 8.2 on page 66/67, the EA suggests no monitoring is required for the first substantive item, "Nests of Migratory Birds / Roosting Habitat for Rare Bats". CEAC suggests spot-check monitoring happen by a qualified professional during construction, particularly for the identification of nesting migratory birds and Species at Risk (SAR). The Contractor or site employees should not be the only mechanism of identification during construction as they are not qualified professionals for this and it could lead to deeper impacts on SAR and nesting migratory birds.

    b) Further, the Contractor is identified throughout Table 8.2 as the point-person for monitoring activities. Monitoring protocols are most robust when they are undertaken by a third-party. CEAC suggests monitoring activities in Table 8.2 be updated to reflect a third-party approach.

5. **Enforcement**

    a) With respect to trespassing beyond the trail, litter, off-leash dogs and other such impacts that may occur with the construction of a trail, will it be financially feasible for the City to monitor and enforce these issues should they arise?

6. **Clarification**

    a) Page 30 states, "The Speed River supports a small number of waterfowl and does not provide preferred habitat conditions." Please consider revising this sentence to clarify the reference is to the 500 metres of the Speed River surveyed within the Study Area and not the Speed River in general. This is an important distinction that was made about the Grand River in the section before. The same language and clarity should apply to this statement about the Speed River.

    b) While Indigenous involvement has obviously been woven throughout the EA and described in plans, there appears to be inconsistency of who is involved throughout. There are mentions of Six Nations, HDI, and Mississaugas of the Credit. but the involvement tends to revert to just Six Nations in several places without explanation. Please provide clarification on how choices are being made for which Indigenous communities were included at various stages of the EA and future project proposal stages.

Thank you for the opportunity to provide comments.

SIGNATURE

Prepared by:

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Alison Fraser
CEAC Member

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Cynthia Brown
CEAC Member

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Danielle Lindamood
CEAC Member

ATTACHMENTS

N/A

Category	Class EA Questions	R.J. Burnside & Associates Limited Response
Methodology	• Can the project team clarify why mammalian considerations and impacts were excluded from the evaluation methodology?	Impacts to mammals were considered. There are no den sites, deer wintering areas or other significant habitats for mammals in the Study Area, with the exception of roosting habitats for bats. Bat habitat s were considered in the evaluation.
	• In Section 6.2 for Evaluation Criteria, 'proximity' is used as an indicator. In general, proximity is one of the least robust indicators that can be used, particularly because proximity does not actually characterize the impact itself but rather notes a general possibility for impact. Can the project team clarify why better, more scientifically robust indicators that would characterize the impact were not used for the evaluation methodology?	Proximity is used as an indicator because no work will occur directly within these natural features. There are no direct impacts occurring within the feature, only activities which occur nearby to a feature. Direct impacts can be measured e.g. the number of trees removed, or X ha of habitat removed. Indirect effects are less easy to quantify. For example, waterfowl may be affected by the human presence, noise etc. if a trail is close by. The degree of that impact is difficult to quantify but it is clear that something that occurs farther away from the habitat will have less effect than something that occurs right beside it. For example, the Alternative Trail Route #1 will have less of an impact on the waterfowl habitat in the Grand River than Alternative #3 which is significantly closer.
Bridge Design	• As noted on page 65, the entire project is located within the floodplain. This is concerning in general since we're seeing the widespread economic impacts of a history of building on floodplains, but additionally because of changing climactic conditions from land-use changes and climate change.	Bridges, by their nature, are built in floodplains. Trails are also often located in floodplains, including many existing trails in the City. The bridge will be constructed to current design standards to ensure it can withstand flows and ice jams. Hydraulic modeling was undertaken and will be updated during detailed design. Modeling has shown that the bridge can be constructed without impacts to the floodplain. Design standards related to flows and flood impacts are set by the Conservation Authority.

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	• CEAC suggests more explicit language be included to address that the bridge design process include deep consideration of proactive and protective measures based on worst-case climate change scenarios that surpass current Grand River Conservation Authority Regulations. This is described briefly as a general concern somewhere in the conceptual design portion of the EA and more in-depth on page 62, but the measures suggested to implement in response to climate change impacts are negligible. This is also in line with the comments received from the Ministry of Environment, Conservation and Parks during the consultation period, noted on page 83.	There are currently no standards beyond Conservation Authority regulations for flood impacts. There is a cost to constructing a bridge beyond current standards. The bridge will be designed to sufficiently convey flows for its constructed lifespan.
Habitat Protection / Restoration and Impacts to Wildlife	• CEAC would like to see more explicit language that this land has been allocated first and foremost for conservation land and will remain so. It should be expected that trail users must coexist with that allocation and that wild inhabitants take precedence over trail users. If there are wildlife conflicts or unanticipated impacts to wildlife, CEAC recommends that the City works with rare to determine appropriate next steps. This may mean impromptu trail closures and not just in winter months. Animal trapping and relocation are too often the first line of defense when human / wildlife conflicts occur.	It is understood that this land is intended for conservation purposes. Mitigation has been provided to minimize impacts to wildlife by keeping trail users on the trail to the extent possible. It is not expected that any animal trapping or relocation will be required. Measures have been provided to monitor impacts to wintering waterfowl and raptors. Post-construction monitoring of wintering waterfowl and wintering raptors will occur to identify any significant changes in populations and trigger the need to additional mitigation, if required. The City carried out winter waterfowl surveys in the winter of 2022/23 to further build our understanding of current waterfowl presence. Surveys will then be carried out for three years after construction. Should the trail cause a significant decrease in wintering waterfowl, the trail will be closed during winter months. Criteria will also be established to identify when, and how, the trail could subsequently be reopened in the winter months. This may include additional exclusion measures and/or monitoring. The City also conducted additional winter raptor surveys in the winter of 2022/23. The intent was to confirm the extent of raptor wintering activities occurring on the site and its immediate vicinity. As with waterfowl, wintering raptor

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		habitats will be surveyed for three years post-construction. If significant impacts are observed due to the trail, additional mitigation can be implemented, such as winter trail closures, if required.
	• Page 60 discusses restoration activities. There did not appear to be any notes about how pre-site conditions were assessed. If impacts are not being characterized there is concern that restoration activities will not be robust or effective. Can the project team please clarify how meaningful restoration activities would be undertaken for "areas disturbed during construction"?	Current conditions were assessed and are documented in section 5.0 of the report. Section 5.1.9 in particular documents existing vegetation and habitats. It is noted that the wooded areas in the vicinity of the proposed bridge include a significant proportion of non-native and invasive species. Rare's Environmental Management Plan also notes this concern. Restoration activities will involve replacing these non-native species with native ones.
	• CEAC recommends further consultation with an ecologist and the Ministry of Natural Resources and Forestry on the proposed removal of the snags identified as bat maternity roosts to more accurately determine the number of bats making use of them, the recommended timing and procedure for safe removal, and that an appropriate number of bat boxes are being installed to compensate for tree removals.	The Ministry of Environment, Conservation and Parks' (MECP's) current direction is that if a small number of trees are being removed, and they can be removed outside of the bat roosting season, then no monitoring and no mitigation is required. Bat boxes are not a provincial requirement under the Endangered Species Act for this project. The installation of bat boxes has been added as and extra measure to provide additional habitat. The boxes will be installed in accordance with provincial guidelines for location/design etc.
	• CEAC supports that lighting is not being recommended along the trail route as lighting could have an adverse effect on wildlife movement, breeding, nesting, foraging, etc.	Noted.
	• Cash-in-lieu is mentioned on pages 60 and 69 and should be used as a last resort. Cash does not compensate for habitat loss of threatened species and this loss should not be economically quantified in this way. Cash-in-lieu that goes to general habitat protection means this habitat will not be ensured and / or exist within our City and that is an intolerable loss. It is also how	The cash-in-lieu noted is intended to be an option of last resort. It will only be used if suitable restoration sites are not identified by rare, GRCA or the City.

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	species become endangered. CEAC has a strong preference for habitat restoration, in this case with the Bobolink habitat.	
	• CEAC would like the opportunity to review the "living fence" design that will be developed in consultation with rare, when it is available.	The living fence design will be submitted to CEAC during the detailed design process.
Monitoring	• In Table 8.2 on page 66 / 67, the EA suggests no monitoring is required for the first substantive item, "Nests of Migratory Birds / Roosting Habitat for Rare Bats". CEAC suggests spot-check monitoring happen by a qualified professional during construction, particularly for the identification of nesting migratory birds and Species at Risk (SAR). The Contractor or site employees should not be the only mechanism of identification during construction as they are not qualified professionals for this and it could lead to deeper impacts on SAR and nesting migratory birds.	No monitoring is required because it is intended that trees will be cut outside of the bird nesting season and bat roosting season. The text in Table 8.2 reads as follows: • If clearing must occur within the nesting/roosting window: – A qualified Ecologist Ecologist / Avian Biologist will first search the affected area. Any active nests will be flagged and all clearing within the associated habitat will be avoided until the Ecologist / Avian Biologist confirms that the birds have fledged, and the nest is no longer active; – If a nesting migratory bird (or SAR protected under ESA, 2007) is identified within or adjacent to the construction site, all activities will stop, and the Contractor shall discuss mitigation measures with the proponent. In addition, the proponent will contact the MECP to discuss applicable mitigation options. The Contractor will proceed based on the mitigation measures established through discussions with the MECP; and – Clearance must be provided by MECP in relation to the removal of trees within the bat roosting season; and, – Six Nations will be contacted for comment and/or review of the trees for potential nesting prior to removal.

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		It is therefore intended that a qualified ecologist will carry out any nest search/bat habitat surveys, if required.
	• Further, the Contractor is identified throughout Table 8.2 as the point-person for monitoring activities. Monitoring protocols are most robust when they are undertaken by a third-party. CEAC suggests monitoring activities in Table 8.2 be updated to reflect a third-party approach.	The city will determine how contract administration and inspection tasks are to be carried out during the detailed planning and tender preparation to be developed in the next phase of the project.
Enforcement	• With respect to trespassing beyond the trail, litter, off-leash dogs and other such impacts that may occur with the construction of a trail, will it be financially feasible for the City to monitor and enforce these issues should they arise?	The City intends to work with rare to develop protocols for bylaw enforcement. The trail will be monitored and enforced to the current City standard for all City trails.
Clarification	• Page 30 states, “The Speed River supports a small number of waterfowl and does not provide preferred habitat conditions.” Please consider revising this sentence to clarify the reference is to the 500 m of the Speed River surveyed within the Study Area and not the Speed River in general. This is an important distinction that was made about the Grand River in the section before. The same language and clarity should apply to this statement about the Speed River.	Agreed. Language to be changed.
	• While Indigenous involvement has obviously been woven throughout the EA and described in plans, there appears to be inconsistency of who is involved throughout. There are mentions of Six Nations, HDI, and Mississaugas of the Credit, but the involvement tends to revert to just Six Nations in several places without explanation. Please provide clarification on how choices are being made for which Indigenous communities were included at various stages of the EA and future project proposal stages.	Each Indigenous community was treated as a separate, unique group. Each expressed their own concerns based on their own priorities. For example, MCFN indicated that they were happy with the EA and did not express a need to participate in further stages of the project, including monitoring. Six Nations indicated that they preferred to be present during construction and wanted to review detailed designs.

Tricia Radburn

From: Kathy Padgett <PadgettK@cambridge.ca>
Sent: Tuesday, November 07, 2023 8:56 AM
To: Jamie Croft
Cc: Tricia Radburn
Subject: RE: Environmental Advisory Committee Comments- Blair/Preston

Hi Jamie,

Following-up on our conversation yesterday and after further dialogue with the CEAC subcommittee, the subcommittee would be happy to meet and be further involved at detailed design as opposed to now. They are satisfied that their concerns are already documented in the comments they have previously made and that further dialogue will be more useful when more details are known in the future. So I think for now we are good, and if this project does proceed to detailed design in the future we can pick this back up.

Thanks,
Kathy

From: Jamie Croft <CroftJ@cambridge.ca>
Sent: Thursday, November 2, 2023 10:11 AM
To: Kathy Padgett <PadgettK@cambridge.ca>
Cc: Tricia Radburn <Tricia.Radburn@rjburnside.com>
Subject: Environmental Advisory Committee Comments- Blair/Preston

Hi Kathy,

Are you able to advise what the committees concerns were with some of the responses for us to review? We could potentially be available for the November 22nd meeting for a brief presentation, but I understand meetings are in person now with no hybrid option?

If the concerns are significant enough, and they feel it warrants more discussion we can try to have someone available.

Thanks,

Jamie

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