Macdonell and Allan's Structures Schedule 'B' Municipal Class Environmental Assessment

Project File Report

Final

September 19, 2025

Prepared for:

RVA

CITY OF Guelph
Making a Difference

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RVA 215632.02

September 19, 2025

City of Guelph
1 Carden Street
Guelph, ON N1H 3A1

Attention: Andrew Miller, P.Eng., PMP
Project Manager

Dear Mr. Miller:

Re: Macdonell and Allan's Structures Schedule 'B' Municipal Class Environmental Assessment
Project File Report

Please find enclosed the final Project File Report for the Macdonell and Allan's Schedule 'B' Municipal Class Environmental Assessment completed by R.V. Anderson Associates Limited.

Yours very truly,

R.V. ANDERSON ASSOCIATES LIMITED

Mila Khatri, MES ENV SP
Environmental Planner, Transportation

Andrew McGregor, MCIP, RPP
Senior Planner, Project Manager

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In Association With:

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MACDONELL AND ALLAN'S STRUCTURES SCHEDULE 'B' MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

PROJECT FILE REPORT

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EXECUTIVE SUMMARY

R.V. Anderson Associates Limited ('RVA') was retained by the City of Guelph ('City') to complete a Schedule 'B' Municipal Class Environmental Assessment (MCEA) for the Macdonell Bridge Area, which includes the Macdonell Street corridor from the Woolwich Street/Wellington Street intersection to the Arthur Street/Rose Street intersection, the Macdonell Bridge, the Allan's Bridge, the Allan's Dam Spillway & Sluiceway, and the Ward to Downtown Pedestrian Bridge (the 'Study'). The Ward to Downtown Pedestrian Bridge was added to the scope in the later stages of the Study. This Study considered options for the Macdonell Bridge Area as a whole.

The purpose of the Study was to identify the preferred alternative solution for the replacement, potential removal and/or rehabilitation of the Macdonell and Allan's Structures, determine the feasibility of constructing the Ward to Downtown Pedestrian Bridge, achieve community consensus on the preferred alternative solution and design concept, and develop a design and cross-section that implements a Complete Streets approach, providing an accessible and safe environment for all modes of transportation to a revitalized Downtown Guelph.

This Project File Report (PFR) documents the results of the Class EA process. As part of the Study, several technical studies were completed to assess the existing conditions and potential impacts of the alternatives being considered. Studies included: Traffic Assessment, Natural Environment Assessment, Stage 1 Archaeological Assessment, Cultural Heritage Assessments, Geotechnical and Hydrogeological Investigations, and a Hydraulic Analysis. The findings of these studies were incorporated into the evaluation of alternative solutions and are summarized in this PFR.

Class EA Phase 1 – Problem / Opportunity Statement

The need and justification for this EA Study was developed from the results of the Ontario Structure Inspection Manual (OSIM) inspection reports for each of the structures. In accordance with Phase 1 requirements of the MCEA process for a Schedule 'C' project, a "Problem / Opportunity Statement" was prepared following the assessment of existing conditions within the Study Area to identify the various problems and opportunities to be addressed throughout the study.

The Study Problem / Opportunity Statement developed for the Macdonell and Allan's Structures Class EA is comprised of the following key elements:

- Address the structural deficiencies of the deteriorating structures, as identified by recent and ongoing bridge inspections;
- Address the hydraulic capacity requirements of the structures;
- Enhance road safety, operations, and connectivity for vehicles, pedestrians, cyclists, and transit to support the community building goals of the City; and
- Investigate the feasibility of constructing the Ward to Downtown Bridge to provide a safe and direct line for pedestrians and cyclists through St. Patrick's Ward into Downtown Guelph (added later to the Class EA Study following City's cancellation of previously tendered bridge).

Class EA Phase 2 – Alternative Solutions

Alternative solutions where developed for each of the 4 structures to address the structural concerns and improve connectivity over the Speed River. The alternatives are listed below with the preferred solution emphasized in bold.

Macdonell Bridge

1. Do Nothing
2. Rehabilitate Entire Structure
3. Rehabilitate Entire Structure and Widen the Deck
4. Replace Entire Structure for Vehicular Traffic Only
5. **Replace Entire Structure to Accommodate Active Transportation on North Side**

Allan's Bridge

1. Do Nothing
2. Minor Rehabilitation of Bridge for Heritage Purposes Only
3. Replace Superstructure for Pedestrians and Cyclists
4. **Remove Bridge**

Allan's Dam Sluiceway and Spillway

1. Do Nothing
2. **Rehabilitate Spillway and Sluiceway**
3. Remove Spillway and Sluiceway
4. Remove Spillway and Sluiceway and Build a New Dam Upstream with an Active Transportation Underpass

Ward to Downtown Pedestrian Bridge

1. Do Nothing
2. Construct the 2023 Tendered Bridge

3. Construct a Simplified Bridge Adjacent to the South Side of the GJR Bridge
4. Construct a Simplified Bridge Adjacent to the North Side of the GJR Bridge

Impacts, Mitigation and Monitoring

The key impacts associated with the implementation of the proposed design concept and general mitigation required have been identified. In addition to the mitigation measures identified in the report, additional work will be required to be completed prior to construction. During detailed design, findings from the Class EA will be confirmed through additional investigations, planning, and consultation with the key interested parties and technical agencies.

1.0 INTRODUCTION

The Macdonell Bridge, located on Macdonell Street over the Speed River, is a main artery for vehicles, pedestrians, and cyclists to Downtown Guelph. Constructed in 1963 and rehabilitated in 1988, recent inspections of the Macdonell Bridge have identified the need to repair or replace the structure. Improvements and modifications to the Allan's Bridge and Allan's Dam, located at the Speed River immediately south of the Macdonell Bridge are also required.

In response, R.V. Anderson Associates Limited ('RVA') was retained by the City of Guelph ('City') to complete a Schedule 'B' Municipal Class Environmental Assessment (MCEA) for the Macdonell Bridge Area, which includes the Macdonell Street corridor from the Woolwich Street/Wellington Street intersection to the Arthur Street/Rose Street intersection, the Macdonell Bridge, the Allan's Bridge, and the Allan's Dam Spillway & Sluiceway (the 'Study'). This Study considered options for the Macdonell Bridge Area as a whole.

1.1 Background

1.1.1 Historical Significance

While the present boundaries for the City of Guelph fall within the former Townships of Puslinch and Guelph, the historical community of Guelph was situated on the River Speed in Guelph Township. The City of Guelph was first laid out by a novelist named John Galt, who also held the role of Superintendent of the Canada Company, in 1827. Many sources note that the founding of Guelph occurred when Galt and his team of associates and workers cut down a tree at approximately the site of the west side of the Allan's Bridge. A tablet commemorating the felling of the tree has been placed just southwest of the Allan's Bridge on the abutment wall of the Macdonell Street Rail Viaduct. Shortly thereafter, on the grounds west of where the first tree fell, was the first house erected in Guelph, called the Priory.

The Study Area is a key bridging point – literally and figuratively – as it is historically associated with Guelph's development, including being the site of the founding of Guelph, being the location of Allan's Mil – an important employer and industry in the nineteenth century, and the Allan's Sluiceway and Spillway – that connects this area to the City's history. The Macdonell Bridge and Allan's Bridge, linking the two sides of the Speed River, was crucial to the neighbourhood's residential development, its transportation network, and Guelph's economy.

1.1.2 Downtown Infrastructure Renewal Program

Downtown Guelph is filled with aging infrastructure such as water and sewer pipes, roads and sidewalks. As such, the City of Guelph is planning for the replacement of this aging municipal infrastructure throughout the Downtown Core.

To minimize disruptions associated with major infrastructure improvements and maximize cost savings, the City has begun the planning phase of the Downtown Infrastructure Renewal Program (DTIRP). The DTIRP serves as the overall capital program for the reconstruction and improvement of public infrastructure within the road allowances in Downtown Guelph.

The Study Area for the DTIRP includes the designated area within the 2014 Downtown Secondary Plan (DSP) as Downtown Guelph and includes the area north of the Metrolinx railway tracks, bordered by Woolwich Street to the northeast, Wellington Street to the south, Gordon/Norfolk Streets to the west and Wellington Street and Wyndham Street south of the Metrolinx tracks (illustrated in Figure 1.1).

The planning phase of the DTIRP includes a Capital Implementation Plan (CIP) and 2 Class Environmental Assessments (EA) – the Wyndham Street Municipal Class EA and the Macdonell and Allan's Structures Class EA. The CIP outlines the overall capital program for reconstruction and improvement of public infrastructure within the road allowance within the project Study Area. The CIP is in the process of being finalized.

The Wyndham Street Class EA, downgraded to Schedule A+ and completed in 2023, considered Wyndham Street North from Carden Street to Woolwich Street. The objectives were to improve pedestrian, cyclist, transit and vehicular movement along Wyndham Street North and particularly through the St. George's Square area at the Wyndham / Quebec / Douglas intersections to support the community building goals of the City for its Downtown Area as envisioned in the Downtown Streetscape Manual, 2014. Wyndham Street Corridor Study was completed in 2024.

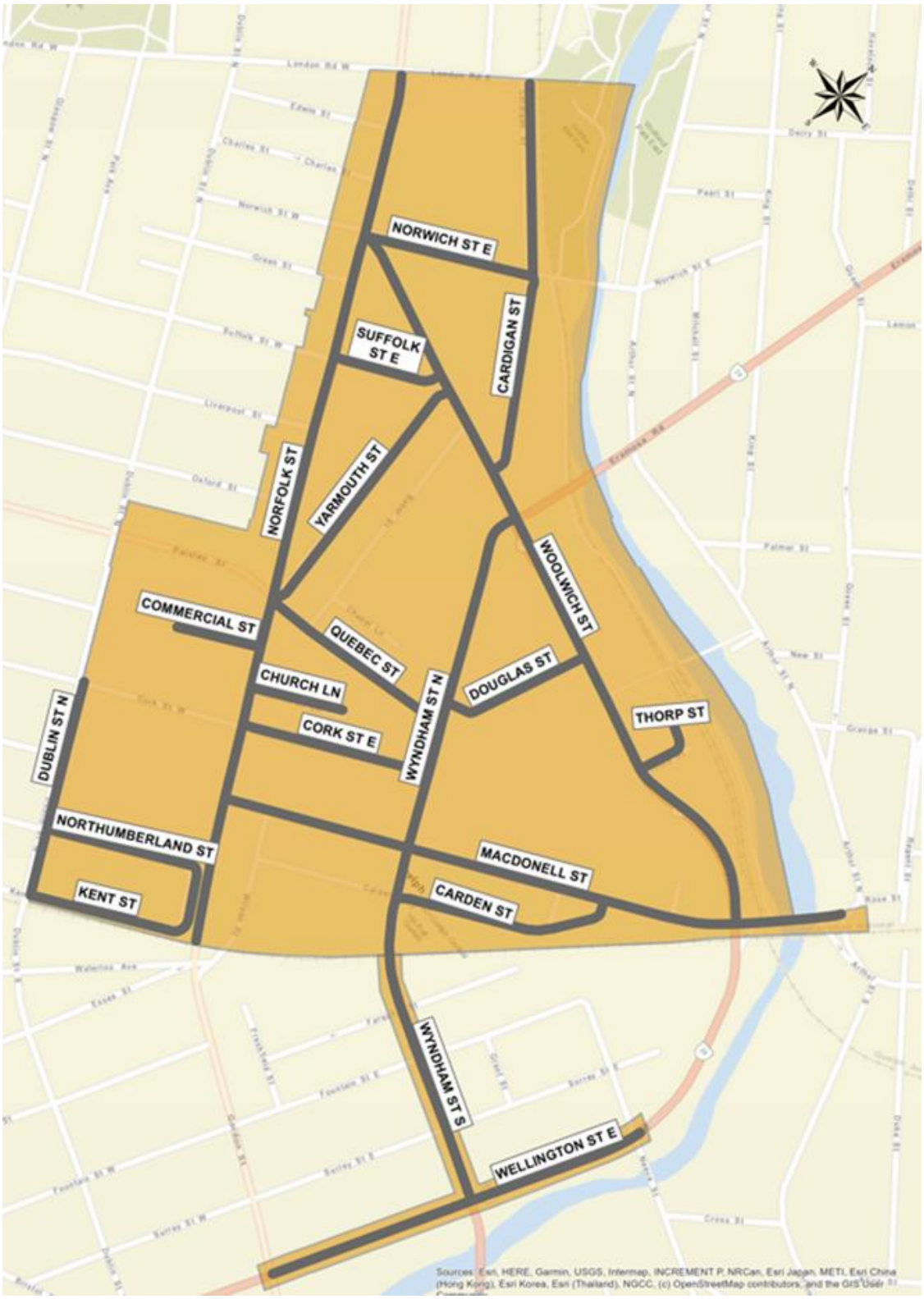

Figure 1.1 DTIRP Study Area

1.1.3 Macdonell Bridge

Macdonell Bridge (Structure ID 112) is a two-span reinforced concrete rigid frame bridge. The bridge has one 24.4m span and one 18.6m span for an overall bridge length of 43m. The total width of the bridge from exterior fascia to exterior fascia is 18.4m and no skew.

The bridge has 1.5m clear width wide sidewalks on each side with a 1.1m height steel railing facing the exterior. The existing railing meets the required 1.05m minimum height for pedestrians, but not the 1.37m minimum height for bicycles as per the Canadian Highway Bridge Design Code (CHBDC). The bridge deck also has 8 deck drains and has no waterproofing system.

The cross-section and lane configuration for the structure from north to south is:

- 1.879m sidewalk with steel railing (1.5m clear width)
- 4 x 3.657m traffic lanes (2 in each direction)
- 1.879m sidewalk with steel railing (1.5m clear width)

The existing east abutment of the bridge extends an additional 5.0m on the south side as a cantilever. This cantilever goes over the top of the existing Allan's Dam Sluiceway. The bridge was previously rehabilitated in 1988 including concrete overlay and resurfacing.

1.1.4 Allan's Bridge

Allan's Bridge (Structure ID 131) was constructed in 1938 as a pedestrian crossing and is a two-span cast-in-place concrete slab over steel girders, with an asphalt wearing surface. Due to its deteriorating condition, the bridge is currently closed to pedestrian traffic.

The bridge spans over Allan's Dam and the Metrolinx Go Train Kitchener line is carried over the Speed River and the bridge elevated rail bridge.

The deck cross-section consists of a total of 6 steel girders, spanning a length of 24.7m and the roadway width is 6.5m. The outer limits of the structure contain concrete curbs and steel railing with concrete posts.

1.1.5 Allan's Dam Sluiceway and Spillway

The Allan's Dam Sluiceway and Spillway (Structure ID 320) is located 20m south of the Macdonell Bridge in the Speed River and consists of reinforced cast-in-place concrete slab and walls. The Spillway forms a weir that created headwaters for the removed Allan's Mill.

1.1.6 Ward to Downtown Pedestrian Bridge

The City terminated the construction of the Ward to Downtown Pedestrian Bridge ("Ward to Downtown Bridge"), as tendered in 2023 due to excessive costs and other construction related challenges. The consideration of a new pedestrian crossing to provide pedestrian and cyclist connectivity across the Speed River at the Macdonell and Wellington Street intersection and to the existing City trail at Elizabeth Street and Arthur Street South was added to the Macdonell and Allan's Structures Class EA part way through the study.

1.1.6.1 OFFICIAL PLAN AMENDMENT #43 – DOWNTOWN SECONDARY PLAN

The purpose of Official Plan Amendment #43 – Downtown Secondary Plan (DSP) was to replace the previous land use and Central Business District policies with new policies to guide and regulate development of the City's Downtown Urban Growth Centre.

The DSP outlined a vision for the Downtown with several core guiding principles and objectives to implement the vision. The construction of 2 pedestrian bridges over the Speed River was identified as an objective to meet the following 2 principles that were outlined in the DSP:

- Principle 5: Reconnect with the River
- Principle 6: Make it Easy to Move Around

The intent for these 2 guiding principles is to allow multimodal connectivity across the Speed River into the downtown core for pedestrians and cyclists with an emphasis on walking and cycling.

1.1.6.2 BACKGROUND ON WARD TO DOWNTOWN BRIDGE

A Municipal Class EA was completed for the Ward to Downtown Bridge Project in 2017 in response to the predicted future growth and in conformance with the Downtown Secondary Plan. The EA evaluated alternatives for 2 new pedestrian bridges that cross the Speed River linking St. Patrick's Ward to the Downtown.

The following needs were identified with respect to pedestrian traffic in the area:

- Some pedestrian traffic trespasses on the existing Guelph Junction Railway (GJR) bridge to cross the Speed River from Arthur Street South to Wellington Street East / Macdonell Street causing a public safety hazard.
- With the predicted increase in the number of residents in the St. Patrick's Ward area due to new intensification developments, pedestrian traffic trespassing on the GJR

bridge is anticipated to increase, worsening the exposure of this safety hazard to the public.

- A safe and direct link for pedestrian and cyclist traffic using the proposed trail through St. Patrick's Ward along the GJR tracks between Macdonell Street and Huron Street currently does not exist.
- The current and future development of the developments in the St. Patrick's Ward will significantly increase the pedestrian and cyclist traffic flowing between St. Patrick's Ward and the Guelph Central Station / downtown area.

The EA recommended building one of the 2 bridges identified in the DSP in the near term and to revisit building a second bridge when it was warranted due to population growth. One of the recommended locations from the EA study was a bridge immediately south of GJR Bridge (±40 m south of Macdonell Street). This alternative was chosen because it offers the City the best alternative to reduce risk exposure from pedestrians crossing the existing GJR bridge. A bridge in this location would also link the existing Downtown Trail with the proposed trail along the GJR track from Huron Street towards Downtown.

The full Ward to Downtown Bridge Environmental Study Report (ESR) documenting the EA process that was followed is available on the City's website at: https://guelph.ca/living/construction-projects/ward-downtown-bridges/.

1.1.6.3 ADDITIONAL INVESTIGATIONS

Based on the background information, alternative solutions will be prepared to be effectively evaluated within the context of the alternatives currently being evaluated for the Macdonell and Allan's Structures, including consideration for the safety implications of pedestrians illegally crossing the river via the GJR Bridge and how this action can be mitigated.

The following alternatives are to be integrated into the Macdonell and Allan's Structures EA study:

1. Do Nothing – No enhanced pedestrian crossing and pedestrian and cyclist movement is redirected to Macdonell Street Bridge and/or the Allan's Bridge.
2. Construct the previously 2023 tendered Ward to Downtown Bridge
3. Construct a modified bridge adjacent to the south side of the GJR Bridge
4. Construct a modified bridge adjacent to the north side of the GJR Bridge.

With added consideration for a Ward to Downtown Bridge, the evaluation of alternative solutions will consider which of the 4 bridge options, or a combination thereof, is the preferred solution for pedestrian and cyclist movement across the Speed River between the Macdonell Street/Wellington Street/Woolwich Street intersection and St. Patrick's Ward.

1.2 Study Area

The Study Area consists of Macdonell Street from the Woolwich/Wellington intersection to Arthur/Rose intersection (excluding the intersections) a distance of approximately 150m, the Macdonell and Allan's Structures, and the potential future Ward to Downtown Bridge approximately 40m south of Macdonell Street and immediately south adjacent to the GJR, as illustrated in Figure 1.2.

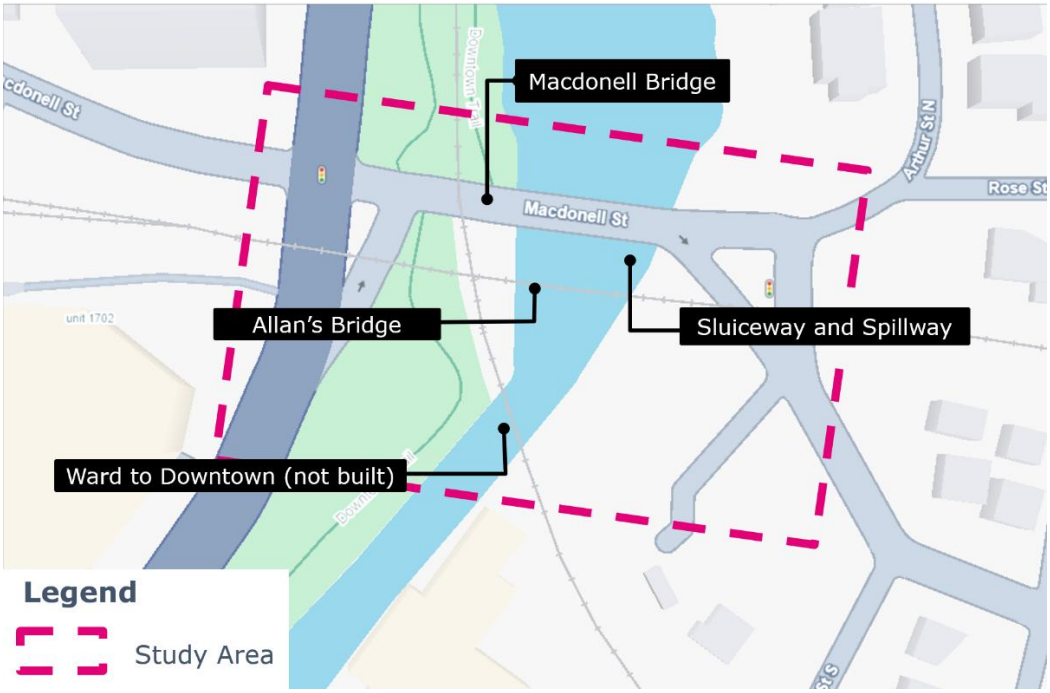

Figure 1.2 Study Area

1.3 Study Objectives

Key objectives and desired outcomes of this Class EA Study include:

- Identify a preferred solution for the replacement, potential removal and/or rehabilitation of the Macdonell and Allan's Structures and other related work that meets the City's the budget and schedule, and aligns with the City of Guelph Official Plan and policies;
- Complete a proactive and robust community engagement program to achieve community and stakeholder consensus on the preferred alternative solution and design concept, and the potential impacts to businesses, residents and stakeholders in the affected area; and
- Develop a design and cross-section that implements a Complete Streets approach, providing pedestrians and cyclists equal priority to the demands of vehicles,

ensuring that this vital corridor provides an attractive, accessible and safe environment for all modes of transportation to a revitalized Downtown Guelph.

1.4 Study Organization

The Class EA was carried out by a consulting team led by R.V. Anderson Associates Limited (RVA) on behalf of the City of Guelph. The study team is outlined below:

- City of Guelph:
  - Infrastructure, Development, & Environment Services Department
- Consulting Team:
  - R.V. Anderson Associates Limited – Lead consultant, Planning, Natural Heritage Assessment, Traffic Analysis, Drainage and Stormwater Management, Structural Analysis, Engineering Services
  - Archaeological Services Inc. – Archaeological and Cultural Heritage Assessments
  - LURA Consulting – Public Consultation Services
  - Thurber Engineering – Geotechnical and Hydrogeological Investigations
  - Bridge Check Canada – Structural Assessments

1.5 Study Schedule and Key Dates

The Class EA Study was initiated in August 2021. Key dates throughout the Study were as follows:

Table 1.1 Key Study Dates

EA Stage	Date
Notice of Study Commencement	August 11, 2021
Notice of PIC #1	October 13, 2022
Notice of PIC #2	November 25, 2024
Notice of Study Completion	Forthcoming

1.6 Municipal Class Environmental Assessment Process

This Study was initiated in accordance with the requirements of MCEA Schedule 'B', which is an approved process under the Environmental Assessment Act (EAA). Figure 1.3 illustrates the framework for the Class EA process which is a legislated planning process

comprising of up to five phases with mandatory points of public contact. The focus of the framework is a comprehensive and transparent decision-making process.

The Class EA is broken down into phases, as follows:

- Phase 1 – Identify problem or opportunity;
- Phase 2 – Identify alternative solutions, evaluate, and select the preferred solution;
- Phase 3 – Identify alternative design concepts, evaluate, and select the preferred design concepts;
- Phase 4 – Complete the Environmental Study Report (ESR) and place it on the public record; and
- Phase 5 – Project implementation, which is to undertake the contract drawings and tender documents for the project and proceed to construction and operation of the project.

This Schedule 'B' study requires the completion of Phases 1 and 2 of the MCEA process, with the final deliverable comprising the documentation of the planning process as provided in this Report. The Project will then proceed to Phase 5.

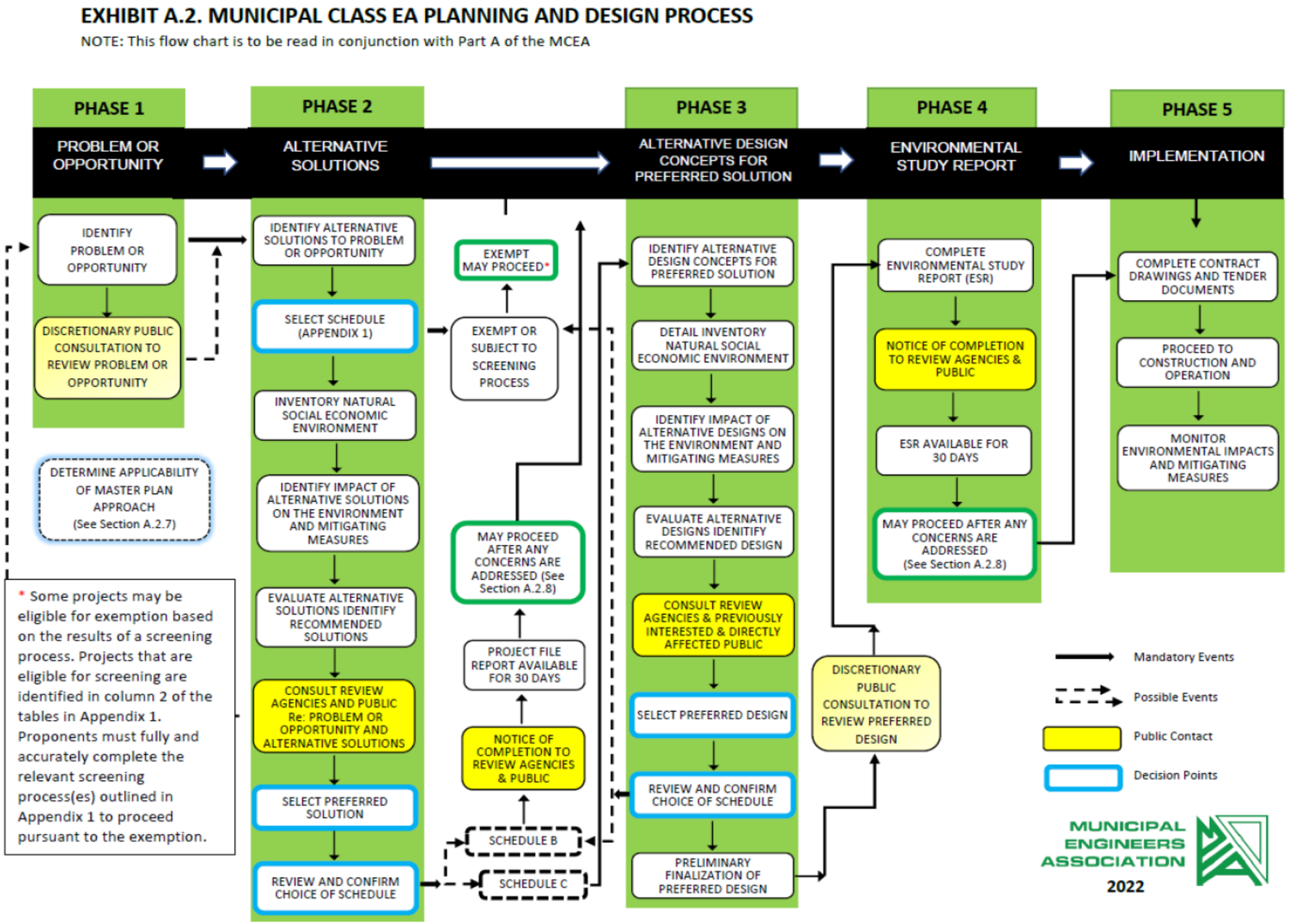

Figure 1.3 Municipal Class Environmental Assessment Process (Municipal Engineers Association, 2022)

1.6.1 Section 16 Order Requests

Timing for an Order Request: At the conclusion of a project, the proponent must post a Notice of Study Completion. Anyone with concerns related to any aspect of the study may submit any comments or concerns to the proponent and/or request a Section 16(6) Order within the 30-calendar day public review period following the Notice of Study Completion. During the comment period the proponent cannot proceed with the project until at least 30 days after the end of the public comment period. All comments and concerns should be sent directly to Project Manager at the City of Guelph.

The Minister of the Environment, Conservation and Parks (MECP) has the authority and discretion to make an Order under Section 16 of the Environmental Assessment Act. A request may be made to the Ministry of the Environment, Conservation and Parks for an order requiring a higher level of study (i.e., requiring an Individual / comprehensive EA approval before being able to proceed), or that conditions be imposed (e.g. require further studies), only on the grounds that the requested order may prevent, mitigate or remedy adverse impacts on constitutionally protected Aboriginal and treaty rights. Requests on other grounds will not be considered. Requests should include the requester contact information and full name for the ministry. This will ensure that the ministry is able to efficiently begin reviewing the request.

Prior to requesting a Section 16 Order, the proponent should first try to resolve any concerns directly through the Class EA process. The minister must consider the factors set out in Section 16 of the Environmental Assessment Act. If a Section 16 Order request is made, the project proponent cannot proceed with the project until the minister makes a decision on the request. If the minister makes a Section 16 Order, the proponent may only proceed with the project if they follow the conditions in the Order.

How to make a request: To submit a Section 16 Order request, the following information must be provided to ensure that the ministry is able to efficiently begin reviewing the request:

- Name, address and email address;
- Project name;
- Proponent name;
- What kind of Order is being requested i.e., a request for additional conditions or a request for an individual environmental assessment;
- Details about the concerns about potential adverse impacts on constitutionally protected Aboriginal or treaty rights and how the proposed Order may prevent,

mitigate potential adverse impacts on Aboriginal and treaty rights, and any information in support of the statements in the request;
- Whether the concerned party belongs to, represents or has spoken with an Indigenous community whose constitutionally protected Aboriginal or treaty rights may be adversely impacted by the proposed project;
- Whether the concerned party has raised their concerns with the proponent, the proponent's response (if any) and why the concerns could not be resolved with the proponent; and
- Any other information to support the request.

Section 16 Order requests are made to the Minister of the Environment, Conservation and Parks and the Director of Environmental Assessment Branch. The request may be submitted by mail, email, or hand delivered to the Minister:

Minister of the Environment, Conservation and Park
Ministry of Environment, Conservation and Parks
777 Bay Street, 5th Floor
Toronto ON M7A 2J3
minister.mecp@ontario.ca

and

Director, Environmental Assessment Branch
Ministry of Environment, Conservation and Parks
135 St. Clair Ave. W, 1st Floor
Toronto ON, M4V 1P5
EABDirector@ontario.ca

Requests should also be sent to the City of Guelph by mail or by e-mail.

For more information and specific instruction and details on the process, please visit: https://www.ontario.ca/page/class-environmental-assessments-section-16-order.

1.7 Policy and Planning

As planned development in the City of Guelph's Downtown continues, the need to reconstruct Macdonell Street, including the Macdonell Street Bridge, has been considered in several documents including the DSP (2012) / Consolidated Official Plan (2018), 2014 Streetscape Manual (2014), and the TMP (2022). These studies considered not only the measures required to address the long-term structural and transportation requirements of

Macdonell Bridge, but also the function of a primary street providing access over the Speed River to the Downtown core, as described below.

Importantly, apart from the City's Official Plan policies concerning the health of the Speed River and preservation of its cultural heritage resources, the planning documents described below do not provide recommendations regarding the Macdonell Bridge structure (beyond the recommended cross-section and intersection configuration), the Allan's Bridge, or the Allan's Dam Spillway or Sluiceway.

1.7.1 Provincial Planning Documents

1.7.1.1 PROVINCIAL PLANNING STATEMENT (2024)

The Provincial Planning Statement (PPS) prepared by the Ministry of Municipal Affairs and Housing (MMAH), provides policy foundation for regulating development and land use planning in the province. Both provincial and local land use planning decisions build on the PPS and its relevant policies. The PPS helps achieve the provincial goal of meeting the needs of a fast-growing province while enhancing the quality of life for all Ontarians.

The recommendations in this Study aligns with policies in Section 3.2 Transportation Systems of the PPS by providing safe modes of transportation, facilitating the movement of people and goods, and addressing project needs. The preferred solution for Macdonell Bridge includes a bridge replacement and widening it by 0.2 meters to accommodate the multi-use path (MUP) on the north side and the sidewalk on the south side. This provides active transportation (AT) and greater connectivity within the multimodal transportation system within the City of Guelph.

1.7.2 Local Planning Documents

A number of City of Guelph planning documents (as summarized below) were reviewed to ensure the proposed works align with the City's policies and vision for the future. The planning documents do not provide recommendations regarding the Macdonell Bridge structure (beyond the recommended cross-section and intersection configuration), the Allan's Bridge, or the Allan's Dam Spillway or Sluiceway. The vision for Macdonell corridor as set out by these key City planning documents, as well as the public engagement completed as part of DTIRP to date, are summarized in Table 1.2.

Table 1.2 Macdonell Street Vision

Planning Document	Downtown Secondary Plan (2012)	Streetscape Manual (2014)	Transportation Master Plan (2022)	Public Outreach – Downtown Renewal (2022)
Parking	• Parking may be permitted in the curb lanes during off-peak hours, where traffic and transit volumes allow	• Off-peak parking in curb lanes	• No comment, refers to updating the Downtown Parking Master Plan (underway, no recommendations)	• NA
Cyclists	• Accommodate dedicated bicycle lanes, with the exception of sections of road where cyclists have the option of using an off-street path	• Dedicated cycling facility	• On-Street Spine Cycling Network (off-road protected facility to accommodate all ages and abilities)	• Strong support for cyclist facilities (emphasis on safety)
Transit	• Transit priority street (signal priority and queue-jumping lanes)	• Transit facilities including seating, shelters, waste receptacles, lighting and route information located in the Planting and Site Furnishing Zone or in bump outs / curb extensions	• A portion of the street is part of the Quality Transit Network, recommended to be Optimized only	• Desire for transit to be accommodated in design
Travel Lanes	• Four travel lanes (no width specified)	• Four travel lanes • Two 3.35-meter-wide inner travel lanes • Two 3.5-meter wide curb lanes that accommodate travel and off-peak parking	• 4 lane arterial	• Maintaining connections for all road users, particularly those who walk or cycle
Pedestrian Realm	• Sidewalks with a minimum width of two metres on both sides of the street	• 3.55-meter-wide pedestrian clearways on both sides of the street	• Part of the Pedestrian Priority Network in an Enhanced Pedestrian Realm	• Desire for safe, attractive environment for pedestrians
Public Realm / Flexibility	• Not a primary streetscape	• Not identified as a flexible street	• Classified as Downtown Primary Street (subject to recommended Complete Streets Design Guide)	• Aesthetics and beautification as a "gateway" to downtown • Protecting the heritage or character of the area
Street Trees	• Street trees on both side	• Either silva cells or open pit planters.	• Enhance the public realm with street trees and other amenities to encourage a sense of community	• Desire for street trees
Vehicle Speeds	• Major road that provides access to and through Downtown for pedestrians, transit bicycles and auto vehicles.	• Focus on vehicular movement - both to and through downtown	• Classified as Downtown Primary Street with no explicit recommended speed limit	• Desire for maintaining the flow of vehicle traffic.

1.7.2.1 DOWNTOWN SECONDARY PLAN (2012) & CONSOLIDATED OFFICIAL PLAN (2018)

Within the City's DSP (2012), and the City's Consolidated Official Plan (2018), Macdonell Street east of Wellington Street is classified as a Primary Street, which are major roads that provide access to and through Downtown for pedestrians, transit bicycles and auto vehicles and have the following characteristics:

- Sidewalks with a minimum width of generally 2m on both sides of the street;
- 4 travel lanes;
- Accommodate dedicated bicycle lanes, with the exception of sections of road where cyclists have the option of using an off-street path; and
- Parking may be permitted in the curb lanes during off-peak hours, where traffic and transit volumes allow.

Principle 5 in the Downtown Secondary Plan is to "Reconnect with the River". One of the targets under this principle is to "Build new pedestrian bridges over the river linking St. Patrick's Ward to Downtown". To meet this target, the feasibility of building the Ward to Downtown Bridge was incorporated into the scope of this Class EA Study. Results of the evaluation of alternatives for this structure identified that a modified bridge can be constructed immediately south-adjacent to the GJR tracks.

1.7.2.2 STREETSCAPE MANUAL (2014)

Building on the DSP (2012), the 2014 Streetscape Manual also identifies Macdonell Street east of Wellington as a Primary Street, which focus most on vehicular movement - both to and through downtown and have the following characteristics:

- 4 travel lanes ranging from 3.35m to 3.5m in width;
- Off-peak parking should be included on all Primary Streets with four lanes; and
- Dedicated cycling facility.

The manual also includes a conceptual plan for the redesign of the Wellington/Woolwich/Macdonell Intersection to better prioritize active modes of transportation.

1.7.2.3 TRANSPORTATION MASTER PLAN UPDATE (2022)

Completed in 2022, Guelph's TMP Update identifies how residents and visitors will move through the city over the next 30 years. The TMP classifies Macdonell Street within the Study Area as a Primary Street, identifying the segment as part of the City's O-Street Spine Cycling Network (off-road protected facility - all ages and abilities).

1.8 Existing Structural Conditions

The findings of the most recent Ontario Structure Inspection Manual (OSIM) inspection reports for each of the structures within the Study Area were reviewed. As part of this Class EA, a Detailed Condition Survey was completed by Bridge Check Canada for each structure. Results of these reports and their structural recommendations are summarized below.

The most recent OSIM reports are provided in Appendix 1, and the Detailed Condition Survey Reports are provided in Appendix 2.

1.8.1 Macdonell Bridge

The sections below summarize the structural condition of Macdonell Bridge and the recommended improvements.

1.8.1.1 EXISTING STRUCTURAL CONDITION – OSIM RESULTS

The most recent (February 29, 2024) OSIM Report for Macdonell Bridge identified that the structure is in overall fair to poor condition and that the structure should be scheduled for replacement. The results indicate varying degrees of scaling, cracking, delamination and spalling on the deck, with the quantity of these deficiencies increasing over time. It is recommended that the structure continue to be monitored for advanced deterioration until the structure is replaced.

Should any indications of structural destress or accelerated structure deterioration be observed, immediate remedial actions such as load postings or road closure would be recommended. It is also recommended that the planning and detailed design phases of the project be completed within the next 1 to 3 years.

1.8.1.2 DETAILED CONDITION SURVEY

The Detailed Condition Survey for Macdonell Bridge was completed and involved observing surface defects, detecting delamination, grid layouts, testing of concrete cores, asphalt samples, and surveying potential corrosion. Results of the survey are summarized in Table 1.3.

Table 1.3 Macdonell Bridge - Detailed Condition Survey Results

Structure Element	Condition
Asphalt	Generally in fair-to-poor condition with unsealed traverse cracks, longitudinal cracks, random cracks, sealed random

Structure Element	Condition
	cracks, potholes/patches, alligator cracks, and rutting. The asphalt depth varied from 35mm to 95mm.
Concrete Deck	The concrete cores (21 cores) revealed debonding of the overlay in majority of the cores. Medium-to-severe scaling was also noted. The exposed concrete surface revealed light-to-severe scaling and delamination. Some cracks and rusting was also observed.
Deck Soffit and Fascia	The Bridge deck soffit and fascia is in fair condition with clean/stained medium cracks, clean wide cracks, pattern cracks, delamination, spalling, light scaling, and wet areas. The deterioration was mainly found along the deck centerline and surrounding deck drains. Wide cracks were found on the fascia.
Bridge Approaches	The asphalt surface was in fair-to-poor condition with unsealed cracks and potholes.
Deck Drainage	Drainpipes need to be extended so they do not discharge drain water on the soffit surface.
Joints	Deck joints exhibit multiple traverse cracks, potholes, and settlements.
Concrete Sidewalks	Sidewalks were in fair-to-poor condition with clean medium cracks, clean wide cracks, delaminations, spalls, patches, and light-to-severs scaling.
Steel Handrails	Handrails were in fair condition with light corrosion.
Abutment Walls	The abutment walls were in fair condition but revealed clean/stained medium cracks, spalls, light-to-medium scaling, and wet areas.
Retaining Walls	The retaining walls were in fair-to-good condition with some clean/stained medium cracks, clean wide cracks, delaminations, spalls, and light-to-severe scaling.
Center Pier	The pier was in fair-to-good condition with minimal clean/stained medium cracks, stained wide cracks, and light-to-severe scaling.

1.8.1.3 STRUCTURAL RECOMMENDATION

Based on the existing condition of the structure, its age, the cost, and RVA's past experience with the rehabilitation of similar type of bridges, replacement of the whole structure was recommended.

1.8.2 Allan's Bridge

The sections below summarize the structural condition of Allan's Bridge and the recommended improvements.

1.8.2.1 EXISTING STRUCTURAL CONDITION – OSIM RESULTS

The most recent OSIM report (November 23, 2022) for the Allan's Bridge identified that the overall structure is in fair-to-poor condition, with maintenance and additional investigations required. It also recommended that the abutment walls be removed in the next 1 to 5 years due to narrow-to-wide cracking, light loss of mortar, and evidence of previous patch repairs. Overall, the OSIM report also recommends considering removing the structure.

1.8.2.2 DETAILED CONDITION SURVEY

The results of the Detailed Condition Survey completed for Allan's Bridge is summarized in Table 1.4.

Table 1.4 Allan's Bridge – Detailed Condition Survey Results

Structure Element	Condition
Asphalt wearing surface	The surface was in poor condition with unsealed transverse cracks, longitudinal cracks, random cracks. The thickness of asphalt wearing surface ranged from 30mm to 50mm.
Concrete Deck	The exposed concrete surface displayed cracks and spalls. There is light rusting on the reinforcement steel (square rebar).
Deck Soffit, Fascia and Diaphragm	Deck soffit and fascia were in fair condition with medium width cracks, pattern cracks, delamination, spalling, light scaling, medium scaling, honeycombing, and wet areas. The diaphragms were in fair condition with delamination, spalling, honeycombing.
Steel Girders	The steel girders were in fair-to-poor condition with light-to-severe corrosion.
Bridge Approaches	The asphalt surface at bridge approaches was in fair condition with unsealed cracks, ravelling, and vegetation growth.
Deck Drainage	Eight (8) deck drains were located on the structure. All deck drains were blocked by debris.
Concrete Curbs	The concrete curbs were in fair-to-poor condition with clean medium cracks, delamination, spalls, light scaling, and medium scaling. 50% of the concrete curbs showed uncertain low corrosion activity and 50% showed probable active corrosion.
Concrete Posts & Steel Handrails	The concrete posts were in fair-to-poor condition with clean medium cracks, delamination, spalls, and light scaling. The steel handrails were in fair condition with light corrosion.
Abutment Walls	The abutment walls exhibited cracks, spalls, and wet areas.

Structure Element	Condition
Retaining Walls	The retaining walls were in fair-to-poor condition with clean/stained medium cracks, clean wide cracks, spalls, and light-to-severe scaling.
Centre Pier	The pier was in fair-to-poor condition with some clean/stained medium cracks, clean wide cracks, pattern cracks, delaminations, spalls, light and medium scaling, and wet areas.
Concrete Sidewalk	Concrete sidewalks were in fair-to-poor condition with clean medium cracks, clean wide cracks, delamination, spalls, patches, medium scaling and severe scaling. Results from half-cell tests show that a 100% of the concrete sidewalk corrosion potential values were over -0.450V, which indicates probably active corrosion over the entirety of the concrete sidewalks.

1.8.2.3 STRUCTURAL RECOMMENDATION

Considering the fair-to-poor condition of the substructure, removal of the structure is recommended. Given pedestrian accommodation is provided on both sides of the Macdonell Bridge, and on the proposed Ward to Downtown Bridge, a dedicated pedestrian bridge in this location is redundant.

1.8.3 Allan's Dam Sluiceway and Spillway

The below sections summarize the structural condition of Allan's Sluiceway and Spillway and the recommended improvements.

1.8.3.1 EXISTING STRUCTURAL CONDITION – OSIM RESULTS

The most recent OSIM report (October 23, 2018) for the Allan's Dam Sluiceway and Spillway identified that the visible elements of the structure were in fair-to-good condition with maintenance work required and a minor rehabilitation recommended. The report noted that completion of a Dam Safety Review under the Lakes and Rivers Act should be considered.

1.8.3.2 DETAILED CONDITION SURVEY

The results of the Detailed Condition Survey completed for the Allan's Dam Sluiceway and Spillway are summarized in Table 1.5.

Table 1.5 Allan's Sluiceway and Spillway - Detailed Condition Survey Results

Structure Element	Condition
Inlet Components	Inlet components were in fair condition with clean medium cracks, clean wide cracks, delaminations, spalls, light-to-medium scaling, honeycombing, wet areas, and exposed reinforcement.
Outlet Components	Outlet components were in fair condition with clean/stained medium cracks, delaminations, spalls, light-to-severe scaling, wet areas, and exposed reinforcement in spalled areas.

1.8.3.3 STRUCTURAL RECOMMENDATION

Since the structure is in fair to good condition, and the impacts associated with the other alternatives considered for the structure, is it recommended that the structure be rehabilitated and a Dam Safety Review, structural investigation, and an enhanced OSIM inspection should be considered.

2.0 PROBLEM / OPPORTUNITY STATEMENT

Per Phase 1 requirements of the MCEA process for a schedule 'B' project, a "Problem / Opportunity Statement" was prepared to identify in detail the various problems and opportunities that needs to be addressed throughout the Study. The Problem / Opportunity Statement outlines the need and justification for the overall project and establishes the general parameters, or scope, of the Study.

The Study Problem / Opportunity Statement developed for the Macdonell and Allan's Structures Class EA is comprised of the following key elements:

- Address the structural deficiencies of the deteriorating structures, as identified by recent and ongoing bridge inspections;
- Address the hydraulic capacity requirements of the structures;
- Enhance road safety, operations, and connectivity for vehicles, pedestrians, cyclists, and transit to support the community building goals of the City; and
- Investigate the feasibility of constructing the Ward to Downtown Bridge to provide a safe and direct line for pedestrians and cyclists through St. Patrick's Ward into Downtown Guelph (added later to the Class EA Study following City's cancellation of previously tendered bridge).

3.0 EXISTING CONDITIONS

Under Phase 2 of the Class EA process, all reasonable solutions to address the Problem / Opportunity Statement were identified and evaluated, including the "Do Nothing" alternative. To adequately identify, develop and evaluate these alternative solutions, a thorough understanding of the existing conditions with the Study Area was required.

As such, various technical studies were undertaken to assess the existing conditions of the Study Area, including: Geotechnical Investigation, Natural Environment Assessment Report, Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment, Cultural Heritage Evaluation Report, Stage 1 Archaeological Assessment (Stage 1 AA): Downtown Infrastructure Renewal Program, Structural Assessments, Existing Traffic and Transportation Conditions Assessment, Hydraulic Existing Conditions Assessment, and Topographic Survey.

The findings of these studies will be incorporated into the evaluation of alternative solutions.

3.1 Existing Transportation Conditions

An Existing Traffic and Transportation Conditions Technical Memorandum was prepared documenting existing active transportation, transit facilities, collision history, and intersection operations within the Study Area. The findings were used to evaluate the short- and long-term transportation impacts associated with each of the alternative solutions. A full copy of the Technical Memorandum is provided in Appendix 3.

3.1.1 Roadway Configuration

Macdonell Street is an east-west corridor with an urban 4-lane (2 lanes in each direction) cross-section with a 50 km/h speed limit. West of Woolwich Street/Wellington Street, Macdonell Street is classified as a Downtown Main Street while east of Woolwich Street/Wellington Street East, Macdonell Street is classified as a Primary Street as per the City's Official Plan. In the City's Transportation Master Plan (TMP), Macdonell Street is included in the Pedestrian Priority Network and is part of the Spine Cycling Network and Resilience Network.

3.1.2 Existing Active Transportation Facilities

Macdonell Bridge currently has sidewalks and guardrails on both sides of the bridge. Currently, there are no dedicated active transportation facilities for cyclists.

3.1.3 Transit Facilities

Macdonell Street is currently serviced by Guelph Transit's Route #99 west of Woolwich Street / Wellington Street East and Route #14 east of this intersection which utilizes Macdonell Bridge as part of its route. GO Bus Routes #30, #31, and #33 also travel east along Macdonell Street through the Study Area.

3.1.4 Future Traffic Conditions

Based on findings from the future (2051) do-nothing intersection operational analysis and a review of projected 2051 traffic volumes, reducing the number of lanes along Macdonell Bridge would not be feasible. A reduction in lanes would contribute to increasing capacity and delay issues at the Macdonell Street / Woolwich Street / Wellington Street East and Macdonell Street / Arthur Street North / Elizabeth Street intersections.

3.2 Geotechnical Conditions

A Preliminary Geotechnical and Hydrogeological investigation was conducted to explore and document the subsurface conditions in the Study Area and provide preliminary geotechnical comments and recommendations to support the design and construction of proposed improvements. Results of the investigation are summarized below.

A total of 9 boreholes (Boreholes 21-01 to 21-08 and 21-05C) were drilled throughout the Study Area, as shown in Figure 3.1, and advanced to depths ranging from 1.4m to 8.9m. Details of the boreholes drilled at the site are summarized in Table 3.1.

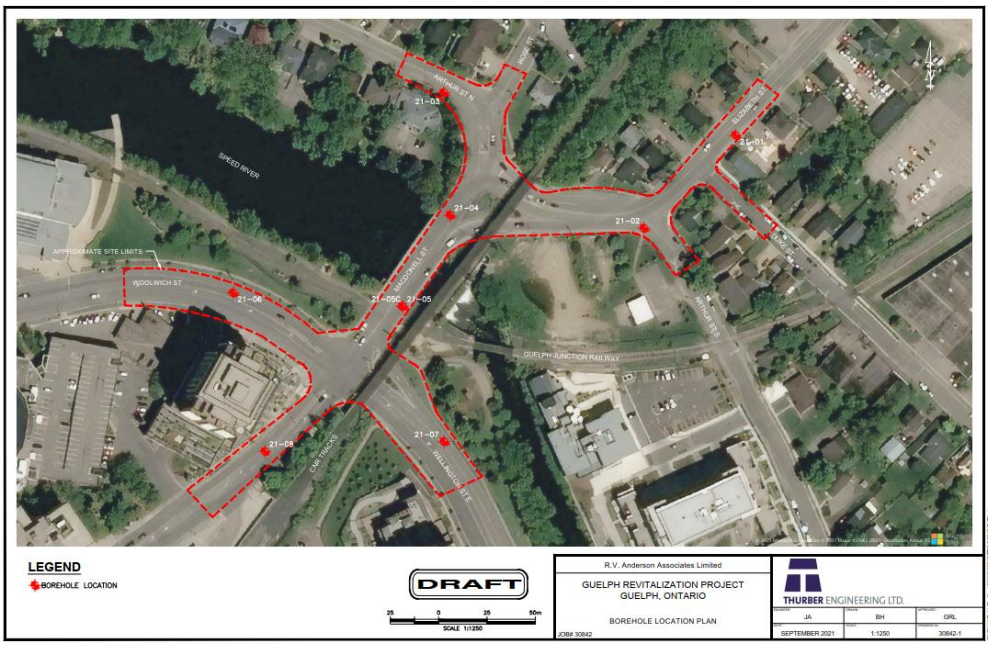

Figure 3.1 Borehole Locations

Table 3.1 Borehole Details

Borehole No.	Ground Elevation (m)	Borehole Termination Depth (m)	Borehole Termination Elevation (m)
21-01	**318.2**	**2.9**	**315.3**
21-02	**318.2**	**2.1**	**316.1**
21-03	**318.1**	**2.4**	**315.7**
21-04	**318.1**	**8.9**	**309.2**
21-05	**317.5**	**1.4**	**316.1**
21-05C	**317.5**	**3.8**	**313.7**
21-06	**318.9**	**2.5**	**316.4**
21-07	**317.8**	**3.5**	**314.3**
21-08	**321.4**	**6.3**	**315.1**

Groundwater conditions were observed in the open boreholes throughout the drilling operations. Monitoring wells were installed in Boreholes 21-01, 21-04, 21-05C and 21-06 to permit monitoring of the groundwater levels at the site.

3.2.1 Subsurface Conditions

All boreholes consisted of surficial asphalt overlying fill layers underlain by native deposits of silty sand till and clayey silt to silty clay till. These overburdened materials were caused by dolostone bedrock. Subsurface conditions are summarized in Table 3.2 below.

Table 3.2 Geotechnical Subsurface Conditions

Fill Type	Thickness Range (m)	Depth Range (m)	Description	Boreholes
Asphalt	0.075 – 0.25	Ground Surface	-	All boreholes
Granular Fill	0.6 – 3.9	0.8 – 4.1	Sand and gravel fill containing traces of some silt.	All boreholes
Silty Clay Fill	-	0.9 – 2.4	Brown silty clay fill was sandy with trace gravel and soft consistency.	21-03
Gravelly Sand Fill	1.1 – 2.9	2.3 – 7.0	Brown to grey gravelly sand fill containing silt and gravel and traces of clay.	21-04
Silty Sand Till	0.5 – 1.7	2.0 – 4.0	Brown silty sand till was gravelly with traces of clay. Occasional dolostone fragments were found.	21-01 21-02
Clayey Silt to Silty Clay Till	-	0.8 and 4.0	Brown to grey clayey silt to silty clay till, sandy to some sand	21-01
Dolostone Bedrock	-	2.0 – 2.6 and 7.0	Highly-to-completely weather dolostone bedrock.	21-01 21-02

The complete Preliminary Geotechnical Investigation Report is provided in Appendix 4.

3.3 Hydrogeological Conditions

A hydrogeological investigation was undertaken to establish baseline hydrogeological conditions, assess groundwater table condition, discuss construction dewatering requirements, potential impacts that the proposed construction works may have, and requirements for water taking permitting.

The Study Area is located within the Speed River sub-watershed of the Grand River Watershed and lands regulated by the Grand River Conservation Authority (GRCA). The Study Area is within a GRCA regulatory floodplain and within the Speed River Policy Area. The Study Area also lies within the Grand River Source Water Protection Area and a Wellhead Protection Area (WHPA)-B, which refers to the area with a 0–2-year groundwater

travel time to a public water supply wellhead. The Study Area is partially located within an Issue Contributing Area (ICA) located general north of the existing Macdonell Bridge. An ICA is an area where a known source of contamination may contribute to a known drinking water issue, and the contaminant of concern for this ICA is Trichloroethylene or another Dense Non-Aqueous Phase Liquid.

3.3.1 Water Wells

In total, 156 recorded wells were located within a 500m radius of the Study Area. A summary of how the wells are recorded is as follows:

- There are 4 water supply wells, of which 2 are for irrigation use and 2 are for domestic use;
- 100 wells recorded as either monitoring and test holes, test holes, or observation wells;
- 1 recharge well;
- 12 abandoned wells; and
- 39 wells with an unknown or "Other" status.

3.3.2 Existing Water Taking Permits

A search of MECP's Environmental Activity and Sector Registry (EASR) mapping application indicates there are 3 active water taking registrations within the Study Area primarily for construction dewatering purposes and conducting a pumping test.

3.3.3 Water Level Monitoring

Groundwater level monitoring was conducted in boreholes 21-01, 21-04, 21-05C, and 21-06. Table 3.3 below summarizes the water levels measured. It should be noted that the below are short-term readings and groundwater levels are expected to fluctuate seasonally. Higher groundwater levels can be expected during wet periods of the day such as spring or after prolonged precipitation.

Table 3.3 Groundwater Level Measurements

Monitoring Well	Date	Water Level Depth (M)	Water Level Elevation (M)
21-01	July 31, 2021	Dry	-
	August 11, 2021	Dry	-
	August 18, 2021	Dry	-
21-04	July 31, 2021	4.3	313.8

Monitoring Well	Date	Water Level Depth (M)	Water Level Elevation (M)
	August 11, 2021	5.1	313.0
	August 18, 2021	5.1	313.0
21-05C	July 31, 2021	2.1	315.4
	August 11, 2021	2.3	315.2
	August 18, 2021	2.3	315.2
21-06	July 31, 2021	Dry	-
	August 11, 2021	Dry	-
	August 18, 2021	Dry	-

3.3.4 Groundwater Quality Results

The following provides a summary of results from the hydrogeological investigation:

- Multiple parameters exceeded the Provincial Water Quality Objectives (PWQO) limits from the unfiltered groundwater sample from Monitoring Well 21-05C. Filtering the sample lowered most parameters to below the PWQO limits except for dissolved nickel. There were no exceedances of the PWQO limits from the groundwater sample collected from Monitoring Well 21-04.
- Multiple parameters exceeded the interim PWQO limits from the unfiltered and filtered groundwater samples from both Monitoring Wells 21-04 and 21-05C.
- Multiple parameters exceeded the City of Guelph Storm and Sanitary Sewer Use By-law limits from the unfiltered groundwater sample from Monitoring Well 21-05C. Filtering the sample lowered all metal parameters to below the Sanitary Sewer Use By-law limits and most metal parameters to below the Storm Sewer Use By-law limits, except for dissolved nickel and dissolved copper from the filtered groundwater sample from Monitoring Well 21-05C. There were no exceedances of the By-law limits from the groundwater sample from Monitoring Well 21-04.
- Sediment control alone will be insufficient to address all identified exceedances to meet the limits for discharge to surface water and/or to the City's storm and sanitary sewers. A water treatment specialist or qualified process engineer must be consulted regarding potential treatment options.
- Discharge of groundwater to the City's storm or sanitary sewers will require a discharge agreement to be obtained from the City and will require verification that the sewer system has capacity for the proposed discharge volume.

- Discharge of groundwater to the natural environment may require approval by GRCA, Ministry of Natural Resources (MNFR), and/or Fisheries and Oceans Canada (DFO).

The complete Preliminary Hydrogeological Investigation Report is provided in **Appendix 5.**

3.4 Hydraulic Analysis

A preliminary hydraulic analysis was completed for the three structures crossing the Speed River to document existing hydraulic conditions and identify impacts associated with the Class EA Phase 2 alternative solutions.

Using the GRCA's HEC-RAS model, the following results were obtained for the structures:

- Macdonell Bridge can only convey flows generated by 2-year and 5-year storm events, and flows greater than 5-year storm events including Regional flow will overtop the bridge.
- Allan's Bridge can convey flows up to the 100-year storm event, but the Regional flood will overtop the crossing.
- The Allan's Dam Spillway and Sluiceway was not modelled as a separate control structure.
- Some discrepancies were noted in GRCA's model versus the Project Team's structural reports and field measurements regarding the size and cross-sections of the structures. For example, Macdonell Bridge is a 2-span bridge with 18.6m and 24.4m openings, and the total span length is 43m versus 35m span size with equal openings in the model. Allan's Bridge span is 24.7m vs. 23.8m in the model.
- The Spillway slope is not consistent throughout the chute section, as field measurements show a slope of 23.6%, but it's modeled as a 52.5% slope chute.

To better evaluate the hydraulic conditions of the current and proposed alternative options some basic modifications were made to the model, producing the results shown in Figure 3.2 below. After modifications, the model still indicated that the Macdonell Bridge is overtopping during deregulated flows for storms above the 5-year return period. For regulated conditions, flows from the 2 to 100-year return period leave no freeboard to the deck of the Bridge, but do not overtop it. Based on this model, the Macdonell Bridge does not meet the MTO Drainage Design Manual hydraulic requirements of conveying the 100-year storm with a 0.5m freeboard. However, based on discussions with the GRCA and City staff, there is no recent evidence of the Macdonell Bridge coming close to overtopping. This suggests that additional updates to the GRCA model will be required to support the bridge replacement in future design phases.

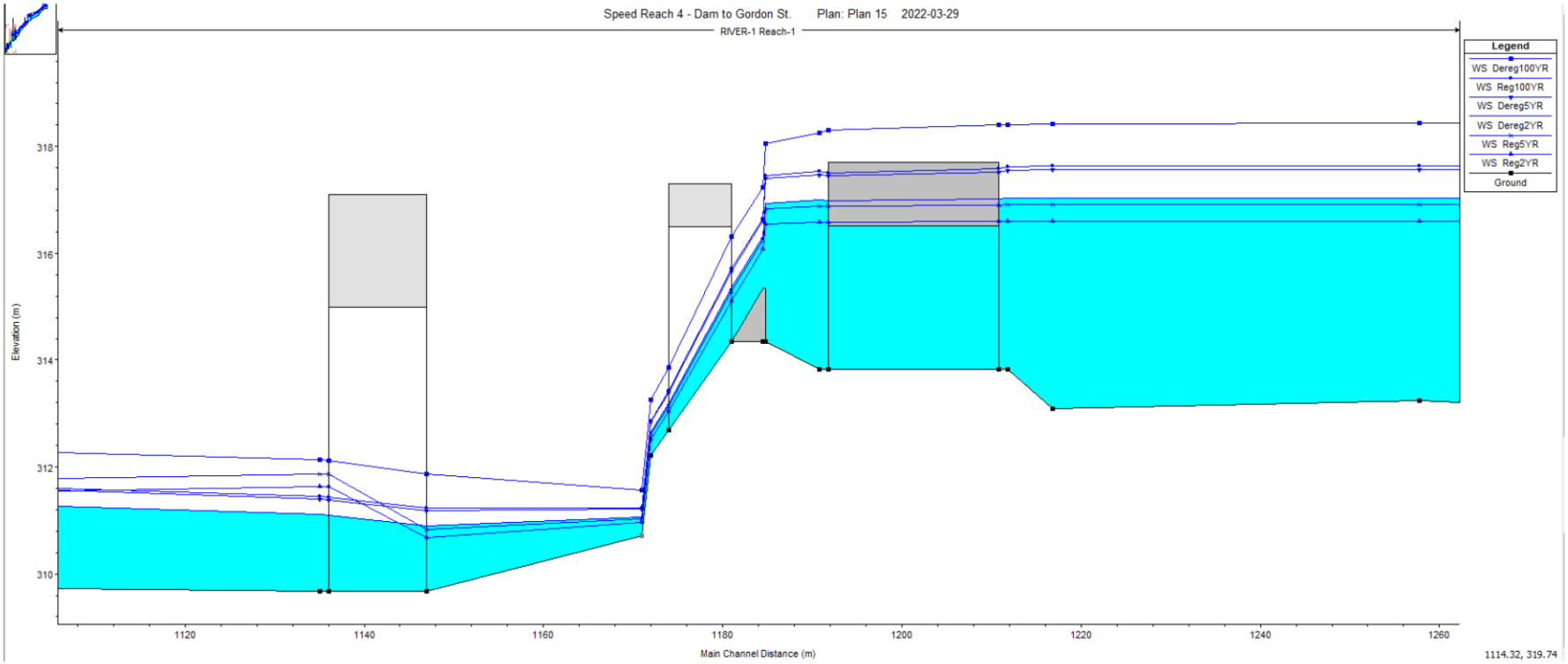

Figure 3.2 Macdonell Bridge, Allan's Bridge, and Allan's Spillway HEC-RAS Revised Profile View

The complete Hydraulic Analysis Technical Memorandum is provided in Appendix 6.

3.5 Natural Environment

A Natural Environment Assessment Report was prepared for this Class EA Study to assess the surrounding natural environment including Species at Risk (SAR) and areas with sensitive and/or significant natural heritage value. The report also provides recommendations to mitigate potential impacts and any required permits or approvals for the preferred solutions.

Key findings of the Natural Environment Assessment have been summarized below. The complete report is provided in Appendix 7.

3.5.1 Designated Natural Areas

John Galt Park and Heritage Park are local parks surrounding the Macdonell Bridge crossing, along the southwest bank of the Speed River in the Study Area. No provincially designated parks, conservation areas, reserves, provincially significant wetlands (PSW), or Areas of Natural or Scientific Interest (ANSI) were identified in the Study Area. A City of Guelph Natural Heritage System was identified in the Study Area limits associated with the Speed River where it bisects the Study Area. This Natural Heritage System is designated as a Significant Natural Area as per Schedule 4: Natural Heritage System of the City's Official Plan and includes Fish Habitat and Permanent and Intermittent Streams, Significant Valleylands, and Significant Wildlife Habitat. No additional Designated Natural Areas were noted by agencies or located during the background review.

3.5.2 Significant Valleylands

Using criteria provided in the City's Official Plan, the Valleylands within the Study Area were identified as significant, and associated with undeveloped portions of the regulatory floodplain present along the banks of the Speed River.

3.5.3 Conservation Authority Regulated Areas

The Study Area is located within the GRCA regulation limit. As such, O. Reg. 41/24 (Prohibited Activities, Exemptions and Permits) under Section 28 of the Conservation Authorities Act, administrated by the GRCA, applies to the drainage features and floodplain within the Study Area. Under this regulation, GRCA may grant permission to modify lands within their regulation limit under conditions outlined in a permit.

3.5.4 Source Water Protection Areas

The Study Area is under the jurisdiction of the Grand River Source Protection Plan. A Wellhead Protection Area and Intake Protection Zone 3 are mapped within the Study Area; however, Highly Vulnerable Aquifers and Significant Groundwater Recharge Areas were not identified. There are no municipal water wells adjacent to the Study Area, however there are private wells. As such, it is recommended that a water well survey to obtain background information to any private wells within a 500m area is completed prior to construction to assist the City in case of any well complaint during construction, and that a monitoring and contingency plan is implemented for any well complaint during construction.

The Ward to Downtown Bridge area is located within a Wellhead Protection Area B, with a vulnerability of 10 as per the GRCA's Source Protection Plan.

3.5.5 Vegetation

Greenspace within the Study Area is associated with Speed River and its riparian areas, which includes John Galt Park upstream and Heritage Park downstream of the Macdonell Bridge crossing, along the southwest bank of the river. These riparian areas support natural/successional vegetation communities. The dominant vegetation reviewed is classified as a Mineral Cultural Woodland (CUW1) which is situated within the riparian areas of the Speed River and along the Goderich Exeter Railway corridor. This community has a thin canopy/subcanopy of scattered shrubs and small trees such as Black, Manitoba Maple, and White Elm. Lower vegetation layers are typical of this community type, being formed by a dense assemblage of Orchard Grass, Virginia Creeper and Great Ragweed. Manicured areas were also present within John Galt Park, Heritage Park, as well as residential and unmaintained areas outside of the riparian areas and parks.

Additionally, 137 vascular floral species were identified during field investigations. The species composition of the surveyed Study Area is typical of cultural woodlands and thickets.

3.5.6 Wildlife & Wildlife Habitats

While no provincially rare wildlife were observed during the field investigations, the background review identified records for Snapping Turtle within the Speed River. It can be assumed that there is the potential for suitable habitat for Turtle Wintering Areas based on sufficient water depth and the target species In the Speed River within the Study Area. Candidate Turtle Nesting Habitat was also identified but is unlikely to occur due to the hardened shoreline being difficult for nesting turtles to climb. The Speed River within the

Study Area is mapped by the Ministry of Natural Resources (MNR) as a Waterfowl Winter Concentration Area.

3.5.7 Aquatic Habitats and Communities

The Project is located in the Grand River watershed. The Grand River originates in the Dufferin Highlands and flows south to Lake Erie.

3.5.7.1 FISH COMMUNITY AND FRESHWATER MUSSELS

The Speed River, within the Study Area, is mapped as cool water fish habitat with a 30m minimum buffer. The Speed River is comprised of secure, cool-to-warm water forage, bait, sport, and pan fish species, except for Blackside Darter, Greenside Darter (uncommon), and Rainbow Darter, which are provincially ranked (S-Rank) as apparently secure. Additionally, a historical record from 1970 for Eastern Blacknose Dace was identified by the GRCA. The Speed River has also been extensively fished over the years, and as such a fish inventory was not undertaken.

In addition to fish, the Speed River provides habitat for a diverse freshwater mussel community. 11 species of native freshwater mussels have been recorded in the Speed River watershed, with SAR recorded in the lower reaches closest to the Grand River. However, due to a series of dams on the river restricting fish movement and the movement of mussels, mussel records are not available for the reach of river in the study Area. Regardless, the potential presence of mussels should be considered during the Study.

No aquatic SAR were identified in the background review or field investigations.

3.5.8 Summary of Species at Risk and Significant Habitats

Following background review and site investigations, habitat for 2 provincially rare species (Snapping Turtle and Northern Map Turtle) was determined to be present within the Study Area. Consequently, this habitat is at minimum Candidate Habitat for Special Concern and Rare Species. Although field investigations were out of season, it is likely that this habitat supports Snapping Turtle and Northern Map Turtle, and it should be considered Confirmed Habitat for Rare and Special Concern Species.

Candidate significant wildlife habitats with potential to occur within the Study Area (i.e., were not confirmed, but could not be ruled out following field investigations) consist of:

- Waterfowl Over Wintering Areas;
- Turtle Overwintering Areas;
- Reptile (snake) hibernacula; and,

- Candidate SAR Bat maternity roosting habitat (treed communities).

3.5.9 Ward to Downtown Bridge

An Environmental Impact Assessment (EIS) was completed as part of the Ward to Downtown Bridge Class EA (2017). The existing conditions for the area are summarized as follows:

- 2 provincial SAR protected under the 2007 Endangered Species Act (ESA) and 3 species identified as rare are within 1km of the area. No habitats were found for any of these species and no SAR were observed during field studies.
- No habitat for SAR birds are present in the area.
- 3 ecological communities were identified (Fresh Manitoba Maple Deciduous Forest, Parkland, and Shallow Aquatic). None of these communities are provincially rare.
- 1 wildlife species (Common Snapping Turtle) observed is listed as Special Concern, both provincially and federally.
- 2 areas of Significant Wildlife Habitat were identified within the Speed River, but not within the project's Study Area.

For more details, the complete Ward to Downtown Bridge Class EA (2017) is on the City's website at: https://guelph.ca/living/construction-projects/ward-downtown-bridges/.

3.6 Cultural Heritage Environment

This section describes the existing conditions of the cultural heritage component of the environment. Cultural heritage resources include archaeological resources, built heritage resources and cultural heritage landscapes.

3.6.1 Archaeological Resources

A Stage 1 Archaeological Assessment (AA) for the Macdonell and Allan's Structures Class EA Study Area was completed as part of the Downtown Infrastructure Renewal Program under Project Information Form number (PIF) P383-0297-2021. The purpose was to identify areas of archaeological potential and areas that require further archaeological assessment (e.g., Stage 2-4).

Results of the Stage 1 AA indicate that there are areas with archaeological potential and if impacted, will require a Stage 2 AA to be completed. The following areas of archaeological potential were found in the Macdonell and Allan's Structures EA Study Area:

- Heritage Park within the Study Area contains the reconstructed ruins of the Allan's Mill complex. These lands have potential for deeply buried archaeological resources

associated with the mill complex and should be avoided by the project design. If they cannot be avoided, then this area will require Stage 2 trenching at a maximum of 10m intervals prior to any development. Testing should be carried out using a backhoe equipped with a smooth bucket to sample any deeply buried soil horizons and sample any subsurface features that may be present. Additional hand exposure/excavation of significant archaeological features or deposits may be required as part of this process. Should Stage 2 excavation result in the delineation of archaeological resources, appropriate mitigative measures must be identified. Mitigative options include protection and avoidance; further test or full-scale salvage excavation; archaeological monitoring of construction activities; or a combination of such approaches.

- A few other parts of the Study Area exhibit archaeological potential and require Stage 2 AA prior to any construction activities (see Figure 3.3 below).
- The marine archaeological potential of the Speed River within the Study Area is to be evaluated by following the Ministry of Citizenship and Multiculturalism (MCM) Criteria For Evaluating Marine Archaeological Potential checklist if project impacts to the riverbed is proposed.

The remainder of the Study Area does not retain archaeological potential on account of deep and extensive land disturbance, slopes in excess of 20 degrees, or being previously assessed and cleared of archaeological concern. Therefore, these lands do not require further archaeological assessment.

The complete Stage 1 Archaeological Assessment Report is provided in Appendix 8.

3.6.1.1 WARD TO DOWNTOWN BRIDGE

A Stage 1 Archaeological Assessment was completed as part of the Ward to Downtown Bridge Class EA (2017). Results of the Stage 1 AA are as follows:

- Parts of the area have been subjected to deep soil disturbance events from the construction of the existing ROWs, commemorative heritage display, and river bank stabilization and flow control and do not possess archaeological potential. These areas do not require further assessment.
- Some lands adjacent to the river are sloped in excess of 20 degrees, and do not possess archaeological potential. These areas do not require further assessment.
- The former Allan's Mill in Heritage Park retains potential for deeply buried archaeological resources associated with the use of the mill since 1830. If the Allan's Mill complex cannot be avoided, this area will require Stage 2 trenching at a maximum of 10 metre intervals prior to any development.

- The remainder of the Study Area retains archaeological potential. These areas will require Stage 2 Archaeological Assessment.

For more details, the complete Ward to Downtown Bridge Class EA (2017) is on the City's website at: https://guelph.ca/living/construction-projects/ward-downtown-bridges/.

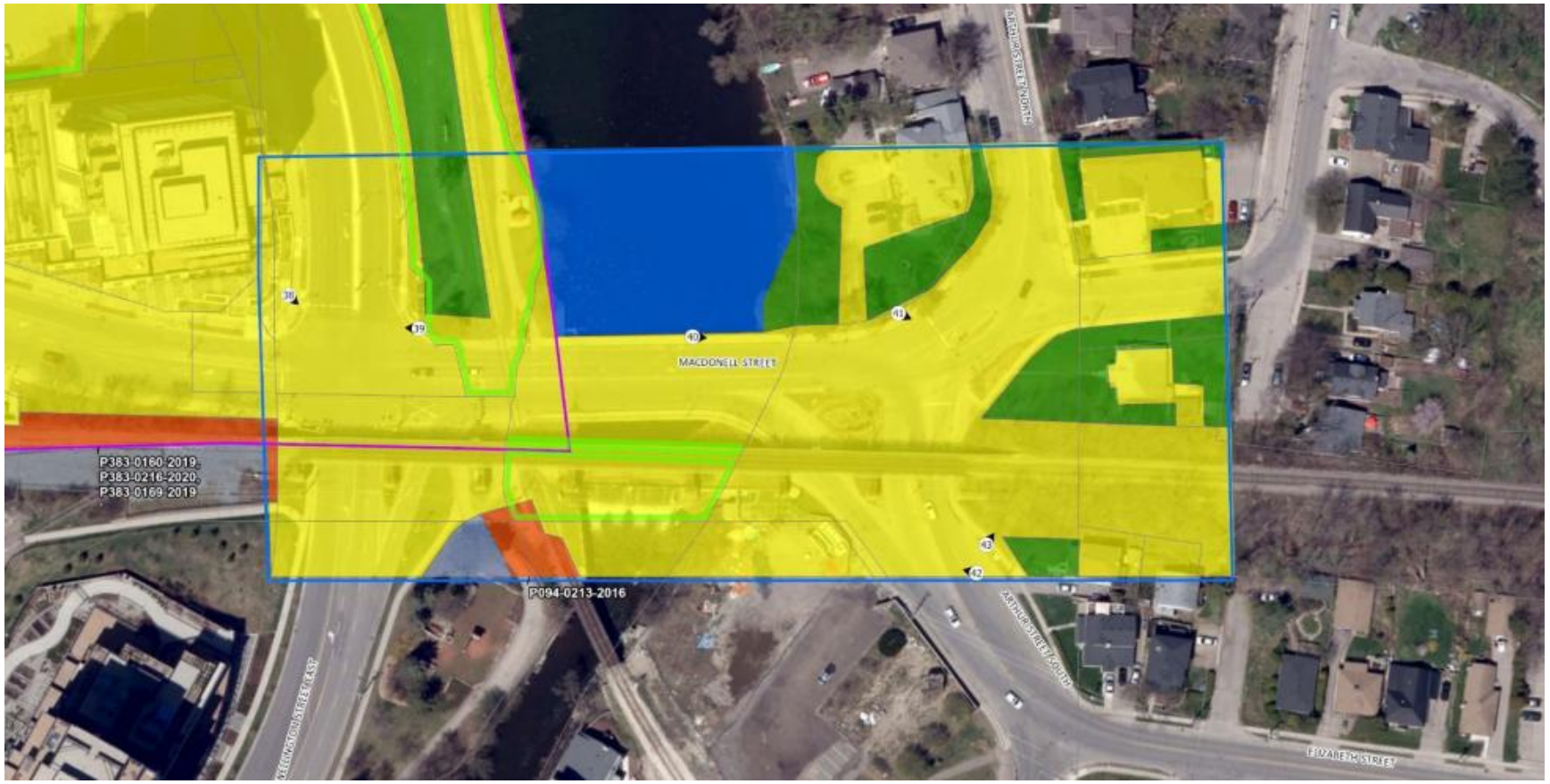

Figure 3.3 Stage 1 AA Results Map for the Original Macdonell and Allan's Structures Class EA Study Area

Legend

- PART A CAPITAL IMPLEMENTATION PLAN STUDY AREA
- PART C MACDONNELL AND ALLAN STUDY AREA
- PROPERTY PARCELS
- LISTED AND DESIGNATED HERITAGE PROPERTIES
- DISTURBED - NO POTENTIAL
- PREVIOUSLY ASSESSED - NO FURTHER WORK REQUIRED
- REQUIRES STAGE 2 TRENCHING
- TEST PIT SURVEY REQUIRED
- RIVER REQUIRES MARINE ARCHAEOLOGICAL POTENTIAL CHECKLIST
- PHOTO LOCATION AND DIRECTION

3.6.2 Built Heritage Resources and Cultural Heritage Landscapes

3.6.2.1 CULTURAL HERITAGE REPORT: EXISTING CONDITIONS AND PRELIMINARY IMPACT ASSESSMENT REPORT

A Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment (CHRECPIA) was completed for the overall Guelph DTIRP, which included the Macdonell and Allan's Structures Class EA Study Area. The purpose of this report is to present an inventory of known and potential built heritage resources (BHRs) and cultural heritage landscapes (CHLs), identify existing conditions within the Study Area, provide a preliminary impact assessment, and propose appropriate mitigation measures for impacts on BHRs and CHLs.

A total of 7 known and potential BHRs and CHLs were identified within the Macdonell and Allan's Structures Study Area. A summary of the known and potential BHRs and CHLs is provided in Table 3.4. The complete CHRECPIA is provided in Appendix 9.

Table 3.4 Known and Potential BHRs and CHLs

Feature ID	Type of Property	Location	Heritage Status
BHR 127	Rail Bridge	Railway viaduct over the Speed River	Known BHR – Provincial Heritage Property.
BHR 128	Allan's Mill Ruins	Wellington Street East – Allan's Mill Ruins	Known BHR – Listed on Municipal Heritage Register.
BHR 242	Former Road Bridge	Allan's Bridge over the Speed River	Known BHR – Listed on Municipal Heritage Register.
BHR 252	Road Bridge	Macdonell Bridge over the Speed River	Potential BHR – Identified During Background Research & Field Review.
BHR 253	Residence	16 Arthur Street North	Known BHR – Designated Under Part IV of the Ontario Heritage Act By-law (1980) 10466.
CHL 1	Riverscape	Speed and Eramosa Riverscape	Potential CHL – Identified as a Candidate CHL in the City's Cultural.

Feature ID	Type of Property	Location	Heritage Status
			Heritage Action Plan. The Speed River is also identified as forming part of the Grand River, designated as a National Heritage River in 1994.
CHL 2	Historic Downtown	Old Downtown	Potential CHL – Identified as a Candidate CHL in the City's Cultural Heritage Action Plan.

3.6.2.2 MACDONELL AND ALLAN'S STRUCTURES CULTURAL HERITAGE EVALUATION REPORT

As recommended by the CHRECPIA, a Cultural Heritage Evaluation Report (CHER) was completed for the Macdonell Bridge, Allan's Bridge, and Allan's Sluiceway and Spillway to further confirm their cultural heritage value or interest (CHVI).

Through a comparative analysis for each structure, it was determined:

- The Macdonell Street Bridge is not significant in terms of age, type or style.
- The Allan's Bridge is an early and representative example of its type and noted for retaining its original 1938 railing system. It is also rare/unique given its integration into the stone piers supporting the Macdonell Street Viaduct above it, and its integration into the Allan's Spillway below.
- The Allan's Sluiceway is unique and rare within the City of Guelph as an extant example of a spillway element associated with a mill.
- The Allan's Spillway is a representative example of a spillway structure. It is also rare/unique given how it has been integrated with the Allan's Bridge above via a concrete central pier and how it is bounded by the piers of the Macdonell Street Rail Viaduct above.

Results of the heritage evaluation conducted for each structure are summarized in Table 3.5. The complete CHER is provided in Appendix 10.

Table 3.5 Cultural Heritage Evaluation Results

Structure	Type of Value	Cultural heritage value or interest (Yes / No)	Heritage Attributes
Macdonell Bridge	Does not meet O. Reg. 9/06	No	N/A
Allan's Bridge	Meets O. Reg. 9/06 Design/physical value Contextual value	Yes	• Location spanning the Speed River below the Macdonell Street Rail Viaduct; • Steel girders and steel-and-concrete railing system; • Two-span design; • Integration of concrete supporting pier with Allan's Spillway; • Integration of superstructure with stone piers of the Macdonell Street Rail Viaduct; and • Views to the bridge from the Downtown Trail, John Galt Park, Allan's Mill Ruins, Elizabeth Street, Macdonell Street and Wellington Street East.
Allan's Sluiceway	Meets O. Reg. 9/06 Design/physical value Historical/associative value Contextual value	Yes	• Location and construction built into the northeast bank of the Speed River, adjacent to the Allan's Bridge; • Channel constructed of limestone and concrete retaining walls; • Barrel arches within sluiceway inlet constructed of limestone and concrete, and; • Sluice gate.
Allan's Spillway	Meets O. Reg. 9/06 Design/physical value Contextual Value	Yes	• Location spanning the Speed River below the Allan's Bridge; • Size, shape and massing of sloping concrete structure, and; • Integration of concrete supporting pier with the Allan's Bridge.

3.6.2.3 WARD TO DOWNTOWN BRIDGE CULTURAL HERITAGE RESOURCE ASSESSMENT

The Cultural Heritage Resource Assessment (CHRA) completed for the Ward to Downtown Bridge Class EA (2017) identified the follow 3 BHRs nearby:

- Wellington Street Rail Bridge (also known as the Guelph Junction Railway tacks)
- Allan's Mill Ruins
- Spring Mill Distillery at 43 Arthur Street

Following the CHRA, Heritage Impact Assessments (HIAs) were completed for each of the BHRs. For more details, the complete Ward to Downtown Bridge Class EA (2017) is on the City's website at: https://guelph.ca/living/construction-projects/ward-downtown-bridges/.

3.7 Socio-Economic Environment

The Study Area and its immediate vicinity has several different land uses. The Macdonell Bridge on Macdonell Street between Woolwich/Welington intersection and the Arthur/Rose intersection has 4 lanes for northbound and southbound vehicular traffic. Above the Allan's Bridge is the Metrolinx GO Transit Kitchener Line crossing over the Speed River on an elevated viaduct.

To the northwest of the Study Area is residential, with primarily late-nineteenth and early-twentieth century houses found along Arthur Street North, Rose Street, and Regent Street. To the northeast is primarily residential as well, with houses along the north side of Elizabeth Street and Arthur Street South. Two exceptions to the residential landscape northeast of the Study Area include a large open field (formerly the carding mill operation) adjacent to the Allan's Bridge and Allan's Sluiceway, south of Elizabeth Street and Arthur Street South, and the Spring Mill Distillery, east of the open field.

To the southeast of the Study Area is the Allan's Mill Ruins and Downtown Trail along the Speed River, which continues southwest. Trees line the trail to the north while John Galt Park and the Guelph Junction Railway track is located to the south. Further south, on the other side of the Macdonell Street and Woolwich Street intersection is a condominium building.

A review of the Downtown Secondary Plan identifies the following land uses within and surrounding the Study Area:

- Residential – Metalworks Condominiums to the south of Macdonell Street and other residential dwellings along Arthur Street North, Arthur Street South, Rose Street, and Elizabeth Street;

- Parks and Open Space – Downtown Trail, John Galt Park, and Allan's Mill;
- Significant Natural Area and Floodway – Speed River;
- Mixed Use – Commercial establishments such as the Spring Mill Distillery, restaurants, real estate and law offices, salons, etc.; and
- Future Park Policy and Special Policy Areas;

3.8 Municipal Services and Utilities

As part of the DTIRP, a Subsurface Utility Engineering (SUE) investigation was completed, which included Macdonell Street within this Class EA's Study Area. Results of the SUE, in combination with data provided by the City, identified the various municipal services within the Study Area as described below.

3.8.1 Drainage and Stormwater Management

There is an existing storm sewer on Macdonell Street from Norfolk Street to Arthur Street / Elizabeth Street made of concrete and PVC and ranging in diameter from 300mm to 600mm. Its likelihood of failure is 4.0 (likely) and is under 100 years old. The Capital Implementation Plan recommends upsizing the sewer to a 525/900mm storm pipe.

3.8.2 Watermains

There is an existing watermain on Macdonell Street from Norfolk Street to Arthur Street / Elizabeth Street. The watermain is made of cast iron and PVC with a diameter ranging from 100m to 300mm. The watermain has had 13 breaks and is nearing the end of its useful life. The Capital Implementation Plan recommends upsizing the pipes to 200mm to improve capacity and accommodate future growth.

3.8.3 Wastewater

There is an existing sanitary sewer Macdonell Street from Norfolk Street to Arthur Street / Elizabeth Street made of vitrified clay with a diameter of 225mm. The sewer is nearing the end of its useful life with a likelihood of failure level of 5.1 (highly probable). No capacity upgrades have been identified for the storm sewer.

3.8.4 3rd Party Utilities

The following utilities have been identified on Macdonell Bridge:

- Bell infrastructure and conduit,
- Telus Fibre / Duct – noted as a Critical Cable

- Rogers Fibre Cable

These identified utilities are likely buried within the Macdonell Bridge structure.

4.0 LONG-LIST OF ALTERNATIVE SOLUTIONS

Under Phase 2 of the Class EA process, all reasonable solutions to address the problem and opportunity statement were considered, including the "Do Nothing" alternative. The sections below document the long list of alternative solutions considered. The long list of options summarized below were presented for input to the public at the first Public Open House held November 2, 2022.

4.1 Macdonell Bridge Long-List Alternative Solutions

Alternative 1: Do Nothing – The Macdonell Bridge would remain as is, with no improvements undertaken. This alternative is required to be considered under the Municipal Class EA planning process as a baseline for the comparison of alternative solutions.

Alternative 2: Rehabilitation of the Structure – This alternative involves undertaking repairs to the existing structure of Macdonell Bridge.

Alternative 3a: Replacement of the Entire Structure (Substructure & Superstructure) – This alternative involves demolishing and removing the entire existing structure and constructing a new Macdonell Bridge as a replacement.

Alternative 3b: Replacement of the Superstructure and Rehabilitation of the Substructure – This option considers replacement of the superstructure, and rehabilitation of the substructure of the Macdonell Bridge. The superstructure reinforced concrete slab would be removed, then the substructure would be rehabilitated and modified to support a new superstructure. This option assumes that the existing abutments and center pier could be reused after significant rehabilitation and modification to accommodate the new superstructure.

Alternative 4: Keep Existing Bridge for Pedestrians and Cyclists Only – This option aims to permanently close Macdonell Bridge to vehicular traffic and maintain the existing bridge as a pedestrian and cyclist crossing.

Alternative 5: Remove Existing Bridge / Redirect Traffic to Another Crossing – This alternative considers removal of the structure and permanent closure of the Macdonell Bridge to vehicular, pedestrian, and cyclist traffic. Vehicular, pedestrian and cyclist traffic would be redirected to other crossings.

4.1.1 Screening and Recommended Short-List of Alternative Solutions

Table 4.1 summarizes how each alternative described above aligns with the City's planning and policy documents and their recommendations.

Table 4.1 Review of Macdonell Bridge Long Listed Options

	1 - Do Nothing	2 – Rehabilitation of the Structure	3 a) – Replacement of the Entire Structure (Substructure & Superstructure)	3 b) – Replacement of the Superstructure and Rehabilitation of the Substructure	4 – Keep Existing Bridge for Pedestrians and Cyclists Only	5 – Remove Existing Bridge / Redirect Traffic to Another Crossing
TMP Goals	Does not align with TMP Goals.	Somewhat aligns with TMP Goals.	Fully aligns with TMP Goals.	Fully aligns with TMP Goals.	Does not align with TMP Goals.	Does not align with TMP Goals.
Secondary Plan Goals	Somewhat aligns with Secondary Plan Goals.	Somewhat aligns with Secondary Plan Goals.	Aligns with Secondary Plan Goals.	Somewhat aligns with Secondary Plan Goals.	Does not align with Secondary Plan Goals.	Does not align with Secondary Plan Goals.
Structural Requirements	Does not address Structural Requirements.	Somewhat addresses Structural Requirements.	Fully addresses Structural Requirements.	Somewhat addresses Structural Requirements.	Does not address Structural Requirements.	Does not address Structural Requirements.
Cultural Heritage Considerations	NA	NA	NA	NA	NA	NA
Natural Environmental Goals	Somewhat aligns with Natural Environmental Goals.	Somewhat aligns with Natural Environmental Goals.	Somewhat aligns with Natural Environmental Goals.	Somewhat aligns with Natural Environmental Goals.	Somewhat aligns with Natural Environmental Goals.	Somewhat aligns with Natural Environmental Goals.
Desired by Public	Not desired by public.	Desired by public.	Some public support.	Some public support.	Some public support.	Not desired by public.
Preliminary Recommendation	**Required to be Carried Forward**	**Recommended to be Carried Forward**	**Recommended to be Carried Forward**	**Recommended to be Carried Forward**	**Not Recommended to be Carried Forward**	**Not Recommended to be Carried Forward**

4.2 Allan's Bridge Long-List Alternative Solutions

Alternative 1: Do Nothing – No improvements to address structural deficiencies and other repairs identified in recent inspections of the Allan's Bridge. This alternative does not address the problem statement. The structure would continue to deteriorate and would remain blocked off to vehicles, pedestrians, and cyclists. This alternative is required to be considered under the Municipal Class EA planning process as a baseline for the comparison of alternative solutions.

Alternative 2: Rehabilitate Bridge for Pedestrians / Cyclists – This alternative involves undertaking repairs to the existing Allan's Bridge to accommodate pedestrians and cyclists only. Vehicles would continue to be accommodated on the Macdonell Bridge.

Alternative 3: Replace Bridge for Pedestrians / Cyclists – This alternative considers replacement of the structure with a new bridge, designed specifically for pedestrian and cyclist traffic. Vehicles would continue to be accommodated on the Macdonell Bridge.

Alternative 4: Remove Bridge – This alternative considers permanent closure and removal of the structure. Vehicles, pedestrians and cyclists would continue to be accommodated on the Macdonell Bridge, as well as the planned Ward to Downtown Pedestrian Bridge. Retaining portions of the bridge only for viewing platforms and/or for heritage purposes may be considered at a later stage.

Alternative 5: Minor Rehabilitation of Bridge for Heritage Purposes Only – This alternative involves continued required minimal bridge maintenance as part of the City's responsibility as the bridge is a registered Heritage property. The bridge would remain closed for pedestrians, cyclists, and vehicles.

4.2.1 Screening and Recommended Short-List of Alternative Solutions

Table 4.2 summarizes how each alternative described above aligns with the City's planning and policy documents and their recommendations.

Table 4.2 Review of Allans Dam Bridge Long Listed Options

	1 - Do Nothing	2 – Rehabilitation of the Structure for Pedestrians & Cyclists	3 - Replace Bridge for Pedestrians & Cyclists	4 – Remove Bridge	5 - Minor Rehabilitation of Bridge for Heritage Purposes Only
TMP Goals	Aligns with TMP Goals (if pedestrians and cyclists accommodated on Macdonell Bridge). ✓	Aligns with TMP Goals (if pedestrians and cyclists accommodated on Macdonell Bridge). ✓	Aligns with TMP Goals (if pedestrians and cyclists accommodated on Macdonell Bridge). ✓	Aligns with TMP Goals (if pedestrians and cyclists accommodated on Macdonell Bridge). ✓	Aligns with TMP Goals (if pedestrians and cyclists accommodated on Macdonell Bridge). ✓
Secondary Plan Goals	NA	NA	NA	NA	NA
Structural Requirements	Does not address Structural Requirements. ✗	Somewhat addresses Structural Requirements. –	Fully addresses Structural Requirements. ✓	Fully addresses Structural Requirements. ✓	Somewhat addresses Structural Requirements. –
Cultural Heritage Goals	Does not align with Cultural Heritage Goals. ✗	Somewhat aligns with Cultural Heritage Goals. –	Does not align with Cultural Heritage Goals. ✗	Does not align with Cultural Heritage Goals. ✗	Aligns with Cultural Heritage Goals. ✓
Natural Environmental Goals	Does not align with Natural Environmental Goals. ✗	Does not align with Natural Environmental Goals. ✗	Does not align with Natural Environmental Goals. ✗	Fully aligns with Natural Environmental Goals. ✓	Somewhat aligns with Natural Environmental Goals. –
Desired by Public	Not desired by public. ✗	Desired by public. ✓	Some public support. –	Not desired by public. ✗	NA (Not presented at PIC)
Preliminary Recommendation	**Required to be Carried Forward**	**Recommended to be Carried Forward**	**Not Recommended to be Carried Forward**	**Recommended to be Carried Forward**	**Recommended to be Carried Forward**

4.3 Allan's Dam Spillway and Sluiceway Long-List Alternative Solutions

Alternative 1: Do Nothing – No improvements to address structural deficiencies and other repairs identified in recent inspections of the structure. This alternative is required to be considered under the Municipal Class EA planning process as a baseline for the comparison of alternative solutions.

Alternative 2: Rehabilitate Sluiceway and Spillway – This alternative involves complete rehabilitation of the existing sluiceway and spillway. The Speed River elevation continues to be controlled by the spillway, with operations on the sluiceway extended.

Alternative 3: Remove Sluiceway and Rehabilitate Spillway – This alternative involves removal of the sluiceway and rehabilitation of spillway. The Speed River elevation continues to be controlled by existing spillway, with no sluiceway operations.

Alternative 4a: Remove Sluiceway and Spillway – This alternative considers the complete removal of the existing sluiceway and spillway, with no introduction of a replacement structure. The Speed River elevation is no longer controlled, with significant impacts to the hydraulic elevation upstream. Portions of the sluiceway may be retained for heritage purposes only. This would be considered during the evaluation of shortlisted alternatives.

Alternative 4b: Option 4a) plus provide an Active Transportation Underpass – This alternative involves construction of a new AT underpass connecting the Trans Canada Rail Trail underneath the Macdonell Bridge.

Alternative 5a: Remove Sluiceway and Spillway and Build a New Dam Upstream – This alternative involves construction of a new dam upstream of the existing structure and Macdonell Bridge followed by the removal of the existing sluiceway and spillway. The elevation of Speed River is controlled by the new spillway.

Alternative 5b: Option 5a) plus provide an Active Transportation Underpass – Figure 4.1 illustrates the construction of a new AT underpass connecting the Trans Canada Rail Trail underneath the Macdonell Bridge. This AT underpass would be in conjunction with the construction of a new dam upstream of the existing structure and Macdonell Bridge followed by the removal of the existing sluiceway and spillway. The elevation of Speed River is controlled by the new spillway.

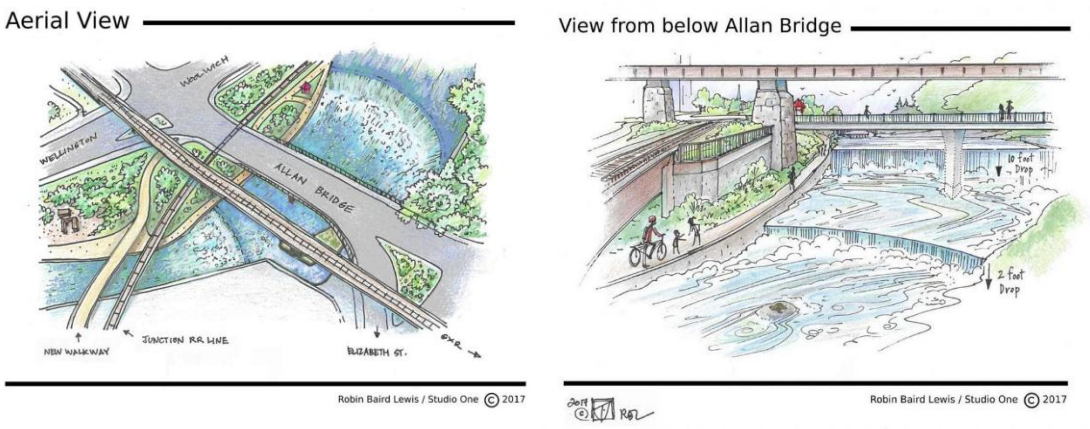

Figure 4.1 Alternative 5b: Option 5a) plus provide an AT Underpass (Guelph Coalition for AT Renderings)

4.3.1 Screening and Recommended Short-List of Alternative Solutions

Table 4.3 below summarizes how each alternative described above aligns with the City's planning and policy documents and their recommendations.

Table 4.3 Review of Allan's Dam Spillway and Sluiceway Long Listed Options

	1 - Do Nothing	2 – Rehabilitate Sluiceway and Spillway	3 - Remove Sluiceway and Rehabilitate Spillway	4 a) – Remove Sluiceway and Spillway	4 b) Remove Sluiceway and Spillway and Provide an Active Transportation Underpass	5 a) – Remove Sluiceway and Spillway and Build a New Dam Upstream	5 b) – Remove Sluiceway and Spillway and Build a New Dam Upstream with an Active Transportation Underpass
TMP Goals	NA	NA	NA	NA	Supports TMP General Goals. ➖	NA	Supports TMP General Goals. ➖
Secondary Plan Goals	NA	NA	NA	NA	NA	NA	NA
Structural Requirements	Does not address Structural Requirements. ✗	Fully address Structural Requirements. ✓	Fully address Structural Requirements. ✓	Fully address Structural Requirements. ✓	Fully address Structural Requirements. ✓	Fully address Structural Requirements. ✓	Fully address Structural Requirements. ✓
Cultural Heritage Considerations	Does not align with Cultural Heritage Goals. ✗	Somewhat with Cultural Heritage Goals. ➖	Does not align with Cultural Heritage Goals. ✗	Does not align with Cultural Heritage Goals. ✗	Does not align with Cultural Heritage Goals. ✗	Does not align with Cultural Heritage Goals. ✗	Does not align with Cultural Heritage Goals. ✗
Natural Environmental Goals and Permitting	Does not align with Natural Environmental Goals. ✗	Does not align with Natural Environmental Goals. ✗	Does not align with Natural Environmental Goals. ✗	Fully aligns with Natural Environmental Goals. ✓	Fully aligns with Natural Environmental Goals. ✓	Does not align with Natural Environmental Goals. ✗	Does not align with Natural Environmental Goals. ✗
Desired by Public	Not desired by public. ✗	Desired by public. ✓	Desired by public. ✓	Some public support. ➖	Some public support. ➖	Some public support. ➖	Some public support. ➖
Preliminary Recommendation	**Required to be Carried Forward**	**Recommended to be Carried Forward**	**Not Recommended to be Carried Forward**	**Recommended to be Carried Forward**	**Recommended to be Carried Forward**	**Not Recommended to be Carried Forward**	**Not Recommended to be Carried Forward**

5.0 SHORT-LIST OF ALTERNATIVE SOLUTIONS

5.1 Evaluation Criteria

The project team considered criteria that represent the broad definition of the environment as described in the Environmental Assessment Act to comparatively evaluate the alternative solutions. The general evaluation criteria used in evaluating the alternative solutions and design concepts are outlined in Table 5.1.

Table 5.1 Evaluation Criteria for Alternative Solutions

Evaluation Criteria	Description of Evaluation Criteria
Structural and Technical	Does the alternative adequately address the technical structural requirements of the project?
Traffic Operations & Safety	How will the alternative serve the existing and future vehicular, pedestrian and cycling traffic needs?
Socio-Economic Environment	What impacts will the alternative have on the local community?
Natural Environment and Climate Change	How does the alternative affect existing vegetation, water quality, fisheries/wildlife and habitat? Does the alternative address climate change?
Cultural Heritage / Archaeological	Will the alternative affect archaeological, cultural heritage resources or Indigenous communities?
Costs	What is the capital cost of the alternative? What is the cost for utility relocations, property acquisitions, maintenance, and operation costs?

5.2 Evaluation Methodology and Ranking System

The project team comparatively ranked each alternative solution from least desirable (highest negative impacts) to most desirable (lowest negative impacts), for each of the criteria described above to determine the preferred solution(s). Alternative solutions represented by a full dark circle symbol were given the highest score where the evaluation criteria resulted in the lowest anticipated impacts, or most desirable. Figure 5.1 demonstrates the rating scale used in the evaluation of alternative design concepts described below.

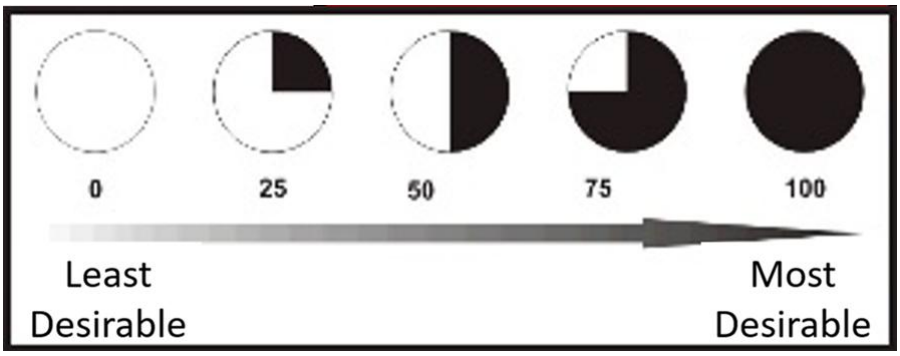

Figure 5.1 Alternatives Ranking Scale

5.3 Description of Alternative Solutions

Preliminary recommendations for the short-listed of alternative solutions were further considered and developed. The following sections summarize the short-listed options for each structure, including the recently added Ward to Downtown Pedestrian Bridge.

5.3.1 Macdonell Bridge

Upon further investigations into the Macdonell Bridge, the short-listed alternatives were revised based on feasibility and constructability. A superstructure replacement for this bridge was no longer considered an option as the superstructure and substructure are rigidly connected and removal of just the superstructure would release the connections that are an integral part of the bridge's rigid frame and structure. Therefore, below are 5 revised alternative solutions identified for Macdonell Bridge.

5.3.1.1 ALTERNATIVE 1: DO NOTHING

The Macdonell Bridge would remain as is, with no improvements undertaken. This alternative is required to be considered under the MCEA planning process as a baseline for the comparison of alternative solutions. No rehabilitation works at this time will result in the bridge requiring replacement in 10 years and no longer be structurally sound.

5.3.1.2 ALTERNATIVE 2: REHABILITATE ENTIRE STRUCTURE

This alternative inlcudes key repairs to the existing structure of Macdonell Bridge. This includes concrete patch repair and electrochemical chloride extraction from the deck, reconstructing a new 90mm asphalt surface and adding a new waterproofing system. The concrete repairs will involve:

- Patch, waterproofing, and paving of existing bridge deck,
- Miscellaneous concrete patch repairs, and

- Concrete repair of fascia, soffit and substructure.

A structural evaluation of the structure should be conducted to ensure structural integrity. Any additional rehabilitiation work should be deferred for 10 years, as by then, the entire bridge will still require full replacement.

5.3.1.3 ALTERNATIVE 3: REHABILITATE ENTIRE STRUCTURE & WIDEN THE DECK

In this alternative, rehabilitation methods described in Alternative 2 are implemented and a new portion of the bridge is constructed to widen the deck to accommodate AT facilities for pedestrians and cyclists. To accommodate AT facilities (i.e., bike lanes, multi-use paths, sidewalks, etc.), the superstructure and substructure would need to be widened by approximately 4m to 5m (to be confirmed in subsequent design stages). Depending on how much the bridge is widened, the centreline will be shifted and realigned with the Macdonell intersections at either end of the bridge.

5.3.1.4 ALTERNATIVE 4: REPLACE ENTIRE STRUCTURE FOR VEHICULAR TRAFFIC ONLY

This alternative involves replacing the entire bridge and minimally widening it by approximately 1m (to be confirmed in subsequent design stages) to accommodate a 2m sidewalk for pedestrians on both sides of the bridge. The bridge could be widened equally on both sides of the bridge to avoid a centreline shift and subsequent reconfiguration of travel lanes for Macdonell Street. This alternative does not provide AT facilities for cyclists. Construction of the new bridge would include new footings, abutments, deck, a parapet wall, asphalt surface, and waterproofing system.

5.3.1.5 ALTERNATIVE 5: REPLACE ENTIRE STRUCTURE TO ACCOMMODATE ACTIVE TRANSPORTATION ON NORTH SIDE

This alternative involves replacing the entire bridge with a new bridge, widened by approximately 4m to 5m (to be confirmed in subsequent design stages) to accommodate AT facilities, likely an MUP on the north side. The type AT facilities will be confirmed at a later stage following the completion of this Class EA study. Construction of the new bridge will include new footings, abutments, deck, a parapet wall, asphalt surface, and waterproofing system.

5.3.2 Allan's Bridge

5.3.2.1 ALTERNATIVE 1: DO NOTHING

No improvements to address structural deficiencies and other repairs identified in recent inspections of the Allan's Bridge. The structure would continue to deteriorate and remain closed to pedestrians and cyclists. This will result in the bridge requiring replacement in 10 years. This alternative does not address the problem statement. This alternative is required to be considered under the MCEA planning process as a baseline for the comparison of alternative solutions.

5.3.2.2 ALTERNATIVE 2: MINOR REHABILITATION OF BRIDGE FOR HERITAGE PURPOSES ONLY

This alternative involves continued minimal necessary bridge maintenance as part of the City's responsibility as a registered Heritage property. The bridge would remain closed for pedestrians and cyclists. Minor rehabilitation includes concrete patch repair for the existing deck and substructure and a new steel coating for existing steel girders.

5.3.2.3 ALTERNATIVE 3: REPLACE SUPERSTRUCTURE FOR PEDESTRIANS & CYCLISTS

This alternative involves full replacement/reconstruction of the existing deck and girders and major rehabilitation of existing masonry abutments and concrete pier to accommodate cyclists and pedestrians on the bridge. A structural evaluation of the existing substructure should be conducted to confirm structural integrity.

5.3.2.4 ALTERNATIVE 4: REMOVE BRIDGE

This alternative involves removal of the structure. Pedestrians and cyclists would be accommodated on the Macdonell Bridge, as well as the planned Ward to Downtown Pedestrian Bridge adjacent to the Study Area. Portions of the bridge may be retained only for viewing platforms and/or for heritage purposes.

5.3.3 Allan's Dam Spillway and Sluiceway

5.3.3.1 ALTERNATIVE 1: DO NOTHING

No improvements to address structural deficiencies and other repairs identified in recent inspections of the structure. This alternative is required to be considered under the MCEA planning process as a baseline for the comparison of alternative solutions.

5.3.3.2 ALTERNATIVE 2: REHABILITATE SPILLWAY & SLUICEWAY

This alternative involves minor rehabilitation (i.e., concrete patch repair) of the spillway and sluiceway. Speed River elevation will continue to be controlled by the spillway, with operations on sluiceway extended.

5.3.3.3 ALTERNATIVE 3: REMOVE SPILLWAY & SLUICEWAY

This alternative involves complete removal of the existing sluiceway and spillway, with no introduction of a replacement structure. Speed River elevation is no longer controlled, with impacts to the hydraulic elevation upstream. Retaining portions of the sluiceway only for heritage purposes to be considered during detailed design.

5.3.3.4 ALTERNATIVE 4: REMOVE SPILLWAY & SLUICEWAY AND BUILD NEW DAM UPSTREAM WITH AN ACTIVE TRANSPORTATION UNDERPASS

This alternative involves complete removal of the existing sluiceway and spillway plus construction of a new dam further upstream and an AT underpass under Macdonell Bridge connecting to the Trans Canada Rail Trail. This alternative does not align with the City's Official Plan to remove barriers and not impact rivers further.

5.3.4 Ward to Downtown Pedestrian Bridge

5.3.4.1 ALTERNATIVE 1: DO NOTHING:

In this alternative, the Ward to Downtown Pedestrian Bridge is not constructed and pedestrians and cyclists are redirected to either the Macdonell or Allan's Bridges to cross the Speed River. This alternative is required to be considered as part of the MCEA process and serves as a comparative baseline for other alternatives.

5.3.4.2 ALTERNATIVE 2: CONSTRUCT THE 2023 TENDERED BRIDGE:

This alternative includes the bridge previously tendered in 2023 based on the recommendations from the 2017 Class EA as shown in Figure 5.2. The previously tendered bridge design involves an architectural cast-in-place concrete slab on steel girders with a lookout and cast-in-place concrete abutments. It was identified that this bridge design had a conflict with the existing cultural heritage property (Spring Mill Distillery) on the southeast side of the bridge's abutment, notably, additional digging which was not permitted under the City's permission to enter (PTE) agreement with the property owner.

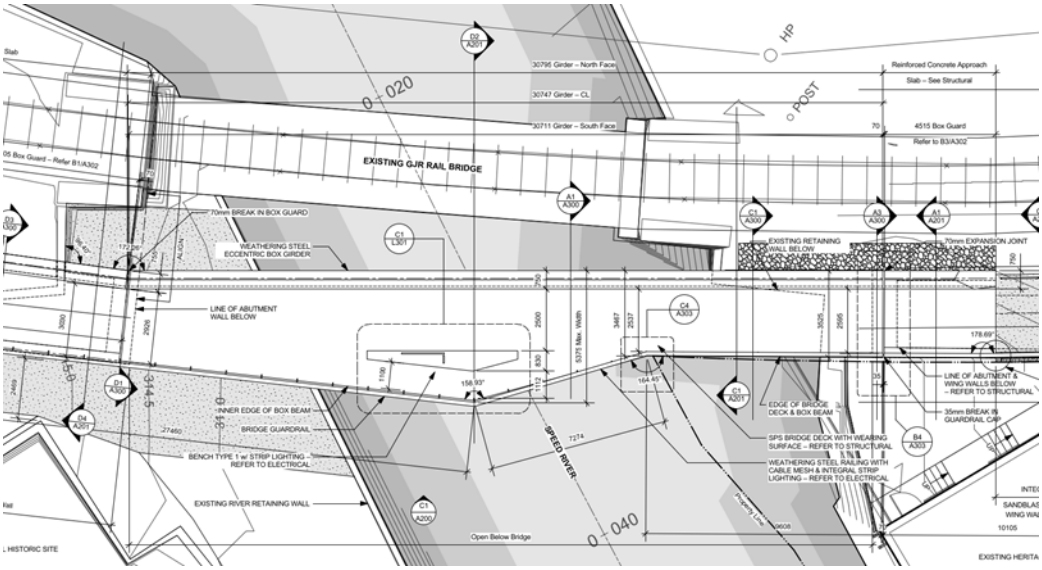

Figure 5.2 Plan View of 2023 Tendered Architectural Bridge

5.3.4.3 ALTERNATIVE 3: CONSTRUCT A SIMPLIFIED BRIDGE ADJACENT TO THE SOUTH SIDE OF THE GJR BRIDGE

This alternative evaluates the feasibility of constructing a simplified bridge adjacent to the south side of the GJR Bridge. The bridge design shown in Figure 5.3 would be a steel prefabricated superstructure or cast-in-place concrete slab on steel girders to accommodate pedestrians and cyclists. The bridge will include helical/micro piles to reduce excavation and vibration impacts to the nearby heritage building.

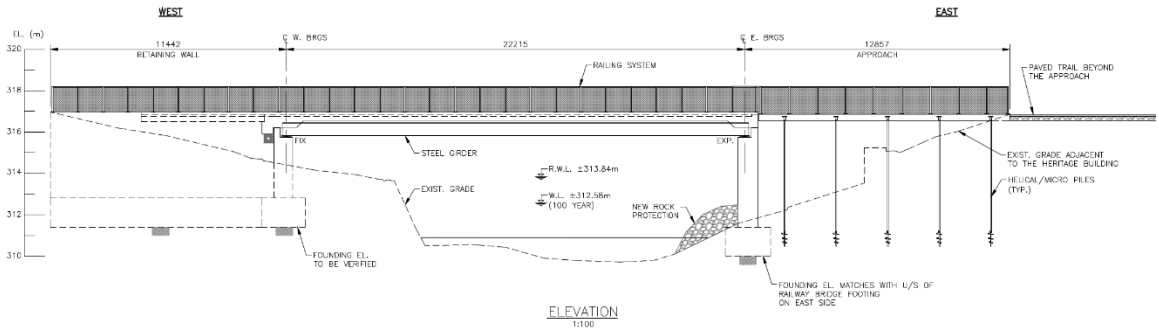

Figure 5.3 Sketch of Simplified Bridge

5.3.4.4 ALTERNATIVE 4: CONSTRUCT A SIMPLIFIED BRIDGE ADJACENT TO THE NORTH SIDE OF THE GJR BRIDGE

This alternative evaluates the feasibility of constructing the Ward to Downtown Bridge adjacent to the north side of the GJR Bridge. This alternative would require a staircase and pathway going over the GJR Bridge to connect to the north side from the existing trail. This

location for the bridge is being considered to avoid potential impacts to Spring Mill Distillery, the heritage property, on the southeast side of the river.

The bridge design would be a cast-in-place concrete slab on steel girders and abutments.

5.4 Evaluation of Alternative Solutions

The following sections provide an evaluation of the alternative solutions for each of the four structures. A detailed evaluation for each structure is provided in Appendix 11.

5.4.1 Macdonell Bridge

In consideration of the impacts of the proposed bridge improvements and transportation, bridge widening feasibility, alignment impacts to Macdonell Street, future AT needs, remaining service life and condition of the existing bridge, initial and future costs, long term durability and public convenience, the preliminary recommended solution for Macdonell Bridge is Alternative 5: Replace Entire Structure to Accommodate AT on North Side. The recommendation was based on the following considerations:

- Alternative 1 – Do Nothing does not address the bridge's structural and safety concerns.
- Alternative 2 – Rehabilitate Entire Structure only defers the replacement of the bridge as it is not in a condition to remain structurally sound for another 10 years.
- Alternative 3 – Rehabilitate Entire Structure & Widen the Deck also does not greatly improve the condition of the bridge and portions of the bridge will require replacement in approximately 10 years.
- Alternative 4 – Replace Entire Structure for Vehicular Traffic Only does not support the City's policy to improve AT and connectivity to the downtown core.

Table 5.2 provides a detailed evaluation of alternative solutions for the Macdonell Bridge based on criteria presented in 5.1 Evaluation Criteria.

Table 5.2 Evaluation of Alternative Solutions for Macdonell Bridge

EVALUATION CRITERIA	1. Do Nothing		2. Rehabilitate Bridge		3. Rehabilitate + Widen Bridge to Accommodate AT on Both Sides		4. Replace Bridge for Vehicular Traffic Only		5. Replace + Widen Bridge to Accommodate AT on North Side	
STRUCTURAL / TECHNICAL	○	Structural issues not addressed. Bridge will require replacement in 10 years.	○	Additional maintenance may still be required. Bridge will still require replacement in 10 years.	○	Potential durability issues as additional maintenance may still be required. Rehabilitated portion of bridge will still require replacement in 10 years.	●	Structural issues completely addressed. Provides opportunity to mitigate bridge runoff draining onto GJR property	●	Structural issues completely addressed. Provides opportunity to mitigate bridge runoff drainaing onto GJR property.
TRAFFIC OPERATIONS & SAFETY	◔	No improvements to active transportation.	◔	No improvements to active transportation.	●	Accomodates active transportation facilities. Improves connectivity to Downtown and nearby trails. Improves safety.	◑	Minimal improvements to active transportation facilities. Improves safety.	●	Accomodates active transportation facilities, improves connectivity to Downtown and nearby trails, and improves safety.
SOCIAL ENVIRONMENT	◕	No construction staging or traffic impacts. No improvements to AT connectivity to Downtown and trails.	◑	Complex construction staging and traffic impacts. Long construction duration.	◑	Requires up to 2.4m encroachment into property at NE quadrant. Long construction duration. Improves AT connectivity to Downtown and trails.	◑	Complex staging and traffic impacts during construction. Temporary encroachment into private property at NE quadrant.	◕	Potential for minor property encroachment and reconfiguration of driveway at NE quadrant depending on future intersection configuration. Improves AT connectivity to Downtown and trails.
NATURAL ENVIRONMENT & CLIMATE CHANGE	●	No anticipated impacts on the terrestrial or aquatic environment.	◕	Some minor and/or temporary anticipated impacts on the aqautic habitat and terrestrial environment.	◕	Some minor and/or temporary anticipated impacts on the aqautic habitat and terrestrial environment.	◕	Some minor and/or temporary anticipated impacts on the aqautic habitat and terrestrial environment.	◕	Some minor and/or temporary anticipated impacts on the aqautic habitat and terrestrial environment.
HERITAGE / ARCHAEOLOGICAL / CULTURAL IMPACTS	●	No impacts to archaeological or cultural heritage resources.	●	No impacts to archaeological or cultural heritage resources.	◑	May impact areas with potential for archaeological resources in northwest corner. Potential for minor impacts to adjacent cultural heritage resources.	◕	No archaeological impacts anticipated, but potential for minor impacts to adjacent cultural heritage resources.	◕	May impact areas with potential for archaeological resources in northwest corner. Potential for minor impacts to adjacent cultural heritage resources.
COST	○	Increased maintenance costs.	◑	$4M capital costs; $12.6M Lifecycle costs	◑	$6.4M capital costs; $13.1M Lifecycle Costs	◑	$8.3M Capital Cost; $9.5M lifecycle costs	◑	$8.8M Capital Cost; $10.3M lifecycle costs
OVERALL SCORE	12.0		12.0		13.0		12.0		15.0	
EVALUATION SUMMARY	Not Recommended		Not Recommended		Not Recommended		Not Recommended		**Recommended to be Carried Forward**	

5.4.2 Allans Bridge

In consideration of the remaining service life, condition of the existing bridge, initial and future costs, and AT options, the preliminary recommended solution for Allan's Bridge is Alternative 4: Remove Bridge. This recommendation was based on the following considerations:

- Alternative 1 – Do Nothing does not address the structural and safety concerns associated with the bridge.
- Alternative 2 – Minor Rehabilitation of Bridge for Heritage Purposes Only is not a viable option as it is not structurally sound to last another 10 years without major rehabilitation or replacement.
- Alternative 3 – Rehabilitate the Bridge for Pedestrians and Cyclists is high in costs and AT does not need to be accommodated on this bridge if it can be accommodated on the Macdonell and/or Ward to Downtown Pedestrian Bridges. This option would also require significant reconstruction to the deck/superstructure which would have a negative effect on identified heritage attributes.

Table 5.3 provides a detailed evaluation of alternative solutions for the Allan's Bridge based on criteria presented in 5.1 Evaluation Criteria.

Table 5.3 Evaluation of Alternative Solutions for Allan's Bridge

EVALUATION CRITERIA	1. Do Nothing		2. Minor Rehabilitation of Bridge for Heritage Purposes Only		3.Rehabilitate Bridge for Pedestrians & Cyclists		4. Remove Bridge	
STRUCTURAL / TECHNICAL	○	Structural issues not addressed. Bridge would continue to deteriorate.	◔	Some structural issues addressed. Bridge may require additional maintenance in the future.	◕	Most structural issues addressed. Reduced concerns for durability and maintenance in the future.	●	No structural, durability or safety issues with the removal of bridge.
TRAFFIC OPERATIONS & SAFETY	◑	No improvements.	◑	Relocation of active transportation users to alternative routes (Macdonell St. & Ward to Downtown pedestrian bridge)	◑	Improves active transportation facilities and connectivity to Downtown. Sightline issues with oncoming trains for peds & cyclists users.	◑	Relocation of active transportation users to alternative routes (Macdonell St. & Ward to Downtown pedestrian bridge)
SOCIAL ENVIRONMENT	◑	No changes to existing aesthetics of the bridge. Does not improve recreational value as active transportation is not accommodated.	◑	No changes to existing aesthetics of the bridge. Does not improve recreational value as active transportation is not accommodated.	◔	3rd active transportation crossing within study limits not required.	◕	Removal of bridge will improve views of Speed River from Macdonell Bridge.
NATURAL ENVIRONMENT & CLMIATE CHANGE	◑	No anticipated impacts on the natural environment. No changes.	◑	No anticipated impacts on the natural environment. No changes.	◕	No anticipated impacts on the natural environment.	◕	Some minor anticipated impacts from bridge removal. Reduces overall footprint within Speed River.
HERITAGE / ARCHAEOLOGICAL / CULTURAL IMPACTS	◕	Continued deterioration of cultural heritage resource. Confirm archealogical.	◕	Minor impact to a Known Built Heritage Resource. Confirm archealogical.	◑	Significant impact to a Known Built Heritage Resource. Confirm archealogical.	◑	Removal of a Known Built Heritage Resource can be mitigated through comemorative strategy
COST	◑	$2.9M Lifecycle costs	◑	$800K capital costs; $1.6M lifecycle costs	◔	$1.9M capital costs; $2.4M lifecycle costs	●	$740K capital costs
OVERALL SCORE	11.0		11.0		9.0		14.0	
EVALUATION SUMMARY	Not Recommended		Not Recommended		Not Recommended		**Recommended to be Carried Forward**	

5.4.3 Allan's Dam Spillway & Sluiceway

Since the Allan's Dam Spillway & Sluiceway is in fair to good condition, the preliminary recommended solution for these structures is Alternative 2: Rehabilitate the Spillway & Sluiceway. This recommendation was based on the key consideration that the other alternatives are extremely costly and would have impacts to Speed River, which is a designated cultural heritage landscape.

Table 5.4 provides a detailed evaluation of alternative solutions for the Allan's Dam Spillway & Sluiceway based on criteria presented in 5.1 Evaluation Criteria.

Table 5.4 Evaluation of Alternative Solutions for Allan's Dam Spillway & Sluiceway

EVALUATION CRITERIA	1. Do Nothing		2.Rehabilitate Sluiceway and Spillway		3. Remove Sluiceway and Spillway		4. Remove Sluiceway and Spillway and Build a New Dam Upstream with an Active Transportation Underpass	
STRUCTURAL / TECHNICAL	◔	Continued degradation over time may lead to failure, impacting river levels.	◕	Addresses structural issues and maintains hydraulic function of the river.	◑	Impact on hydraulic function of the river.	◑	Impacts on hydraulic funciton of the river. Requires additional studies to quantify full impacts. External agency permitting is unlikely for a new dam.
SOCIAL ENVIRONMENT	◑	Continued degradation over time may lead to failure, impacting river levels and enjoyment of property.	◕	Water levels maintained as is. Minimal to no impact to properties abutting Speed River or public recreation.	◔	Potential for impacts on property values and enjoyment of property by altering water levels. Major impacts to public recreation uses of river. Could allow for creation of a cycling underpass.	◔	Improved aesthetics but potential for impacts on property values and enjoyment of property by lowering water levels. Impacts public recreation uses of the river. Could allow for creation of a cycling underpass.
NATURAL ENVIRONMENT & CLMIATE CHANGE	◑	No anticipated impacts on the natural environment. Fails to mitigate future impacts associated with climate change.	◕	Some minor anticipated impacts on the aquatic environment from rehabilitation of the sluiceway and spillway.	◕	Removal will impact the aquatic and terrestrial environments. Provides opportunity for restoring NHS and significant valleylands.	◔	Impacts to the aquatic environment anticipated from removal of the sluiceway and spillway. Additional impacts when the new dam is built, provides no environmental benefit. Does not conforn with City's OP policy to remove barriers and refrain from impacting them further.
HERITAGE / ARCHAEOLOGICAL / CULTURAL IMPACTS	◕	Continued deterioration of cultural heritage resource.	●	Minor impact to two Known Built Heritage Resource. Positive impacts are also identified through retention and rehabilitation of the structures.	◑	Removal of two Known Built Heritage Resources. Changes to Speed River, which is an important CHL to Indigenous Peoples. Confirm archaeological.	◑	Removal of two Known Built Heritage Resources. Impacts to Speed River, which is an important CHL to Indigenous Peoples.Confirm archaeological.
COST	◑	Increased maintenance and future reconstruction costs.	◕	~$415K Capital Cost	◑	~$2M Capital Cost	◔	~ $15M Capital Cost (based on similar examples)
OVERALL SCORE	9.0		13.0		8.0		5.0	
EVALUATION SUMMARY	Not Recommended		Recommended to be Carried Forward		Not Recommended		Not Recommended	

5.4.4 Ward to Downtown Pedestrian Bridge

In consideration of the impacts of the proposed improvements and transportation, future AT needs, initial and future costs, long term durability and public convenience, the preliminary recommended solution for the Ward to Downtown Pedestrian Bridge is Alternative 3: Construct a Simplified Bridge Adjacent to the South Side of the GJR Bridge. This recommendation was based on the following considerations:

- Alternative 1 – Do Nothing does not conform to the City's goal of providing AT accommodations and connectivity to the downtown core.
- Alternative 2 – Construct the 2023 Tendered Bridge is not feasible to construct without impacting the Spring Mill Distillery, a known heritage building.
- Alternative 4 has a higher construction cost and is not feasible to construct due to lack of space required for a staircase structure on the west end of the bridge. This alternative also would not meet accessibility requirements.

Table 5.5 provides a detailed evaluation of alternative solutions for the Ward to Downtown Pedestrian Bridge based on criteria presented in 5.1 Evaluation Criteria.

Table 5.5 Evaluation of Alternative Solutions for Ward to Downtown Bridge

EVALUATION CRITERIA	1. Do Nothing		2. Construct 2023 Tendered Bridge		3. Construct a Modified Structure on South Side of GJR Rail Bridge		4. Construct a Modified Structure on on North Side of GJR Rail Bridge	
STRUCTURAL / TECHNICAL	●	No constructability or hydraulic concerns.	◑	Excessive impacts at east abutment due to excavation requirements and PTE requirements.	●	Excavation issues and PTE requirements mitigated through modified design and use of Micro (Helical) Piles.	◕	Construction complexities due to lack of space along west side of river, north of rail.
TRAFFIC OPERATIONS & SAFETY	◔	Saftey concerns not addressed as pedestrians may continue using GJR railway bridge to cross the Speed River as a shortcut instead of using Macdonell or Allan's bridges.	●	Improves safety as pedestrians and cyclists will use the bridge to cross Speed River and avoid using the GJR railway bridge.	●	Improves safety as pedestrians and cyclists will use the bridge to cross Speed River and avoid using the GJR railway bridge.	◑	Improves safety but introduces accessibility issues due to elevation/stairs required at west end.
SOCIAL ENVIRONMENT	◑	Does not improve connectivity to Downtown Guelph and trails.	◑	Provides recreational benefit by improving connectivity to Downtown Guelph and trails. Impacts private / heritage property at east side.	●	Provides recreational benefit by improving connectivity to Downtown Guelph and trails, without impacting property.	●	Provides recreational benefit by improving connectivity to Downtown Guelph and trails, without impacting property.
NATURAL ENVIRONMENT & CLIMATE CHANGE	◕	No anticipated impacts on the natural environment. No changes.	◕	No anticipated impacts on the natural environment.	◕	No anticipated impacts on the natural environment.	◕	No anticipated impacts on the natural environment.
HERITAGE / ARCHAEOLOGICAL / CULTURAL IMPACTS	●	No impacts to archaeological or cultural heritage resources.	◑	Obstructs views to the Wellington Street Rail Bridge from the south. Construction acitivites have significant potential to impact Known Built Heritage Resource (Spring Mill Distillery).	◕	Obstructs views to the Wellington Street Rail Bridge from the south. Significantly reduces potential to impact Known Built Heritage Resource (Spring Mill Distillery).	●	No obstruction of views to Rail Bridge . Significantly reduces potential to impact Known Built Heritage Resources due to location.
COST	●	No costs	◑	Approx. $5M Capital Cost	◕	Approx $3.3M Capital Cost (Lower construction costs due to simpified structure)	◑	Approx $4.5M Capital Cost (Higher construction costs, mainly due to elevation requirements)
OVERALL SCORE	14.0		10.0		17.0		15.0	
EVALUATION SUMMARY	Not Recommended		Not Recommended		Recommended to be Carried Forward		Not Recommended	

6.0 DESCRIPTION OF THE PREFERRED SOLUTION

The following combination of alternative solutions were recommended:

- Replace the entire Macdonell Bridge with a wider bridge to accommodate an MUP on the north side and a sidewalk on the south (to be confirmed in subsequent design stages),
- Remove the Allan's Bridge,
- Rehabilitate the Allan's Dam Spillway & Sluiceway, and
- Construct a simplified Ward to Downtown Pedestrian Bridge south of the GJR Bridge.

This overall recommended solution, as shown in Figure 6.1, will support the City's policy of improving connectivity to the downtown core.

6.1 Macdonell Bridge Cross-Section Options

Following the completion of the Macdonell and Allan's Structures Class EA, cross-sections and AT options will be further refined for the Macdonell Bridge to further develop the preferred solution. Other key considerations will be confirmed including lane configurations and widths, intersection alignments, and connectivity to adjacent trails.

Widening the bridge will require a centreline shift and realignment of Macdonell Street with intersections at either end of the bridge. The extent of the centreline shift, and realignment will be determined during preliminary and detailed design. Concepts for Macdonell Street intersection improvements were presented at POH #2 and are shown in Figure 6.2 to Figure 6.5 below.

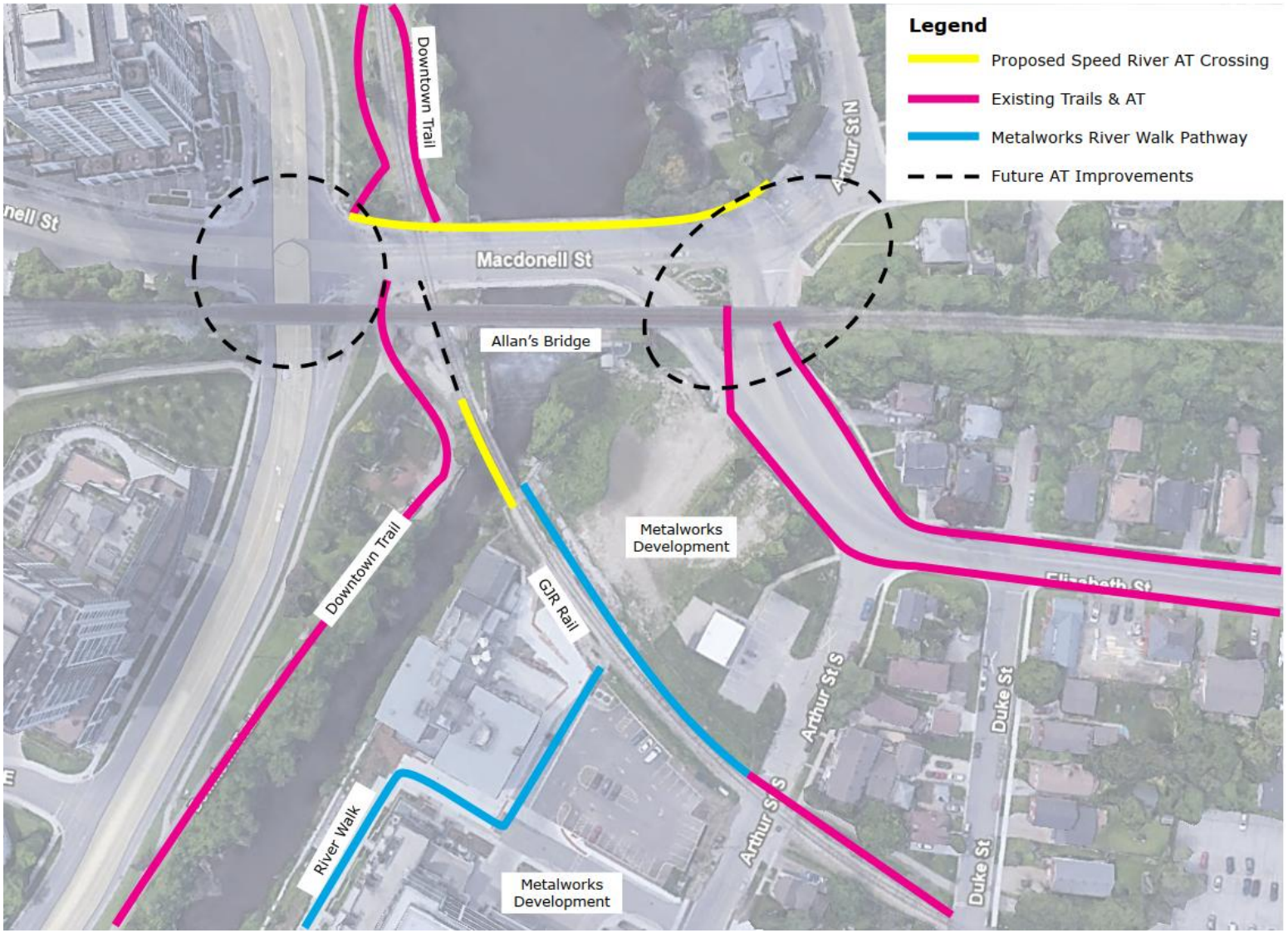

Figure 6.1 Proposed Overall Active Transportation Improvements*

*To be confirmed in subsequent design stages

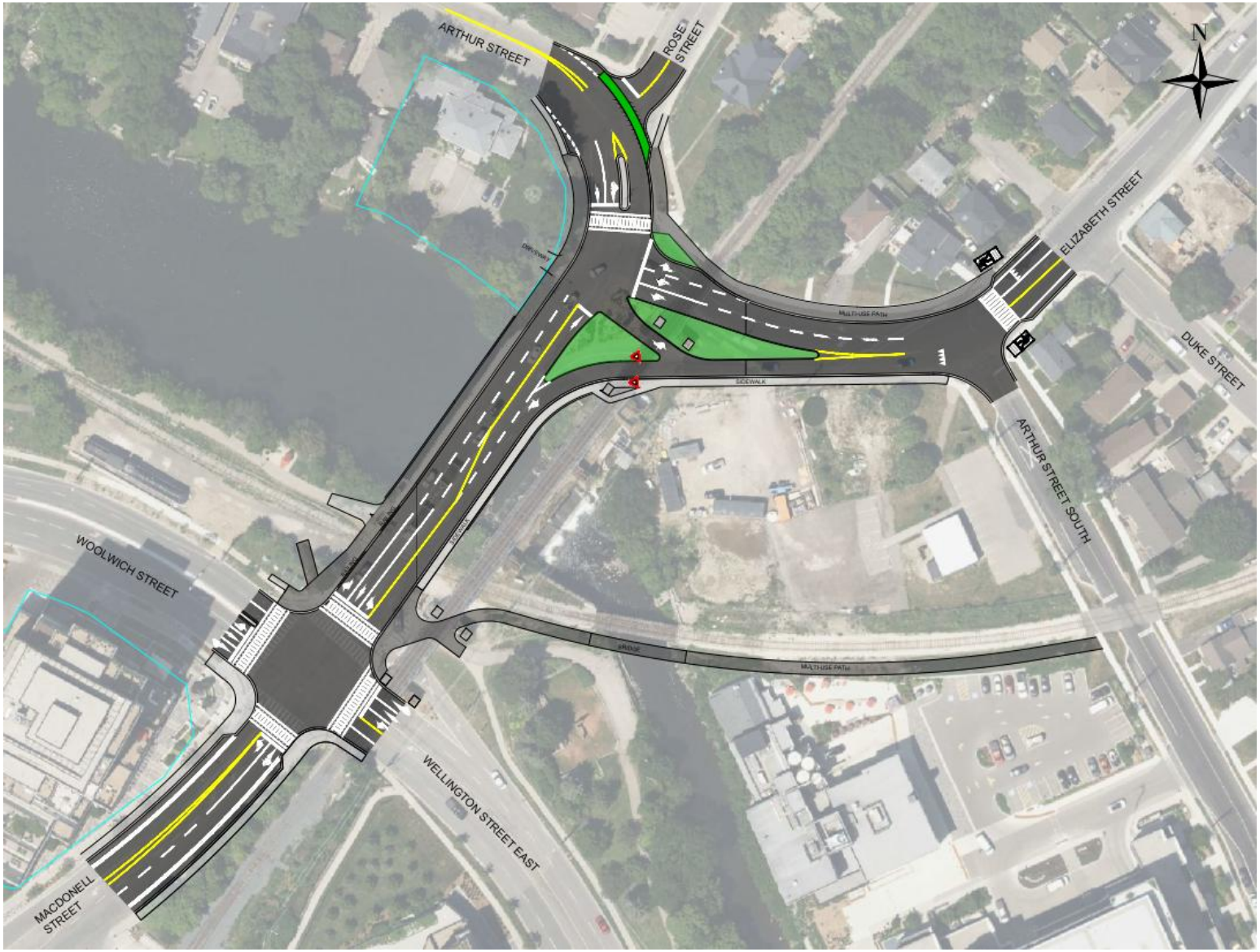

Figure 6.2 Macdonell Street Intersection Concept #1

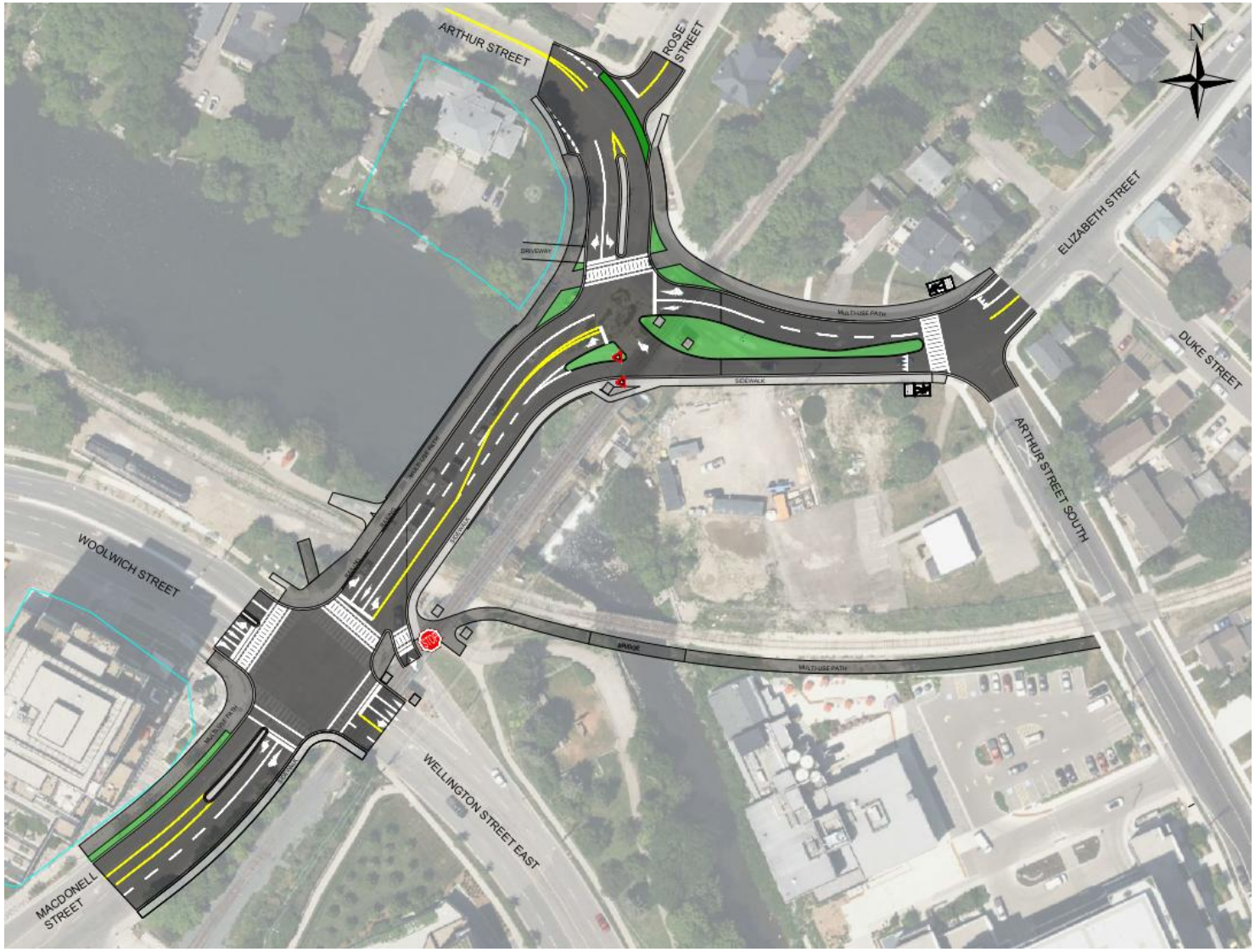

Figure 6.3 Macdonell Street Intersection Concept #2

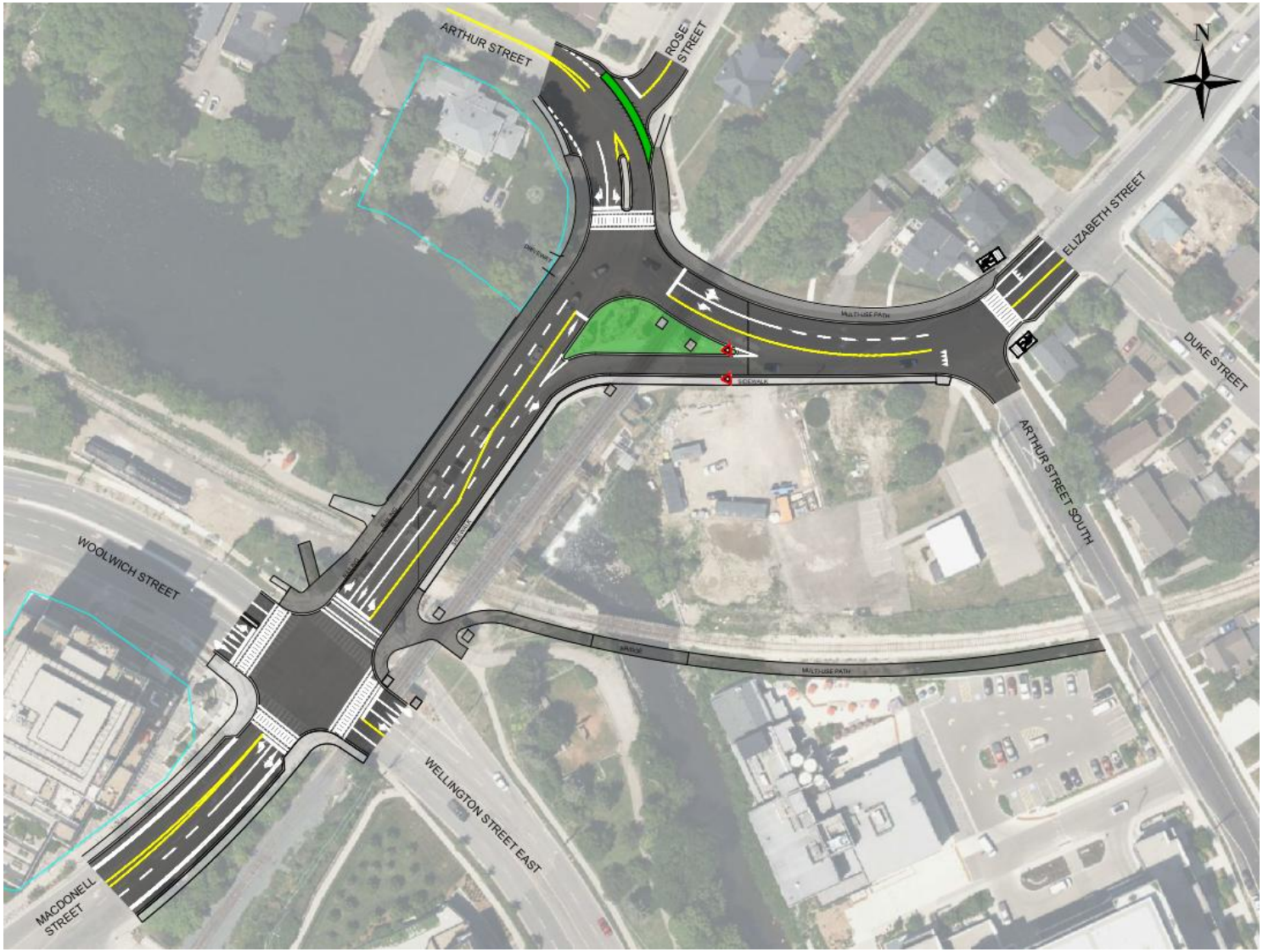

Figure 6.4 Macdonell Street Intersection Concept #3

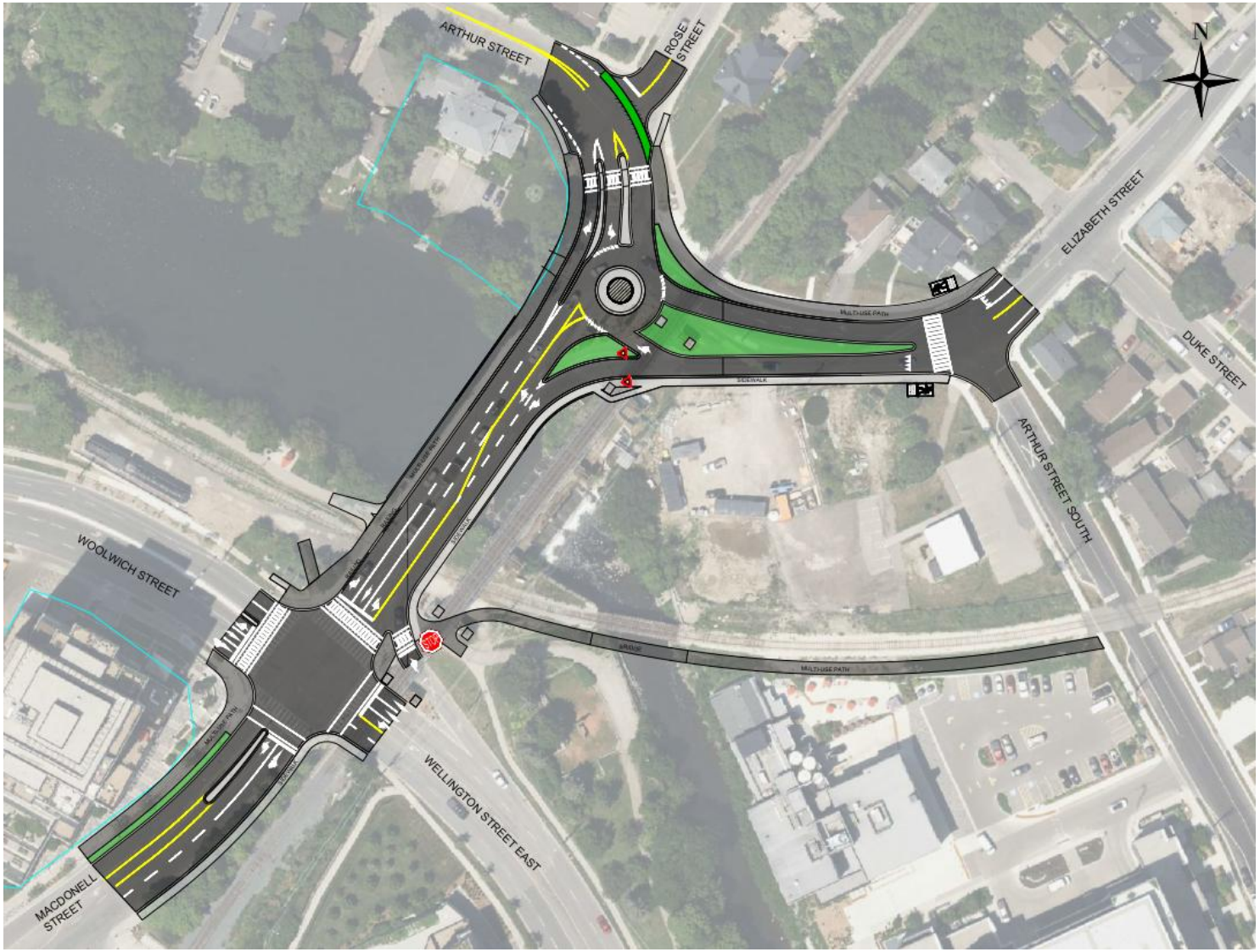

Figure 6.5 Macdonell Street Intersection Concept #4

6.2 Commemorative Strategy for Allan's Bridge

The removal of Allan's Bridge will require an HIA to be undertaken during detailed design to confirm impacts to this known cultural heritage resource. Based on the results and recommendations of the HIA, options could be considered to commemorate the bridge. This may include constructing a lookout point, developing a commemorative plaque, or repurposing materials from the bridge, etc. A local committee could be formed to develop the commemorative strategy for Allan's Bridge and evaluate options.

6.3 Ward to Downtown Pedestrian Bridge Constructability & Design Options

A simplified bridge structure adjacent to the south side of the GJR Bridge has been determined to be feasible by constructing the east abutment flush against the existing GJR Bridge's abutment, which is approximately at the edge of the Speed River on the east side. A 20m-long approach span will connect the abutment to the new pedestrian trail in the east. This approach span will be supported on helical/micro piles to minimize the extent of excavation and disturbance to the existing grade adjacent to the heritage building, Spring Mill Distillery. By using helical/micro piles, vibration impacts are minimized compared to other types of deep foundations. Based on the location of the east abutment for the Ward to Downtown Pedestrian Bridge, the bridge would be able to accommodate the minimum clear width required for both pedestrians and cyclists.

Following the completion of the Macdonell and Allan's Structures Class EA, which now includes the Ward to Downtown Pedestrian Bridge, design options for the bridge will be further developed. A simplified structure could be considered by implementing a prefabricated bridge or a concrete slab on steel girders. Additionally, with the removal of the Allan's Bridge, aesthetics from that bridge could be used to inspire the design of the Ward to Downtown Pedestrian Bridge.

6.4 Preliminary Cost Estimates

A high-level preliminary cost estimate has been prepared for the preferred solutions for each structure. It is important to note that the construction cost estimate will be further refined during the preliminary and detailed design stages. The overall preliminary cost estimate to complete the construction of the proposed works is $13,257,000, as shown in Table 6.1 below.

Table 6.1 Preliminary Cost Estimate

Item	Cost Estimate
Macdonell Bridge	
Capital Cost	$5,869,000
Contingency, Engineering Fees, Construction Support (~50%)	$2,934,500
Subtotal	**$8,803,500**
Allan's Bridge	
Capital Cost	$492,000
Contingency, Engineering Fees, Construction Support (~50%)	$246,000
Subtotal	**$738,000**
Allan's Dam Spillway and Sluiceway	
Capital Cost	$277,000
Contingency, Engineering Fees, Construction Support (~50%)	$138,500
Subtotal	**$415,500**
Ward to Downtown Pedestrian Bridge	
Capital Cost	$2,200,000
Contingency, Engineering Fees, Construction Support (~50%)	$1,100,000
Subtotal	**$3,300,000**
Total	**$13,257,000**

6.5 Construction Staging & Implementation

Macdonell Bridge

The existing Macdonell Bridge shall be removed and the new bridge constructed in 3 construction stages to allow for vehicular and pedestrian to utilize the bridge during construction. 2 vehicle lanes and pedestrian access will be open during all stages of construction.

- Stage 1: During this stage the south side of the existing Macdonell Bridge will be used for 2 vehicle lanes while the north side is removed and reconstructed. The existing sidewalk will remain open for pedestrian access during this stage. A portion of the new sidewalk and parapet wall will be constructed first to provide enough road clearance for Stage 2. A temporary concrete barrier (TCB) will be installed at

the north edge of the remaining existing bridge with a 300mm clearance from the edge. Additionally, a protection system will be installed at the approaches.

- Stage 2: The 2 vehicles lanes will be moved to the north side on the new bridge and the remaining portion of the existing bridge will be removed and reconstructed. A portion of the new sidewalk will be constructed to allow for pedestrian access. The TCB will be moved onto the north to provide a barrier for the traffic.
- Stage 3: The 2 vehicle lanes will be moved back to the south side of the bridge while construction is completed on the north portion to complete the MUP. In this stage, pedestrians will have access to the new sidewalk on the south side.

Allan's Bridge and Sluiceway and Spillway

The Allan's Bridge will be removed entirely in a single construction stage. The Allan's Dam Sluiceway and Spillway will also be rehabilitated in a single construction stage.

Ward to Downtown Pedestrian Bridge

The Ward to Downtown Pedestrian Bridge is a new structure with no pre-existing traffic, therefore, it can be constructed in one construction stage.

6.6 Geotechnical Construction Recommendations

Geotechnical construction recommendations for the preliminary pavement and foundation design have been provided in the Geotechnical Investigations Report (Appendix 4). Recommendations are based on the subsurface soil and groundwater conditions encountered during the preliminary investigation. Additional investigation will be required during the detailed design stage to supplement the subsurface information and confirm the preliminary recommendations.

7.0 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

7.1 Construction Impacts

Since the structures are in the vicinity of residential areas, the following identified potential impacts and mitigation measures will be considered during construction:

- Noise and vibration from construction activities and machinery – Increased noise and vibration will be mitigated by planning the working hours following local noise bylaws, and construction machinery and heavy vehicles will be in compliance with source sound limits with local bylaws.

- The City will consider the possibility of restricting any lane or road closures hours during peak travel times (e.g., rush hour) for adjacent roadways, to minimize impact on traffic overall.
- Residential areas are located in proximity to the construction area. The contractors will be made aware of this and are to exercise caution for all construction vehicle movements in the area.
- It is recommended that best management practices be followed during construction to mitigate diesel emissions from the truck and equipment operations, including:
  - Proper maintenance and operation of engines and exhaust systems of fuel-burning equipment and the use of newer machinery that meets more stringent air emissions standards or retrofit older diesel engines with abatement technologies.
  - Loads on haul trucks are to be covered.
- Burning of waste materials will be prohibited.

7.1.1 Disruption to Vehicular Traffic, Pedestrians and Cyclists

During the construction of the proposed works, vehicular traffic will be able to cross over the Speed River via Macdonell Bridge as per the construction staging and implementation described in Section 6.5. 2 vehicle travel lanes and pedestrian access is anticipated to be provided throughout all stages of construction. This will allow for minimal disruption for vehicular traffic and pedestrians and minimize the need for detours. Due to the reduction of lanes during construction (from 4 to 2 lanes), moderate traffic delays and congestion is anticipated within the area.

Dedicated access for cyclists may not be provided during the construction staging for Macdonell Bridge, and as such, detour routes will be developed as part of the traffic management plan during detailed design.

Roadway users may be notified of construction through press releases, newspaper ads, social media, the City's website, and roadway signage. A communication plan and traffic management plan may also be prepared during detailed design in consultation with key interested parties. The focus of the plan would be to provide accurate and timely information to roadway users informing them of how to adjust their route and/or departure times. Emergency services are to be notified prior to construction to minimize and avoid delays during emergencies. Additionally, school transportation services will also be consulted in advance of construction to allow for proper bus route and student pick-up planning.

7.1.2 Hydrogeological Impacts

Within the construction dewatering zone of influence, impacts such as ground settlement, reduction in groundwater flow to groundwater users and watercourses, and other impacts may occur. Potential impacts due to dewatering will need to be assess following the completion of dewatering estimates. It is also anticipated that temporary cofferdams or equivalent will be required to temporarily divert the river flow around the excavations during construction to keep it dry.

7.1.3 Construction Dewatering

Construction dewatering may be required if the excavations are proposed to extend below the water table. At the time of preparation of this report, preliminary design drawings for the structures were not available, therefore dewatering estimates could not be completed.

Based on the shallowest groundwater level depth (2.1m), it is anticipated that the excavations to construct foundations for the new structures would advance below the water table and construction dewatering is likely required. However, this should be confirmed once preliminary design and any additional investigations are completed.

The removal of Allan's Bridge will not require construction dewatering and can be completed in the wet.

Once preliminary design information is available, as assessment of construction dewatering requirements including estimated groundwater inflows and an estimate of the construction dewatering zone of influence will be required. Additionally, an assessment of the long-term drainage needs of the structures will need to be assessed. Details for future hydrogeological work is summarized in Section 10.2 and in Appendix 5.

7.2 Hydraulic Impacts

The Allan's Bridge does not function as a hydraulic control and therefore, there are no anticipated hydraulic impacts associated with the removal of Allan's Bridge. Furthermore, as the Allan's Dam Sluiceway and Spillway is not currently modelled as a separate control structure within GRCA's HEC-RAS Model, thus, the hydraulic function of the dam on the Speed River cannot be quantified at this time. However, as the preferred solution is to rehabilitate the sluiceway and spillway, there are no quantifiable hydraulic impacts relative to existing conditions.

Furthermore, as the dam structure has a large influence on the elevation of the Speed River, upstream and downstream, it is reasonable to assume that removal of the structure would

result in significant impacts to the water level elevation of the Speed River upstream and likely come with significant public scrutiny. Through ongoing discussions with the GRCA, they have indicated that a more thorough modelling exercise is underway to update the HEC-RAS model for this stretch of the Speed River, however, an updated model was not made available during the preparation of the Hydraulic Analysis study.

While the existing model has been used to compare the relative impacts of alternative solutions, the precise hydraulic impacts and/or improvements should be determined in future design phases using the updated GRCA hydraulic model. This includes:

- Potential hydraulic impacts associated with the dam/spillway removal; and
- Potential hydraulic risks and design requirements for the proposed Macdonell Bridge structure replacement.

7.3 Natural Environment

The sections below provide a general overview of potential impacts the proposed works may have on the natural heritage features and suggest avoidance measures and operational constraints to mitigate and/or avoid these impacts for carrying forward into design. A detailed impact assessment should be undertaken during preliminary and/or detailed design.

7.3.1 Vegetation

Potential direct impacts to terrestrial vegetation include the temporary stockpiling areas, and complete removal through construction and grading activities. Indirect impacts to landscaping trees along the periphery of construction areas may occur due to damage to roots, stems, and branches through interaction with construction equipment. Dust raised by construction activities may also negatively impact vegetation.

The following measures are recommended to reduce impacts from vegetation removal:

- To prevent incidental impacts to nesting birds, (including at-risk and rare species) bat maternity colonies, and Monarch larva, clearing of vegetation should be restricted to outside of the migratory bird nesting, bat maternity, and Monarch rearing seasons. Vegetation should not be removed from April 1 through September 30.
- Compensation of lost woody vegetation should be in accordance with the City's Private Tree By-Law (2025) and GRCA guidelines.
- Contractors should employ Clean Equipment Protocols to prevent movement of exotic invasive species to and throughout the Project area.

7.3.2 Excavation, Grading, Filling, and Industrial Equipment

Construction of the Project may require excavation and stockpiling of soils, deposition of aggregate, pouring of concrete, grading and filling, and related construction activities. These activities create exposed soils and other materials (granular, loose asphalt) and can alter slopes and grades, that can in-turn affect drainage patterns. There is potential for materials and/or sediment to be released into the environment or as dust to both terrestrial and aquatic environments.

Dust on vegetation can reduce plant productivity through reduction in metabolic processes and both dust and concrete can adversely affect aquatic environments. Additionally, the industrial equipment used for these activities may release deleterious substances such as oil, fuel or grease that could seep into groundwater or be conveyed into nearby aquatic environments. Equipment can also incidentally compact soils, negatively affecting existing and future vegetation, and kill or injure wildlife.

The following measures are recommended to reduce and/or avoid impacts to natural features from excavation and grading:

- Grading, vegetation clearing, and other activities that expose loose soil should be scheduled in a way that limits the area and length of time soils are vulnerable to erosion.
- Topsoil from natural vegetation communities should be stockpiled separately and re-used in post-construction efforts.
- Erosion of soils disturbed by excavation/construction will be mitigated by the erosion and sediment controls (ESCs) implemented during construction.
- All excess materials generated by excavation will be stockpiled, handled, and disposed of in a manner that prevents entry into adjacent natural features.
- All stockpiled material will be maintained at an angle of 70 degrees or less to deter use of the material by Bank Swallows, a protected bird species.
- Keep machinery clean and free of fluid leaks. Wash, refuel and service machinery and store fuel in a way that prevents deleterious substances from entering nearby drainage features.
- Dust suppression, such as wetting down with water, will be on standby for areas that may generate dust during construction, including the active work area.
- A Spill Response and Action Plan should be prepared by the contractor in advance of work that describes actions to be taken in the event of a spill, and a spill kit containing appropriate absorbent materials will always be kept on site to be used in

the event deleterious materials are released into drainage features or roadside drains.

- Design and implement ESCs to contain/isolate the construction zone, manage site drainage and prevent erosion of exposed soils and migration of sediment to adjacent drainage features during all phases of the Project.
- Concrete washout areas, as required during construction, should be clearly marked and located/managed so residue does not enter proximal drainage features.
- Preference should be made to use biodegradable ESC materials and be specified in the contract drawings.

All ESC measures should be inspected regularly by a qualified professional and maintained to ensure they are functioning as intended throughout the construction period and until such time that disturbed areas have stabilized.

7.3.3 Wildlife and Wildlife Habitat

Wildlife and their habitats may have potential impacts during construction through direct injury and habitat loss. Wildlife may experience indirect impacts as well through avoidance of areas of active construction due to vibration and noise and light pollution, resulting in modification to established daily movement patterns. This disruption would be temporary, and it is anticipated that local wildlife is accustomed to a moderate amount of human disturbances.

Vegetation clearing has may impact breeding birds through disturbance of actively nesting individuals and destruction of nests, eggs and young. Additionally, dead/dying, or injured trees within the Study Area may provide habitat for at-risk bats and their active-season maternity colonies. There is limited candidate habitat for bats, SAR or otherwise, within the project footprint as there are only a few small individual trees.

Construction activities may temporarily impact terrestrial wildlife habitats and have the potential to impact individuals. The following measures are recommended to reduce these impacts:

- To prevent incidental impacts to nesting birds (including at-risk and rare species) and bat maternity colonies, clearing of vegetation should be restricted to outside of the migratory bird nesting, bat maternity and Monarch rearing seasons. Conservatively, this period during which vegetation will not be removed occurs from April 1 through September 30.
- ESC (e.g., silt fencing) can be specified to provide the added function of wildlife barrier fencing as needed.

- To avoid potential impacts to wildlife through entanglement, all ESC measures, including erosion control blankets, fibre rolls, and sediment fence will be 'netless', meaning they do not contain nylon or other fine, open-weave synthetic mesh/netting components.
- Education of construction staff regarding the potential of encountering wildlife, including turtles, as well as appropriate actions (i.e., allow the animal to leave on its own, contact a wildlife professional, etc.) is an effective mitigation against unintended impacts to wildlife.

7.3.4 Aquatic Habitats and Fish

Potential impacts to aquatic habitats and the fish communities can be identified as a change in habitat, injury to aquatic organisms as a result of construction, and indirect changes to the aquatic habitat that may occur in the long term and/or over a larger area.

The following mitigation measures shall be refined during preliminary and/or detailed design once construction activities are confirmed. It is recommended the applicable mitigation measures identified below be carried forward into design.

- Any in-water work required for this Project shall be permitted between July 1 and March 14 (D. Ungar, personal communication, January 7, 2022).
- All work below the highwater mark will be completed within an isolated work area, under dry conditions, to ensure sediment generated during construction activities is contained to the worksite. Cofferdams are to be constructed in accordance with the DFO Interim code of practice: temporary cofferdams and diversion channels, following all necessary mitigation and notification requirements.
- If the cofferdams enclose wetted areas, prior to any unwatering activities, a qualified Fisheries Specialist (with a License to Collect Fish for Scientific Purposes issued by the MNR prior to the work) will relocate fish and .
- During all unwatering activities, fish screens will be placed at the end of all pump intakes, in accordance with DFO's Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater, to prevent the potential entrainment and/or impingement of fish and other aquatic animals during dewatering.
- Discharge from unwatering will be treated to remove suspended sediments prior to re-entering the stream. Treated water will be released back into the system in a manner that prevents erosion and sediment inputs in the receiving waterbody.
- Should a spill occur, stop work, and contain sediment-laden water to prevent dispersal in the watercourse.

- Regularly monitor the Speed River for signs of sedimentation during all phases of the work, undertaking or activity, and taking corrective action as required.
- Design and implement ESCs to contain/isolate the construction zone, manage site drainage and prevent erosion of exposed soils and migration of sediment into the Speed River during all phases of the project.
- To prevent any deleterious substances from entering the watercourse, operate, store, and maintain all equipment, vehicles, and associated materials at a minimum, 30m away from the Speed River.

7.3.5 Species at Risk

Based on the urban nature of the Study Area, there is a low likelihood of encountering terrestrial SAR, however the following recommendations will help to reduce potential impacts to terrestrial wildlife, SAR or otherwise:

- To prevent incidental impacts to nesting birds (including at-risk and rare species), and bat maternity colonies, clearing of vegetation should be restricted to outside of the migratory bird nesting and bat maternity seasons. Conservatively, this sensitive period during which vegetation will not be removed occurs from April 1 through September 30.
- Education of construction staff regarding the potential of encountering wildlife, including turtles, as well as appropriate actions (i.e., allow the animal to leave on its own, contact a wildlife professional, etc.) is an effective mitigation against unintended impacts to wildlife.

A complete list of mitigation measures is provided in the Natural Environment Assessment Report in Appendix 7.

7.3.6 Ecological Benefit Opportunities

7.3.6.1 RESTORATION

As a component of the Project, removal of Allan's Bridge and reconstruction of the Macdonell Bridge will create areas of disturbed earth that will require stabilization. Restoring disturbed areas along the river in the footprint of the removed Allan's Bridge and other areas of disturbance with native vegetation, specifically with pollinator species, provides an opportunity to enhance this habitat, as described in the City's Pollinator Habitat policy (4.1.7.4).

Riparian plantings that provide shade, cover and nutrient inputs to the river, not only enhance the corridor linkage, but also enhance the fish habitat below. While supporting

pollinator habitat, indigenous tree or shrub plantings have opportunity to benefit both the aquatic and terrestrial systems. Additionally, vegetation removal to support construction, along with appropriate pre-clearing vegetation controls, provides an opportunity for invasive species removal in accordance with the City's Invasive Species policy (4.1.7.1).

7.3.6.2 STORMWATER TREATMENT

The existing Macdonell Bridge has 10 6-inch deck drains that outlet road runoff directly to the Speed River below. The new bridge design has opportunity to remove the deck drains entirely, instead divert this stormwater runoff to larger catch basins at the lower end of the bridge. From the catch basins, the water can be conveyed through a filtration system, like an Oil & Grit Separator (OGS) prior to release to the river; thereby reducing the contaminant load to the aquatic ecosystem.

7.4 Climate Change

Project impacts and resiliency to climate change were taken into consideration during the Study and will be carried forward into design. Considering how a project contributes to climate change, through greenhouse gas emissions or its effects on the natural environment is important to the planning process as it allows proponents to consider climate mitigation measures that will avoid and/or minimize such effects. Furthermore, considering how climate change may affect a project is critical to the planning process as it enables proponents to make informed decisions to increase infrastructure resilience and adapt to changing environmental conditions.

With the accommodation of an MUP on Macdonell Bridge and construction of the proposed Ward to Downtown Bridge, residents and public will have improved active transportation connections into downtown and overall connectivity within the cycling network. This promotes multi-modal transportation, reducing the reliance and need for vehicles on the road, thus minimizing greenhouse gas emissions.

7.5 Cultural Heritage Resources

This section summarizes the potential impacts and mitigation measures for areas with archaeological potential and known and potential BHRs and CHLs identified within the Study Area.

7.5.1 Impacts to Archaeological Resources

The Stage 1 AA determined that archaeological potential exists in parts of the Study Area. The following mitigation measures are recommended:

- Allan's Mill in Heritage Park is located within the Part C Study Area and contained reconstructed ruins of the Allan's Mill complex. These lands revealed archaeological potential for deeply buried archaeological resources, associated with the Mill complex. The proposed construction may impact the Allan's Mill complex thus, a Stage 2 mechanical trenching at 10m intervals must be conducted before any development begins.
  - Stage 2 trenching should occur at a maximum of 10m intervals prior to any development. Testing should be carried out using a backhoe equipped with a smooth bucket to sample any deeply buried soil horizons and subsurface features that may be present. Additional hand exposure/excavation of significant archaeological features or deposits may be required.
  - Appropriate mitigative measures must be identified if a Stage 2 excavation results in the delineation of archaeological resources. Mitigative options include protection and avoidance, further test or full-scale salvage excavation, archaeological monitoring of construction activities, or a combination of such approaches.
- The marine archaeological potential of the Speed River within Part C Study Area and if the Study impacts the riverbed, an MCM Criteria for Evaluating Marine Archaeological Potential checklist was recommended.
- If any proposed work extends beyond the current Study Area, further archaeological assessments should be conducted to determine the archaeological potential of the surrounding lands.

The full Stage 1 AA Downtown Infrastructure Renewal Program Report is provided in Appendix 8.

7.5.2 Impacts to Built Heritage Resources and Cultural Heritage Landscapes

7.5.2.1 CULTURAL HERITAGE REPORT: EXISTING CONDITIONS AND PRELIMINARY IMPACT ASSESSMENT

Table 7.1 outlines the potential impacts on all identified known and potential BHRs and CHLs within the Study Area. Construction activities and staging should be suitably planned and undertaken to avoid unintended negative impacts to identified BHRs and CHLs.

Avoidance measures may include, but are not limited to: erecting temporary fencing, establishing buffer zones, issuing instructions to construction crews to avoid identified BHRs and CHLs, locating laydown and staging activities away from identified heritage properties and heritage attributes, etc. Suitable mitigation measures including post-construction rehabilitation with sympathetic plantings should also be implemented.

Additional details for impacts and mitigation measures are provided in the complete CHRECPIA in Appendix 9.

Table 7.1 Impacts and Mitigation for Known and Potential BHRs and CHLs

Feature ID	Location	Description of Impacts	Mitigation Measures
BHR 127	Railway Viaduct over the Speed River	• Removal of Allan's Bridge may result in direct adverse impacts to the Macdonell Street Rail Viaduct through alterations to the masonry work at the base of the piers, which are identified as heritage attributes. Given the limestone piers of the railway viaduct support either end of the Allan's Bridge superstructure, the process of removing the Allan's Bridge from this site may result in adverse impacts to the masonry. • Construction vibration from the Macdonell Bridge replacement and rehab of Allan's Sluiceway and Spillway may have indirect impacts due to close proximity.	• If possible, avoid direct impacts to the limestone piers. • Where avoidance is not possible, an HIA is recommended as early as possible during detailed design. • Undertake a baseline vibration monitoring assessment for indirect impacts due to construction vibration.
BHR 128	Wellington Street East – Allan's Mill Ruins	• Given the Ruins are more than 50m from construction activities, they are not anticipated to be impacted directly nor indirectly.	• Continue to avoid adverse impacts to Allan's Mill Ruins.
BHR 242	Allan's Bridge over the Speed River	• Allan's Bridge will be directly adversely impacted through its removal, and with no replacement.	• Where feasible, it is recommended that bridge replacement is avoided and the following options be explored further: repair and rehabilitate; relocate the bridge to a new site; or lastly, replacement with a sympathetic structure. • Where avoidance is not feasible, a Cultural Heritage Evaluation Report (CHER.) is recommended to determine if this bridge has CHVI. A CHER was completed (summarized in Section 3.6.2.2) and it was determined this structure has CHVI. An HIA is recommended as early as possible during detailed design. • In advance of removal of the Allan's Bridge, a plan to salvage bridge components (where feasible) and a plan to commemorate the bridge must be developed. The Salvage and Commemoration Plan should be scoped in consultation with heritage staff at the City of Guelph. A Cultural Heritage Documentation Report is also recommended.
BHR 252	Macdonell Bridge over the Speed River	• Macdonell Bridge and its potential heritage attributes will be directly adversely impacted through its replacement.	• Where feasible, it is recommended that bridge replacement is avoided and the option to repair and rehabilitate be explored further, which is preferred from a heritage conservation perspective. • Where avoidance is not possible, a CHER is recommended to determine if the structure has CHVI. A CHER was completed (summarized in summarized in Section 3.6.2.2) and determined that Macdonell Bridge does not have CHVI. Therefore, no additional work is required.
BHR 253	16 Arthur Street North	• There is potential for indirect impacts due to construction vibration as the Macdonell Bridge's construction activities are approximately 45m from the stone building on the property. • Widening of the bridge to the north to accommodate active transportation facilities may also result in minor encroachment on to the southwest corner of this property. While this would not result in direct adverse impacts to identified heritage attributes, it may result in indirect adverse impacts through removal of vegetation and reconfiguration of the driveway, and potential impacts to its heritage character.	• The proposed designs and construction activities should be developed to avoid encroachment, vegetation removal, and driveway reconfiguration. • Should avoidance not be feasible, a H.I.A. is recommended as early as possible during detailed design.

Feature ID	Location	Description of Impacts	Mitigation Measures
CHL 1	Speed and Eramosa Riverscape	• Replacement of Macdonell Bridge will result in direct adverse impacts as this crossing is an identified heritage attribute of the riverscape. • Removal of Allan's Bridge will result in direct adverse impacts through alterations as this crossing is an identified heritage attribute of the riverscape. • Rehabilitation of the Allan's Sluiceway and Spillway will result in direct adverse impacts as these structures are identified heritage attributes of the riverscape.	• Where avoidance of the identified heritage attributes of this CHL is not feasible, a CHER. is recommended to determine if the Macdonell Bridge, Allan's Bridge, Allan's Sluiceway and Spillway have CHVI. • A CHER. was completed in 2025 and determined that the • Allan's Sluiceway and Spillway and Allan's Bridge all have CHVI. The Macdonell Bridge does not have CHVI. • An HIA for the Speed and Eramosa Riverscape is recommended as early as possible during detailed design to assess the impacts of the proposed works on the structures.
CHL 2	Old Downtown	• No direct or indirect impacts are anticipated to this CHL or its potential heritage attributes or setting. Most of the project footprint is outside the Candidate CHL boundary.	• The proposed designs and construction activities should continue to avoid adverse impacts to the Old Downtown Candidate C.H.L.

7.6 Socio-Economic Environment

7.6.1 Property Requirements and Impacts

Impacts are anticipated to a private property in the northeast corner of the Study Area as 16 Arthur Street North, a BHR as identified in the CHRECPIA. It is estimated that approximately 40m^2 of land will be required at this property. Additional impacts and mitigation measures for this property are described in Section 7.5.2 of this PFR. Impacts to properties will be further confirmed during preliminary and detailed design.

7.6.2 Air Quality

Since there are no additional vehicle lanes being added to Macdonell Street and Bridge, there are no negative impacts anticipated to air quality. Furthermore, with the improvement of active transportation facilities and connectivity to recreational trails, it is anticipated that the proposed works will promote multi-modal transportation and ideally, reduce the number of cars on the road, thus reducing greenhouse gas emissions and improving air quality.

7.7 Servicing, Utilities, and Facilities

7.7.1 Utility Impacts

The existing utility infrastructure, Bell infrastructure and conduits, Telus Fibre Critical Cable, and a Rogers Fibre Cable, crossing Macdonell Bridge will likely be impacted when replacing the bridge as the utility ducts are embedded inside the sidewalk. Impacts to utility infrastructure and relocation requirements will need to be further confirmed during preliminary and detailed design.

8.0 MONITORING

Following the completion of Detail Design, contract drawings and specifications will be developed to allow the project to be tendered for construction. During construction, the on-site Contract Administrator will confirm that implementation of environmental mitigation measures and key design features are consistent with the contract and that commitments made in this EA document as well as conditions outlined in environmental permits and approvals are adhered to. In addition, the effectiveness of the environmental mitigation measures shall be assessed to confirm that the measures are providing the expected control and/or protection. Regular inspection of measures shall be undertaken to confirm they are maintained, functioning and effective and that any necessary repairs are completed

expeditiously. For any unanticipated environmental issues that may arise during construction, the Contract Administrator will confirm that additional mitigation measures are provided, as required.

An Environmental Inspector will also visit the site on a regular basis to confirm that the environmental protection measures are functioning and effective, that timing windows and permits and approvals are adhered to, and to provide recommendations for additional environmental mitigation measures, as necessary. In the event problems develop, appropriate City of Guelph and external representatives will be contacted to provide additional input and to address specific notification requirements as may be required.

9.0 CONSULTATION PROCESS

9.1 Consultation Approach

Schedule 'B' studies are subject to Phases 1 and 2 of the Class EA process, in accordance with the Municipal Class Environmental Assessment (October 2000, amended in 2007, 2011, 2015, 2023, 2024). As such, extensive public and technical agency consultation plays a key role in developing the Study recommendations. Per the MCEA, notification to the public, government agencies, key interested parties, and Indigenous groups was provided in advance of key consultation opportunities.

9.1.1 Study Contact List

Various government agencies, authorities, utility companies, interest groups, and Indigenous communities were informed of the Class EA Study commencement and Public Open Houses (POHs). A brief overview of interested parties included in our Study Contact List is provided in Table 9.1 below. A complete list of interested parties who were contacted is provided in Appendix 12-1.

Table 9.1 Study Contact List Overview

External Study Contact List
Provincial & Federal Agencies
Ministry of Citizenship and Multiculturalism
Ministry of Environment, Conservation and Parks
City of Natural Environment Department
Fisheries and Oceans Canada
City of Guelph Departments & Committees

Guelph Coalition for Active Transportation (GCAT)

Heritage Guelph Committee

Utilities

Alectra

Bell

Enbridge

Grand Rive Conservation Authority

Telus

Zayo Utility Circulation

Other Interest Parties

Canada Post

Emerge Guelph

Guelph Hiking Club

Wood Development Group

Indigenous Communities

Haudenosaunee Confederacy Chiefs Council (HDI)

Mississaugas of the Credit First Nation (MCFN)

Six Nations of the Grand River (SNGR)

9.1.2 Study Notification

Residents within and adjacent to the Study Area received direct mailings of key notices, while members of the general public were invited to participate in the Study through notices published in the newspaper, the City's *Have Your Say* platform, and the project website. Residents who asked to be added to the contact list were also notified by emails. Table 9.2 below provides a summary of notifications published and distribution methods used throughout the duration of this Study. Copies of notices distributed are provided in Appendix 12-2.

Table 9.2 Summary of Study Notifications

Notice	Date Notice Published	Distribution/Publication Methods
Notice of Study Commencement	August 12, 2021	• Posted to project website • Email to Study Contact List and City departments

Notice	Date Notice Published	Distribution/Publication Methods
		• Published in *Guelph Mercury* on August 12, 2021 and August 19, 2021
Notice of Public Open House #1	October 13, 2022	• Posted to project website • Email to Study Contact List and City departments on October 13, 2022 • *Have Your Say* newsletter distribution on October 11, 2022 • Published in *Guelph Today* on October 19, 2022 • Published in *Guelph Mercury* on October 13, 2022 • Direct mailing to local residents
Notice of Public Open House #2	November 25, 2024	• Posted to project website • Email to Study Contact List and City departments on November 25, 2024 • Published in *Guelph Today* on November 28, 2024 • Direct mailing to local residents
Notice of Study Completion	Fall 2025	• Posted to project website • Email to Study Contact List and City departments • Published in *Guelph Today* a • Direct mailing to local residents

9.2 Public Consultation

Key opportunities for residents and general public input to the study included two (2) Public Open Houses (POHs), with online information packages, and online comment forms on the project website as described below. The POHs invited residents to learn about the Study, provide feedback, and ask questions.

After each POH, a Summary Report was prepared highlighting the purpose of the POH, the format in which they took place, materials presented, and comments received. Summary Reports for POH #1 and POH #2 are available in Appendix 12-3.

9.2.1 Public Open Houses (POHs)

9.2.1.1 PUBLIC OPEN HOUSE #1

The City a combined POH #1 for the Macdonell and Allan's Structures Class EA and Wyndham Street Class EA on November 2, 2022. The POH was a hybrid, drop-in style format where materials were on display in-person and online for public review. A copy of POH #1 materials is provided in Appendix 12-4-1. Project team members were available in person and online to provide additional context and answer questions. A total of 46 individuals attended in-person, and 31 attendees joined the POH virtually. The purpose of the first POH was to share information on existing conditions and alternative solutions being considered, and to receive input form the public on the goals for the Wyndham Street Corridor and the Macdonell Bridge and the Allan's Structures. A mapping exercise was also completed to identify potential issues and opportunities.

After the POH was held, presentation materials and comment forms were published on the *Have Your Say* from October 26, 2022, to November 16, 2022, so that those unable to attend could participate in the Study and provide their comments. Following the POH, a total of 5 comments were received via email and 164 surveys were received from the *Have Your Say* platform. In addition, 140 follow-up surveys were completed for the Allan's Dam Sluiceway and Spillway alternatives.

The comments received during and following the POH #1 are summarized in Table 9.3.

Table 9.3 Summary of Comments Received From POH #1 Comment Period

Topic of Comment Received	Comment Summary	Consideration of Comments in Class EA
Accommodation of Pedestrians and Cyclists	• Consideration of a dedicated/protected crossing to increase safety for people who walk or bike across the structures and those with accessibility needs and reduce focus on cars. • Create connections to existing trails across the structures.	• The Project Team considered several options prior to developing the alternative solutions for the Macdonell and Allan's Structures, with active transportation being a significant factor. • The alternatives were developed in consideration of the City's policies to improve connectivity to existing trails and the Cycling Network.
Future Opportunities	• Aesthetics and attractive design of the structures; opportunity for creating a "gateway" to downtown and acknowledge local history.	• Aesthetics and design of the structures will be further refined during detailed design.
Impacts to Natural Environment	• Consider reducing environmental harm and protecting/naturalizing the Speed River, support/enhance local wildlife and fish, and consider the river's history and possible future use. • Environmental considerations for flood protection. • Request for more information about the environmental implications of Allan's Dam Sluiceway and Spillway modifications and the potential impacts on the river and wildlife.	• A Natural Environment Assessment Report (NEAR) was completed as part of the Class EA Study and is summarized in this PFR. The NEAR identifies the net positive and negative impacts and mitigation measures associated with each alternative. • Further natural environment studies, such as an Environmental Impact Study may be completed during detailed design.
Ward to Downtown Pedestrian Bridge future consideration	• Consider looking at crossings across the Speed River in a holistic manner. (i.e., the Ward to Downtown pedestrian bridge).	• The scope of the Class EA Study was later revised to include the Ward to Downtown Bridge. Alternatives were identified and evaluated, and it is recommended that a modified bridge be constructed adjacent to the GJR tracks. • The overall recommendation for the Study Area was selected in consideration of increasing the number of crossings over the Speed River and identifying the most effective way to connect people to Downtown Guelph.
Other	• Consider hydro-electric power generation, climate change, flooding risks, sustainability and the City's net-zero goals.	• Climate change was taken into consideration during the Study and documented in this PFR in Section 7.4. Appropriate climate mitigation measures were considered in determining the alternative solutions for all four (4) structures. The City's policies were also considered when evaluating alternatives.
Evaluation Criteria	• Participants were generally not supportive of the "Do Nothing" alternative or the alternatives to remove the bridges. • Requested a walking/cycling underpass alternative. • More information about the traffic flow, existing connections and usages. How will this impact the alternatives regarding bridge removal and/or bridge closure?	• Lack of support for the "Do Nothing" alternative was taken into consideration when confirming the recommended solutions for each structure. • The Project Team developed an alternative that provides an active transportation underpass; however, after evaluation, it was not recommended to be implemented. • A detailed Existing Traffic and Transportation Conditions Report was completed and documented in this PFR, available in **Appendix 3.** Traffic management, lane closures, and detours were considered when determining the constructability of the Macdonell Bridge alternatives.
Cost Considerations	• Requested to learn more about the costs and trade-offs of various options.	• Cost of works were considered throughout the EA to ensure the City has sufficient time to budget for the project.

Participants were asked which alternatives they preferred for the Macdonell Bridge, Allan's Dam Bridge, Allan's Dam Sluiceway and Spillway. The following sections provide a summary of responses received.

Macdonell Bridge

Most of the participants favoured Alternative 3 (repair the bridge), with support for Alternative 4 (keeping the bridge option for pedestrians and cyclists only) and replacing the entire bridge or the superstructure.

Allan's Bridge

Majority of the participants supported Alternative 2 (rehabilitating the bridge for pedestrians and cyclists). Participants felt that rehabilitating the bridge for pedestrians and cyclists would provide a safe connection for these road users and encourage more residents to walk or cycle downtown. Participants noted the historical importance of the bridge and would like to see it maintained.

A few participants were concerned that creating a pedestrian and cycling bridge would be a duplication of the Ward to Downtown Bridge and not a good use of City funds. Participants encouraged the Project Team to examine all the bridges downtown holistically.

Allan's Dam Sluiceway and Spillway

Participants supported Alternative 2 (repair the existing sluiceway and spillway). There was also support for Alternative 3 (remove the sluiceway and repair the spillway) and Alternative (remove the sluiceway and spillway and build a new dam upstream).

A full copy of the Downtown Renewal POH #1 Summary Report is provided in **Appendix 12-3-1.**

9.2.1.2 PUBLIC OPEN HOUSE #2

The City hosted POH #2 for the Macdonell and Allan's Structures Class EA on December 9, 2024. The POH shared spaced with several other concurrent City projects that impact the Downtown area. The POH was an in-person, drop-in style format with materials on display for public review. Project Team members were available in person throughout the open house to provide additional context and answer questions. At least 75 individuals attended the POH. The purpose of the second POH was to present and obtain comments on the alternatives and preliminary recommendations.

After the POH, presentation materials and the comment forms were published on *Have Your Say* from December 9, 2024, to January 12, 2024, so that those unable to attend

could participate in the Study and provide their comments. A total of 203 survey responses were received from *Have Your Say*. Each recommendation for the structures received support from most participants, with an average of 72% of participants choosing "strongly or somewhat agree" across all structures. The Macdonell Bridge's recommendation received the strongest support, with 82% selecting "strongly or somewhat agree," while the Allan's Dam Structure received the weakest support, 59% selecting "strongly or somewhat agree". Feedback received is summarized in Table 9.4 below.

Table 9.4 Comments Received During POH #2 Comment Period

Topic of Comment Received	Comment Summary	Consideration of Comments in Class EA
Comments from Respondents that Agreed with the Macdonell Bridge Recommended Solution	• Respondents requested improved safety by widening the bridge and reconfiguring adjacent intersections to provide more opportunities to cross the street, removing slip lanes, and adding more traffic lights. • Improve non-vehicular road user experience by providing ample separation between active transportation facilities and vehicles. • Respondents suggested sidewalks on both sides to avoid conflicts with fast-moving cyclists. • Consideration for making the bridge a "destination" by adding seating to watch the water, maintain sightlines to important landmarks, and designing the bridge to reflect the area's heritage.	• Improvements to the Macdonell and Wellington intersection and the Macdonell / Arthur / Elizabeth intersection are not a component of this Class EA. However, some concepts were shown at POH #2 to help the public visualize what improvements may look like. • Safety was a significant factor when developing alternatives for Macdonell Bridge, and thus, the recommended solution includes a sidewalk on the south and an off-road MUP on the north side. • Due to constraints with adjacent land uses, a wider bridge to accommodate sidewalks on both sides is not implementable. • Aesthetics of the bridge will be considered and refined during detailed design.
Comments from Respondents that Disagreed with the Macdonell Bridge Recommended Solution	• Respondents felt active transportation should be removed from the Bridge entirely and put on another structure. • Respondents felt fund should not be spent on the bridge and it should be maintained.	• An alternative to remove active transportation from Macdonell Bridge was evaluated, however it was not recommended. • Recently completed OSIM reports identified structural deficiencies in Macdonell Bridge and requires rehabilitation or removal. By not replacing the bridge now, maintenance costs for the existing bridge would continue to increase.
Allan's Bridge	• Respondents were against spending resources on heritage commemoration for the bridge, with a few specifying a plaque would be enough. Others disagreed and would like to preserve the bridge for its heritage value, expressing keeping the bridge was preferred over heritage commemoration. • Respondents that wanted to preserve the bridge also would like to see it rehabilitated for a vehicle-free space such as a park, spot for fishing, watching the water or active transportation.	• Alternatives for Allan's Bridge included rehabilitating it for heritage purposes only, however, due to its structural deficiencies, the bridge will eventually require removal. • Alternatives for Alan's Bridge included rehabilitating it for active transportation, however, the rehabilitation would be significant, thus impacting the bridge's heritage value. Additionally, active transportation has been accommodated on other river crossings (i.e., Macdonell Bridge), that Allan's Bridge would become redundant.
Allan's Sluiceway and Spillway	• Respondents suggested modifying the structures to allow fish and boats to pass through. • Respondents would like to see rehabilitation of the sluiceway to improve the aesthetics and suggested using natural materials such as stone. • Many respondents that disagreed with the recommendation advocated for removing the structure to allow the Speed River to naturalize. • Respondents were concerned with the cost of rehabilitating the structure and maintaining it in the future versus removing it entirely.	• Aesthetics of the structure may be considered during detailed design. • Removal of the structure was identified as an alternative, but ultimately, not recommended due to several other evaluation criteria. • Maintenance, construction and other operational costs for each alternative were factored into the evaluation.
Ward to Downtown Bridge	• Respondents recommended adding in a widened portion to the bridge as a lookout onto the river. • Respondents would like to see aesthetics play a key role in the bridge's design to honour the heritage value of the area. • Some respondents feel the bridge is unnecessary due to other structures nearby with some suggesting rehabilitating Allan's Bridge for active transportation instead of building the Ward to Downtown Bridge.	• Adding a lookout portion to the bridge may be considered during detailed design. • Aesthetics of the bridge will be further refined during detailed design. • The combination of not constructing the Ward to Downtown Bridge and rehabilitating the Allan's Bridge for active transportation was considered, however, it was not recommended when options for Downtown as a whole were evaluated.

9.2.2 Online Engagement and Additional Comments

In addition to the formal consultation described above, contact information for the City and Consultant Project Managers, including email, telephone and mailing address were available to the public on the City's project website and *Have Your Say*, and was included in all public notices distributed. This provided an ongoing opportunity for members of the public to submit their questions, concerns, and/or comments to the Project Team at any time during the study. Comments received via email throughout the course of the Study are summarized in Table 9.5.

Table 9.5 Summary of Comments Received Throughout the Class EA Study

Agency / Group	Date Comments Received	Comment Summary	Consideration of Comments in Class EA
Resident	August 8, 2021	• Resident noted any construction or changes in the area will have an impact on their property as it is in close proximity. • Resident requested to be put on the mailing list and provide early input on the Study.	• The Project Team added the resident onto the mailing list. Residents were notified promptly of any impacts identified as a result of the Class EA recommendations.
Resident	October 20, 2022	• Resident requested to be put on the mailing list and obtain additional information on the Study. • Resident inquired if a 3-way roundabout would be considered for the intersection improvements.	• The Project Team added the resident to the mailing list and noted to the resident that the Study is in early stages and all feasible options for intersection improvements will be considered.
Resident	November 4, 2022	• Resident expressed that alternatives presented for Allan's Bridge did not consider the Speed River's history or possible land and river use going forward.	• The Project Team considered the City's cultural heritage policies and goals as part of the evaluation of alternatives for Allan's Bridge.
Resident	December 29, 2022	• Resident expressed that improvements to the structures must be approached in an integrated and comprehensive manner. • Resident expressed that the Project Team should consider placemaking, the area's multifunctionality, the area's purpose as a "gateway to Downtown", as key elements in determining the recommended solution for the Study Area.	• The Project Team evaluated all alternatives in a holistic manner for Downtown Guelph as a whole. • The Project Team evaluated the alternatives against the City's policies and vision for Downtown, policies for improving active transportation, and natural environment policies.
Resident	January 7, 2025	• Resident believes the Allan's Dam Sluiceway and Spillway should be removed so it can facilitate the creation of riparian habitats. • The resident believes removal of the dam would have many positive impacts to the Speed River.	• The removal of Allan's Dam Sluiceway and Spillway was considered as an alternative and the evaluation of this alternative shows several positive benefits to the Speed River. However, when evaluating the alternative from all environments and criteria, the removal of Allan's Dam is not recommended at this time.
University of Guelph	February 13, 2025	• Resident provided comments regarding the description presented for the functional purpose of Allan's Bridge, Sluiceway, and Spillway. • Resident noted the Allan's Dam Sluiceway and Spillway's function it to provide a large, ponded water surface, which contributes to the area's heritage value, provides recreation and aesthetic value. Resident believes the Allan's Dam Sluiceway and Spillway should not be removed. • Resident believes that the recreational value of the ponded water is declining over time. • Resident recommends that the GRCA should study the drop in elevation and change in position of the Regional Storm flood line for the reach of the Speed River between Allan's Dam and Eramosa Road.	• The Study Area's cultural heritage value and land use was considered in the evaluation of alternatives for each structure. • The Allan's Dam Sluiceway and Spillway is recommended to be rehabilitated. • A hydraulic study was conducted for the Speed River, however the GRCA model used at the time did not identify Allan's Dam as a separate control structure. A hydraulic analysis may be conducted in the future with GRCA's updated model and mapping of the Speed River.

9.3 Key Interested Parties, Interest Groups, and Technical Agencies

Various government agencies, authorities, interested parties and groups were informed of the Class EA Study commencement and POHs through direct mail and email. A complete list of interested parties who were contacted is provided in Appendix 12-1. During the EA Study, correspondence was received from various technical agencies, as summarized in Table 9.6 and included in Appendix 12-5.

Comments received from utilities are summarized in Table 9.7 and provided in Appendix 12-7.

Table 9.6 Comments Received from Technical Agencies

Comments Received	Date Received	Response to / Consideration of Comments in Class EA
City of Guelph – Natural Environment Department		
• The department supported the short-listed alternatives but did not support some of the Natural Environment Goals preliminary review rankings for the Allan's Bridge and the Allan's Dam Sluiceway and Spillway.	February 16, 2023	• The Project Team has taken note and would like to better understand the City of Natural Environment Staff's concerns with the natural environment evaluations and offer to provide additional information. Prior to the workshop on February 24, 2023, the Project Team suggested the Staff to provide comments for discussions.
Department staff provided the following detailed comments on the short-listed alternatives. • Consider Natural Environment goals and general opportunities to improve the health of the river. • Consider accommodation of all modes of travel for Macdonell Bridge. • Having 3 bridges in this part of the Speed River would not represent much additional degradation, however, it would go against the City's principles of minimizing watercourse crossings and prevent an opportunity to improve the riparian zone of the river. • Not removing Allan's Bridge would go against the City's OP (Policy 4.1.3.5.12 – remove barriers from the river). • The EA should consider cumulative negative impacts and any positive impacts. Alternatives should be evaluated against the City's policies and goals. • Staff provided further comments on the screening of the long list of alternatives.	February 22, 2023	• The Project Team revised the screening and evaluation of long list of alternatives to reflect comments provided by department staff. • Alignment with City's policies and goals was included in the evaluation of short-listed alternatives as an evaluation criteria.
In response to the Macdonell and Allan's Structures Schedule 'B' Class EA – Evaluation of Alternative Solutions Technical Memorandum the City's Natural Environment department staff provided the following comments: • Environmental staff is not supportive of any alternative that is inconsistent with the City's Official Plan Policy such as the policy to remove barriers and restore rivers and not impacting them further. • Clarify how impacts to the river's hydraulic function have been evaluated if Allan's Dam is removed. • It should be documented that the Study Area includes fish habitat. • Evaluation of short-listed alternatives should consider significance of the Speed River to Indigenous Peoples. • The Hydraulic Analysis lacks technical data to accurately determine impacts to the Speed River if Allan's Dam is removed. Revisions should be made to the evaluation to include public perception on restoring river systems and ecological enhancements. • The evaluation of the alternative to remove Allan's Dam requires revisions.	December 6, 2024	The Project Team provided the following response to the City's Natural Environment department staff: • Evaluation table was updated to include OP's direction to remove barriers and not impact rivers as a criteria. • Exact hydraulic impacts for removing Allan's Dam could not be quantified as it was not modelled as a separate control structure in GRCA's model. • Significance of the Speed River to Indigenous Peoples was included as an evaluation criteria. • Revisions to the evaluation were made as directed by the City's Natural Environment department staff.
Emerge Guelph		
• Structural/Technical: ○ Significant impact on hydraulic function of the river. ○ How would the floodplain, GRCA regulation mapping and City of Guelph planning constraints change with dam and sluiceway removal? ○ What strengths and weaknesses would occur to the hydraulic function of the river?	January 13, 2025	The Project Team provided the following responses: • The City's Official Plan has policies in place that encourage the removal of barriers in the water to allow for fish passage, therefore the removal of the dam would align with those policies. If the dam is removed, the natural floodplain would be restored and valleyland features would be increased. • The Allan's Dam Sluiceway/Spillway was not modeled as a separate control structure within GRCA's HEC-RAS Model at the time of the evaluation, and hence the hydraulic function of the dam on the

Comments Received	Date Received	Response to / Consideration of Comments in Class EA

• Social Environment:
  ○ Potential for impacts on property values and enjoyment of property by altering water levels. Major impacts to public recreation uses of the river. Could allow for creation of a cycling underpass.
  ○ What potential impacts would occur on property values and insurance implications if the removal of the dam would reduce the amount of property and buildings in the floodplain and GRCA regulation area?
• Natural Environment and Climate Change:
  ○ What impacts will this have on the aquatic habitat given that the top draw nature of the existing dam may be contributing to warmer water temperatures in the impoundment area and downstream?
  ○ What are the microclimate implications of restoring the Natural Heritage System and significant valleylands vs the status quo?
  ○ How many properties could see positive climate adaptation impacts of the floodplain, GRCA regulation area and City of Guelph planning constraints by removing the dam and sluiceway?
		Speed River could not be fully quantified. As such, the exact hydraulic impacts of removing or modifying the structure have not been determined. However, as the dam structure has a large influence on the elevation of the Speed River, upstream and downstream, it is anticipated that removal of the structure would result in impacts to the water level elevation of the Speed River upstream and likely effect subsequent recreational use of the river and properties backing onto it.
		• Extensive impacts to aquatic species and habitat are anticipated. There would be a loss of impounded pool habitat, and subsequent increase in riffle/run habitat. The warmer and more turbid water characteristic of impoundments would be replaced with a more natural thermal regime and natural sediment/nutrient movement through the system. The width of the channel would decrease upstream, providing opportunity for riparian plants to grow and increasing the overall stream shade potential, further reducing the thermal regime. This is all dependent on the management of the newly exposed lands.
		• A naturalized riparian zone would provide opportunity to restore the floodplain function and increase carbon sequestering in the form of vegetation in the new terrestrial riparian areas. This would improve the fish and wildlife migration corridor and provide opportunity to increase local biodiversity. Together, these changes to the microclimate have potential to buffer against thermal extremes.
		• The removal of the dam would provide potential to increase carbon sequestering with restoration planting in new terrestrial areas. It would also restore the floodplain function and natural sediment transport and enhance wetland and surface water functions. There would be improved thermal regime by removing flow impoundment. The number of properties has not been quantified.

Guelph Coalition for Active Transportation (GCAT)		
• GCAT requested a to be added to the Study Contact List to receive updates about the Study.	September 7, 2021	• The Project Team added the GCAT to the Study Contact List.
Guelph Heritage Committee		
• Guelph Heritage Committee requested to be added to the Study Contact List to receive updates about the Study.	November 9, 2021	• The Project Team added the Guelph Heritage Committee to the Study Contact List.
Guelph Hiking Club		
• Class EA scope of work was restricted to 3 structures and geographically limited. Requested more information on the status of the GJR rail bridge replacement and the addition of the Ward/downtown pedestrian bridge (timeline).	August 30, 2021	• Les Petroczi would be the appropriate Staff to connect with regarding any information on the timeline of the GJR Bridge Replacement. The construction tender for the Ward to Downtown Bridge was released in January 2022. Construction was anticipated to be completed by the end of the year. • Construction tender for the Ward to Downtown Bridge was later cancelled by the City, and investigations into constructing the bridge were added to the scope of this Class EA.
Grand River Conservation Authority (GRCA)		
• As part of the Hydraulic Analysis, the Project Team coordinated with GRCA to obtain their model and hydraulic requirements. GRCA noted that updates to their model for Speed River would not be finalized until the end of 2022 at best.	April 6, 2022	• The Project Team proceeded to complete a hydraulic analysis with the information obtained from GRCA. The Project Team noted that the analysis may need to be updated in the future to reflect GRCA's updated model.
• In response to the Notice of POH #1, GRCA noted they have no objection to the proposed works.	November 17, 2022	• The Project Team continued to circulate notices to GRCA.
Ministry of Citizenship and Multiculturalism (MCM)		

Comments Received	Date Received	Response to / Consideration of Comments in Class EA
In response to the Notice of Commencement, MCM provided the following comments: • The Project Team must determine the Study's impact on cultural heritage and archaeological 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. • All technical cultural heritage studies and their recommendations are to be addressed and incorporated into EA projects.	September 9, 2021	• The Project Team completed a Stage 1 Archaeological Assessment, a Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment, and a Cultural Heritage Evaluation Report for the Macdonell and Allan's structures. These reports are summarized in this PFR and included in the appendices.
In response to the submission of the draft CHER, MCM provided the following comments: • MCM finds the draft CHER consistent with the requirements, guidance, and standards of the MCEA and with best practice guidance provided by the MCM. • The Macdonell Bridge does not retain cultural heritage value, therefore a Heritage Impact Assessment is not required for the structure. The Allan Bridge and Allan Spillway were found to be of cultural heritage value or interest. Therefore, a HIA shall be undertaken by a qualified person. MCM recommends that the HIA be prepared as a part of preliminary design prior to issuing a notice of completion. • MCM provided a comment regarding revisions to the Legislation and Policy Context section of the CHER.	September 20, 2022	The Project Team incorporated MCM's comments and revisions into the final CHER and provided the following response to MCM on October 26, 2022: • We would advise that preparing the HIA for the bridge and spillway during preliminary design would be much too early, because there would not be enough details about the undertaking and precisely how the heritage resources may be impacted. It should also be noted that we will be updating the CH report which will include a high level review of potential direct/indirect impacts to these heritage resources and make recommendations, which of course will be to avoid negative impacts to the bridge and spillway and where that is not possible, to complete an HIA early in detailed design to help inform the process. • We understand the importance of ascertaining enough cultural heritage information at the time of the EA to be able to evaluate the alternatives against each other accurately and develop mitigation measures (which will include the preparation of an HIA as required). The scores assigned to the cultural heritage section will be defensible with the ability to refer to information collected during the CHER.
MCM provided the following response to the Project Team's communications on October 26, 2022 regarding the draft CHER. • MCM continues to recommend that an HIA be completed during the planning phase of the EA. • All technical cultural heritage studies and their recommendations are to be addressed and incorporated into EA projects. An HIA will determine if any built heritage resources and/or cultural heritage landscapes (including those previously identified and those found as part of the site assessment) are impacted by a specific proposed development or site alteration. It can also demonstrate how those resources will be conserved in the context of redevelopment or site alteration. Mitigative or avoidance measures or alternative development or site alteration approaches may be recommended. The HIA will also inform the selection of the preferred alternative.	October 26, 2022	In response to these additional comments, the Project Team requested a meeting with MCM to discuss the Ministry's comments. A meeting was held on November 8, 2022 and concluded with the following proposed approach: • A Cultural Heritage Evaluation Report (CHER) has been completed as part of the Macdonell and Allan Structures Municipal Class Environmental Assessment. The CHER determined that the Allan Bridge and Allan Spillway are of cultural heritage value or interest (CHVI). The team will make some revisions based on feedback as appropriate. • A Cultural Heritage Assessment Report (CHRA), which is also known as a "Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment", is being undertaken as part of the City of Guelph Downtown Renewal Project. ○ This report will include a preliminary impact assessment section which will address potential impacts to the Allan Bridge and Allan Spillway, among other properties identified through the study. ○ The discussion of impacts for these structures will reflect the eight conservation options provided in Section 4.3 of the Ontario Heritage Bridge Guidelines (OHBG) – which ranks alternatives from minimum to maximum intervention as most to least preferred. The demolition or removal of a bridge should be considered a last resort after all other alternatives have been considered. ○ The CHRA will be completed before the notice of completion for the Macdonell and Allan Structures Municipal Class Environmental Assessment and the CHRA's preliminary impact

Comments Received	Date Received	Response to / Consideration of Comments in Class EA
		assessment will inform the selection of a preferred alternative for the Macdonell and Allan Structures Municipal Class Environmental Assessment. • A Heritage Impact Assessment (HIA) for Allan Bridge and Allan Spillway will be completed during the detailed design phase of the Macdonell and Allan Structures Municipal Class Environmental Assessment.
Following the meeting, MCM provided the following comments: • We agree that the conservation options provided in the OHGB do not need to be applied to the Allan Spillway, however given the Allan Spillway's close proximity to the Allan Bridge we recommend that best practices and conservation mitigation measures are applied.	November 9, 2022	The Project Team acknowledged MCM's comments and ensured mitigation measures were incorporated into the cultural heritage reports.
Following the submission of the CHRECPIA, MCM provided the following comments: • We have reviewed the above referenced Cultural Heritage Report and find that the report overall is consistent with the requirements, guidance and standards of the Municipal Class EA and with best practice guidance prepared by MCM. • However, we recommend that that the term 'adjacent' included in the Glossary be revised to align with the definition from the Provincial Planning Statement, 2024 which came into effect October 20, 2024: o Adjacent – The first paragraph should be revised to align with the PPS 2024. Keep the definition from the City's Official Plan.	April 23, 2025	The Project Team incorporated MCM's comments into the final CHRECPIA.
Ministry of Environment, Conservation and Parks		
In response to the Notice of Commencement, MECP provided an "Areas of Interest" document and highlighted the following factors to take into consideration: • Planning and policy; source water protection; climate change; air quality, dust, and noise; ecosystem protection and restoration; species at risk; surface water; groundwater; excess materials management; contaminated sites; servicing, utilities and facilities; mitigation and monitoring; and consultation. • MECP advised the Project Team should consult the following Indigenous communities: o Mississaugas of the Credit First Nation o Six Nations of the Grand River o Haudenosaunee Confederacy Chiefs Council	August 24, 2021	• The Project Team completed the necessary technical studies as part of the Class EA (as summarized in this PFR), identified impacts and mitigation measures, and documented the consultation process. • Areas of Interest have been addressed in this PFR. • The Project Team consulted Indigenous communities as recommended by MECP (as summarized in Section 9.4).
Wood Development Group		
Wood Development Group requested to be added to the Study Contact list to received future progress and updates. It should be noted that Wood Development Group owns major redevelopment lands at Elizabeth / Duke / Huron on the edge of the Study Area.	August 24, 2021	The Project Team has added Wood Development Group to the Study Contact List.
Wood Development Group provided comments on the Macdonell and Allan's Structures Class EA: • Ward to Downtown Bridge: o This infrastructure should address existing desire-lines and pedestrian safety measures over the existing GJR bridge. Wood Development Group will lean towards the alternative that gets the bridge built faster. o Consider operational maintenance for the trail and bridge	January 13, 2025	The Project Team provided the following responses on February 19, 2025: • Ward to Downtown Bridge: o The Project Team has reviewed these comments and noted that standard operations and maintenance costs were included as part of the evaluation of alternatives for the Bridge. Costs associated with winter operations and maintenance were determined upon Council approval of the proposed works. • Macdonell Bridge

Comments Received	Date Received	Response to / Consideration of Comments in Class EA

• Macdonell Bridge:
  ○ Future consideration to replace and widen the bridge to accommodate AT on both sides (a combination of alternative 3 and 5)?
• Allan's Bridge Alternatives:
  ○ If the Macdonell Bridge cannot be widened on both sides, then how would the Allan's Bridge fit into the intersection and roadway design? Request the Project Team to review and consider if rehabilitation (or replacement with a truss bridge) is necessary.
  ○ Commemorating the Allan's Damn Bridge: Wood Development Group encouraged the City to consider a Landscape Master Plan for the Study Area and include it in the community engagement.
• Allan's Dam Sluiceway and Spillway Alternatives:
  ○ Ecological benefits to restoring the natural flow of the Speed River?
  ○ Pond bed restoration and more greenspace considerations to adjacent properties downtown.
  ○ Introducing a trail under the Macdonell Bridge.
• Wood Development Group provided comments regarding the preliminary Macdonell Street intersection design concepts, which is outside of the scope of this Class EA Study. Comments revolved around roadways and intersections principals and design considerations.
		○ The accommodation (AT) along Macdonell Bridge via unidirectional cycle tracks along both sides of the bridge was assessed by the Project Team throughout the Class EA. Based on the evaluation, widening the bridge to accommodate AT on the north side was determined to be the preferred cross section, particularly when considered in conjunction with the additional Ward to Downtown Bridge crossing.
		• Allan's Bridge
		  ○ The alternative to rehabilitate Allan's Bridge accommodates AT and was considered in the evaluation (Alternative 3). By utilizing the bridge for AT, it would increase the complexity of the flow of pedestrians, cyclists, and traffic in the area including sightline issues with oncoming trains for bridge users. When considered in totality, i.e. with the recommendation to proceed with the new Ward to Downtown bridge, the costs associated with maintaining the Allan's Bridge for AT purposes only was determined to be excessive.
		• Allan's Dam Sluiceway and Spillway
		  ○ A detailed evaluation was completed in the background, and it identified the following ecological benefits of removing the Allan's Damn Sluiceway and Spillway: restoration of connectivity in the migration corridor, increase in littoral zone and wetland plants, increase in area of valley lands, restoration of the natural floodplain and sediment transport, and improved thermal regime.
		  ○ for people, instead, the area would be excellently suited for naturalization and wildlife-use, with the added benefit of providing additional filtration of runoff before it enters the watercourse. However, to increase its potential as an amenity for people; trails, benches and lookouts could be incorporated to provide easily accessible nature appreciation opportunities, specifically for birding.
		  ○ Benefits of the trail under Macdonell Bridge, primarily around safety for users, was considered by the Project Team and factored into the City's evaluation. Based on the evaluation against various criteria, the City recommended rehabilitation of the Allan's Dam Sluiceway and Spillway, as opposed to complete removal.
		• Preliminary Macdonell Street Intersection
		  ○ Comments regarding the intersection configurations were taken into consideration. The intersections were reconfigured to provide greater connectivity and improved safety for pedestrians and cyclists crossing the intersections and bridge.

Table 9.7 Utility Coordination

Utility	Summary of Comments Received	Date Comments Received	Response to Comments / Considerations in Class EA
Alectra Utilities	In response to a utility circulation email, Alectra provided drawings for their infrastructure in the area.	August 12, 2021	The Project Team made note of Alectra's utility infrastructure in the Study Area.
Bell	In response to a utility circulation email, Bell provided the following comments: • There are 2 very large Bell ducts structures on the south side of the bridge containing local & city to city long haul networks. There are not any planned upgrades to happen 2021-2022 to add any additional cables or make any other changes affecting the bridge. • In 2023-2025 to meet Guelph residents demands Bell will be upgrading the northeast side of Guelph and may require additional fiber feed cables placed through this pathway in the bridge.	August 12, 2025	The Project Team made note of Bell's utility infrastructure in the Study Area.
Bell	In response to an Ontario One Call request, Bell provided their utility markup information.	May 8, 2025	The Project Team made note of Bell's utility infrastructure in the Study Area.
Enbridge Gas	In response to a utility circulation email, Enbridge Gas provided drawings for their infrastructure in the area.	August 23, 2021	The Project Team made note of Enbridge's utility infrastructure in the Study Area.
Enbridge Gas	In response to an Ontario One Call request, Enbridge Gas provided their utility markup information.	May 12, 2025	The Project Team made note of Enbridge's utility infrastructure in the Study Area.
Telus	In response to a utility circulation email, Telus provided drawings for their infrastructure in the area and the following comment: • Telus has cable in 360GT's leased ducts and vaults, close to the proposed route or area, along railway tracks. Please refer to 360GT's drawings.	August 13, 2021	The Project Team made note of Telus' utility infrastructure in the Study Area.
Telus	In response to an Ontario One Call request, Telus provided their utility markup information.	May 12, 2025	The Project Team made note of Telus' utility infrastructure in the Study Area.
Zayo	In response to a utility circulation email, Zayo provided the following comment: • Zayo does have existing plant in the area indicated in your submission. Please maintain standard clearances and we have no objection. Thank you.	August 30, 2021	The Project Team made note of Zayo's utility infrastructure in the Study Area.

9.4 Indigenous Communities Engagement

Engagement with Indigenous communities is a key component of the Class EA process. Various Indigenous communities were notified of the Study, to identify any potential issues or concerns regarding possible impacts to Aboriginal and Treaty Rights, or any other interests or questions that the community may have regarding this study. In consultation with the MECP, City of Guelph sought direction on the identification of Indigenous communities that may have an interest in the Study. MECP confirmed that engagement should proceed with the following Indigenous communities:

- Haudenosaunee Development Institute / Haudenosaunee Confederacy (HDI)
- Mississaugas of the Credit First Nation (MCFN)
- Six Nations of the Grand River (SNGR)

Table 9.8 provides a summary of communication between the Project Team and Indigenous communities. The complete list of Indigenous communities engaged is provided in **Appendix 12-1,** while copies of comments received are provided **Appendix 12-8.**

Table 9.8 Indigenous Communities Consultation Log

Indigenous Community / Organization	Date of Communication Issued	Notification Sent to Community / Organization	Method of Communication	Comments Received	Date Comments Received
Haudenosaunee Development Institute / Confederacy	September 17, 2021	Notice of Study Commencement & Introduction Letter	Email	No comments were provided.	-
Haudenosaunee Development Institute / Confederacy	May 27, 2022	Notice of Study Commencement & Follow-up Letter #1	Email	No comments were provided.	-
Haudenosaunee Development Institute / Confederacy	November 2, 2022	Stage 1 AA & Follow-up Letter #2	Email	No comments were provided.	-
Haudenosaunee Development Institute / Confederacy	April 25, 2024	Stage 1 AA & Follow-up Letter #3	Email	No comments were provided.	-
Mississaugas of the Credit First Nation	September 17, 2021	Notice of Study Commencement & Introduction Letter	Email	No comments were provided.	-
Mississaugas of the Credit First Nation	May 27, 2022	Notice of Study Commencement & Follow-Up Letter #1	Email	MCFN had no comments/questions about the Study and requested to be informed about project updates/progresses	May 30, 2022
Mississaugas of the Credit First Nation	November 2, 2022	Stage 1 AA & Follow-up Letter #2	Email	MCFN reviewed the Stage 1 AA report and did not have any questions or comments.	November 11, 2022
Mississaugas of the Credit First Nation	April 25, 2024	Stage 1 AA & Follow-up Letter #3	Email	No comments were provided.	-
Mississaugas of the Credit First Nation	January 14, 2025	Project Update Letter, Draft Archaeological Risk Management Plan	Email	No comments were provided.	-
Mississaugas of the Credit First Nation	April 3, 2025	Stage 1 AA, Natural Environment Assessment Report, and Follow-up Letter #4	Email	The DOCA consultation team has filed the project-related correspondence identified above. We have no questions or comments for you at this time. This does not indicate a position of support for the project, that the Duty to Consult and Accommodate the MCFN has been met, or that there are no adverse impacts to the MCFN's Indigenous and Treaty Rights.	April 25, 2025
Six Nations of the Grand River	September 17, 2021	Notice of Study Commencement and Introduction Letter	Email	No comments were received.	-

Indigenous Community / Organization	Date of Communication Issued	Notification Sent to Community / Organization	Method of Communication	Comments Received	Date Comments Received
Six Nations of the Grand River	May 27, 2022	Notice of Study Commencement and Follow-Up Letter #1	Email	No comments were provided.	-
Six Nations of the Grand River	November 2, 2022	Stage 1 AA and Follow-up Letter #2	Email	SNGR acknowledged that Stage 1 AA was received.	November 3, 2022
Six Nations of the Grand River	April 25, 2024	Stage 1 AA and Follow-Up Letter #4	Email	No comments were provided.	-
Six Nations of the Grand River	January 14, 2025	Project Update Letter, Draft Archaeological Risk Management Plan	Email	SNGR provided the following comments: • Interested in Macdonell Bridge and if there will be in-water works. • Requested to review the Natural Environment Assessment Report. • Requested further details regarding Alternative 3 for the Allan's Dam Sluiceway and Spillway.	January 17, 2025
Six Nations of the Grand River	March 12	Response to Comments Received on January 17, 2025	Email	SNGR noted they have concerns about the Environmental Impact Study being a future works commitment for detailed design.	March 13, 2025
Six Nations of the Grand River	March 24, 2025	Response to Comments Received on March 13, 2025	Email	SNGR noted concerns regarding resources and capacity funding.	March 24, 2025
Six Nations of the Grand River	April 30, 2025	Response to Comments Received on March 24, 2025	Email	SNGR continued to communicate with the City regarding rationale for providing capacity funding and engage in meaningful consultation.	May 1, 2025
Six Nations of the Grand River	June 24, 2025	Response to Comments Received on May 1, 2025, and Review of Natural Environment Assessment Report	Email	SNGR indicated they have engaged MECP for additional guidance regarding capacity funding. SNGR noted they will initiate a Section 16 request until the matter is resolved.	June 24, 2025

9.5 Review of Draft Project File Report

The draft PFR will be shared with a few key technical agencies, such as MECP, GRCA and Indigenous communities to obtain their input and feedback on the report including results from the technical studies, the decision-making process leading up to the preferred design concept and identified impacts and mitigation measures.

Once comments have been received, the PFR will be finalized and placed in the public record for the 30-day public review period.

10.0 ADDITIONAL WORK AND APPROVALS

10.1 Permits and Approvals

Table 10.1 Permits and Approvals

Agency	Permit / Approval	Description
City of Guelph	Discharge Agreement	To discharge groundwater to the City's storm or sanitary sewers.
GRCA / MNR / DFO	Groundwater Discharge	Discharge of groundwater to the natural environment may require approval from the noted external agencies.
GRCA	Permit	Study Area is within Regulation Limit of the GRCA and will require a permit to proceed, supported by erosion control and site restoration recommendations.
DFO	Request for Review	Proposed works will require in-water work with impacts to fish and habitat anticipated. A Request for Review will be required to determine project compliance under the Fisheries Act.
MECP	Registration on the EASR	Based on dewatering volumes, a PTTW or registration on the EASR may be required. If the water taking rate is between 50,00 L/day and 400,000 L/day, then registration on the EASR will be required. Registration on the EASR will require the preparation of a Water Taking Report and Discharge Report. Registration on the EASR does not require review by MECP and dewatering can commence immediately after registering.
MECP	Category 3 Permit to Take Water	If the water taking rate is greater than 400,000 L/day, a PTTW will be required.

10.2 Future Work and Detailed Design Commitments

The following additional work and technical studies are recommended and / or required to be completed during preliminary and detailed design.

10.2.1 Geotechnical Investigations

- Pavement design thicknesses should be reviewed during detailed design.
- Assessment of base and subbase material quality should be completed as a final design task.
- Reassess preliminary foundation design recommendations for Macdonell Bridge by drilling additional boreholes at the site.
- A detailed geotechnical investigation will be required to confirm the subsurface conditions and recommendations. This work should incorporate:
  - A detailed pavement investigation including additional boreholes within the existing roadway pavement to further define the existing granulars and subgrade conditions and confirm the pavement design recommendations;
  - Boreholes within the envelope of all bridge foundation units to confirm the subsurface conditions at the structure location and develop detailed geotechnical recommendations for design and construction of the bridge foundations.
  - Bedrock coring in boreholes at the bridge to confirm bedrock elevation and depth to competent bedrock. An assessment of the strength and quality of the bedrock for foundation design purposes.
  - Chemical testing to confirm the requirements for reuse or disposal of excavated material in accordance with Ontario Regulations.

10.2.2 Hydrogeological Investigations

- Conduct a water well survey to obtain background information to any private wells within a 500m area.
- Confirm if excavations to construct new foundations for the Macdonell Bridge and Ward to Downtown Bridge will advance below the water table and if construction dewatering will be required.
- Assess the long-term drainage needs of the structures.
- Once preliminary design information is available, an assessment of construction dewatering requirements should be completed, including an estimate of groundwater inflows and the construction dewatering zone of influence will be required for Macdonell Bridge and the Ward to Downtown Bridge.

- Detailed Hydrogeological Investigation
  - Assess potential impacts due to dewatering following the completion of dewatering estimates including impacts to surface water and natural environment, water well users, and other potential impacts.
  - Study should include impact assessment, mitigation measures, a monitoring plan, and contingency plan for dewatering.
  - Additional monitoring wells installed in boreholes within the envelope of foundation units to confirm the hydrostratigraphic conditions at the structure locations and develop detailed hydrogeological recommendations for construction dewatering for the bridge foundations.
  - Extended groundwater monitoring program at new and existing monitoring wells to determine seasonal maximum and minimum water level elevations.
  - Additional slug tests should be conducted at newly installed monitoring wells to target various geological materials.
  - Collection and analysis of additional groundwater samples at newly installed monitoring wells.
- EASR Registration Requirements
  - If the dewatering assessment determines registration on the EASR will be required, a Water Taking Report prepared by a qualified professional would be required. The Report will need to meet O. Reg. 63/16 legislation and describe the water taking activity, construction works, estimated area of influence, water taking rates, impact assessment, contingency plan, assessment of the need for a water monitoring plan, and notification protocol.
  - A Discharge Report will be required to register on the EASR and meet the requirements of O. Reg. 63/16 legislation. The Report should describe the discharge (location and method), estimate of the quantity and quality of groundwater and stormwater to be discharged, required mitigation measures, assess the need for a monitoring plan, and a contingency plan.

Details of future hydrogeological investigation work required is provided in Appendix 5.

10.2.3 Updated Hydraulic Analysis

A detailed hydraulic analysis should be completed using GRCA's updated HEC-Ras model to determine the precise hydraulic impacts or required improvements, including:

- Potential hydraulic impacts associated with the dam/spillway removal; and

- Potential hydraulic risks and design requirements for the proposed Macdonell Bridge structure replacement.

10.2.4 Natural Environment

- A detailed impact assessment should be undertaken during preliminary and/or detailed design for potential impacts to the surrounding natural environment.
- Refine mitigation measures for impacts to terrestrial SAR, aquatic habitats, and fish during preliminary and/or detailed design.
- A scoped Environmental Impact Study (EIS) should be undertaken, including an inventory of trees, to determine the Project impact details, prepare a robust mitigation plan and identify the compensation requirements.

10.2.5 Archaeological and Cultural Heritage Studies

- A Stage 2 AA is recommended for parts of the Study Area that exhibit archaeological potential, including parts of the Ward to Downtown Bridge Class EA (2017) Study Area.
- Heritage Impact Assessments are recommended as early as possible during detailed design for the following:
  - Railway viaduct over the Speed River (BHR 127)
  - Allan's Bridge over the Speed River (BHR 242)
  - 16 Arthur Street North (BHR 253)
  - Speed and Eramosa Riverscape (CHL 1)
- In advance of removal of the Allan's Bridge, a plan to salvage bridge components (where feasible) and a plan to commemorate the bridge must be developed. The Salvage and Commemoration Plan should be scoped in consultation with heritage staff at the City of Guelph. A Cultural Heritage Documentation Report is also recommended.

10.2.6 Design Work

- Utilities will be engaged with during detailed design to confirm potential impacts to, and relocation of utility infrastructure as a result of the preferred solution.
- Confirm properties impacts and mitigation measures.
- Prepare a traffic management plan to maintain vehicular access during construction.
- Confirm additional illumination requirements and finalize lighting design.

10.3 Distribution of Notice of Study Completion and Project File Report

In accordance with the requirements of the Municipal Class Environmental Assessment (MCEA) – Schedule 'B', a Notice of Study Completion is anticipated to be issued in **Fall 2025**. Through issuance of the Notice of Study Completion, this PFR documenting the planning process undertaken, details of the study recommendations, and potential impacts and mitigation measures will be placed on the public record for the mandatory 30-day review period.

The Notice of Study Completion will also advise the public that during the 30-day review period, a request may be made to the MECP for an order requiring a higher level of study (i.e., requiring an individual/comprehensive EA approval before being able to proceed), or that condition be imposed (e.g., require further studies), on the grounds that the requested order may prevent, mitigate or remedy adverse impacts on constitutionally protected Aboriginal and Treaty rights.

Following the close of the 30-day public review period, the MECP has an additional 30 days to consider the project and review any potential Section 16 Order requests submitted during the 30-day public review period. The City of Guelph may not proceed with the project for at least these 30 days of the MECP review period. Following the 30-day MECP review period, the project may proceed to detailed design and construction provided the ministry is not reviewing Section 16 Order requests related to the project and subject to any other permits and approvals that may be required