PROJECT FILE REPORT

G2G Pedestrian Trailway Bridge Reconstruction

Municipal Class Environmental Assessment



LGL File TA2600061

September 2026

PROJECT FILE REPORT

G2G Pedestrian Trailway Bridge Reconstruction
Wallenstein, ON

Municipal Class Environmental Assessment – Schedule B

Prepared for:
Region of Waterloo

Prepared by:
LGL Limited

Doug Dixon & Associates Inc.

SEPTEMBER 2026
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1. Introduction

1.1 Background

The Regional Municipality of Waterloo is undertaking the Municipal Class Environmental Assessment (Class EA) for the reconstruction of the G2G Pedestrian Trailway Bridge as part of the Goderich to Guelph (G2G) Rail Trail. Doug Dixon and Associates Inc. has been commissioned to complete the Schedule 'B' Class EA, and LGL Limited has been retained to prepare the Municipal Class EA documentation and assessment, providing natural science and environmental planning expertise on behalf of the Region of Waterloo.

The proposed bridge crossing is located southwest of the village of Wallenstein, between Region Line 86 / Wellington County Road 86 (Line 86) and Powell Road, where the abandoned rail corridor intersects the Conestogo River. The remaining piers and abutments from a former railway bridge persist on-site and are intended to be rehabilitated to support a new pedestrian bridge. Currently, the absence of a bridge requires trail users to detour onto the local road network, resulting in reduced safety, accessibility, and trail continuity.

In 2023, preliminary design work was completed on behalf of the Goderich to Guelph Rail Trail volunteer group. In 2024, the Region of Waterloo assumed ownership of the project and retained DDA to revisit previous studies and complete the Schedule B Class EA. LGL Limited (LGL) is providing Class EA and natural science services.

1.2 Purpose and Need for the Project

The primary objective of the project is to re-establish a continuous and safe multi-use trail crossing over the Conestogo River along the G2G Rail Trail. The rationale for undertaking this initiative arises from the existing break in the trail network, the safety risks associated with required on-road detours, and the potential to repurpose remaining bridge infrastructure to enhance regional active transportation connectivity while minimizing environmental impacts. The project aligns with broader regional goals related to recreational trail expansion, active transportation development, and the advancement of sustainable infrastructure.

1.3 Project Area

The project area is generally defined as a 120-metre radius surrounding the proposed bridge crossing and abandoned trail corridor where the G2G Rail Trail intersects the Conestogo River, including the connecting trail sections to Line 86 and Powell Road (**Figure 1**).

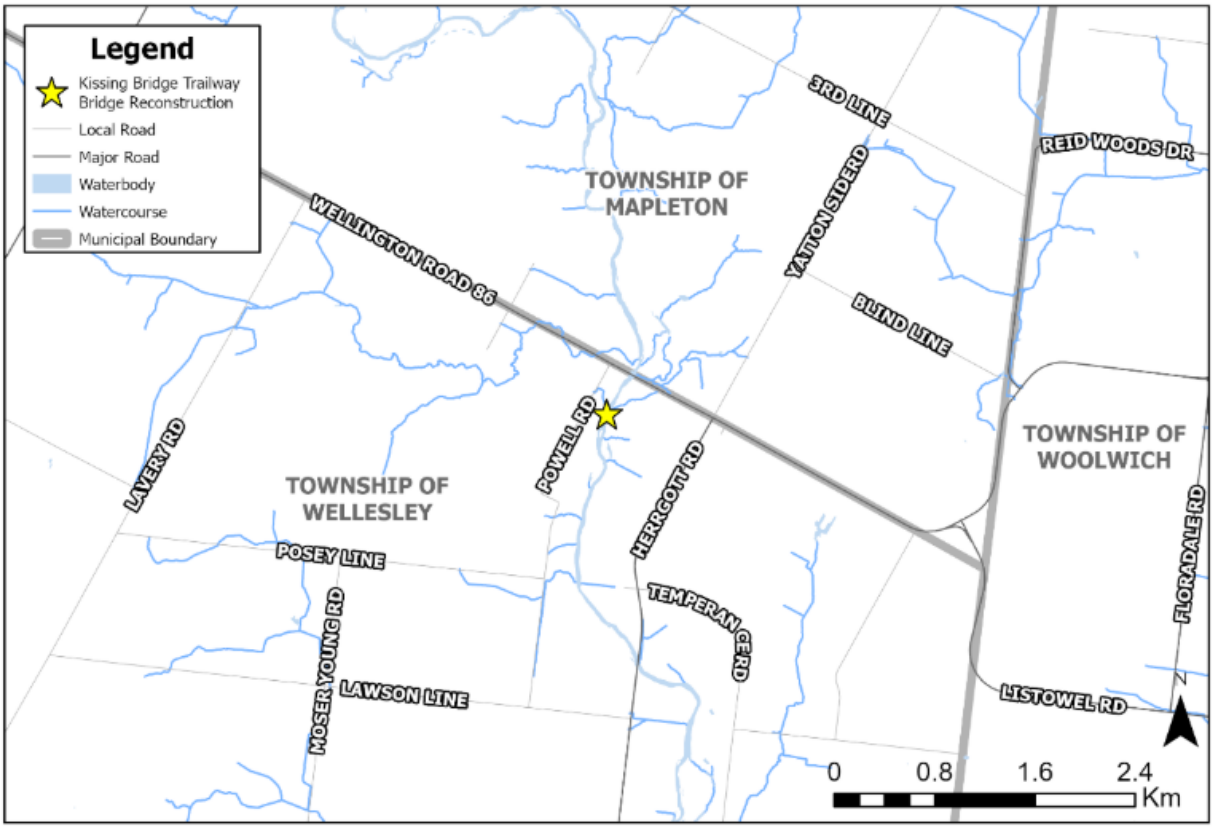


Figure 1. Key Map

2. Municipal Class Environmental Assessment Planning Process

2.1 Overview

Municipalities in Ontario must comply with the Ontario *Environmental Assessment Act (EAA),* which requires an Environmental Assessment for eligible public works. The Municipal Engineers Association's *Municipal Class Environmental Assessment* (2023 amended 2024) (Class EA) provides a standardized, phased framework for planning municipal sewage, water, stormwater, and transportation projects that are routine in nature and have predictable environmental effects. The Class EA process ensures that municipal infrastructure projects are planned and executed in a manner that is efficient, transparent, and responsive to environmental, social, and economic considerations.

This project, which is categorized as Schedule B, includes the following phases of the Class EA: Phase 1 (Problem or Opportunity), Phase 2 (Alternative Solutions) and Phase 5 (Implementation).

This Project File Report identifies the Problem and Opportunity, documents the Alternative Solutions evaluated, the Preferred Alternative Solution, preliminary design and construction works required, existing conditions and potential environmental effects, and consultation activities carried out during this phase of the project.

3. Policy, Legislative, and Planning Context

3.1 Provincial Planning Statement, 2024

The *Provincial Planning Statement, 2024* (PPS 2024) replaces the *Provincial Policy Statement*, 2014 (PPS, 2014) and incorporates growth management policies from the former Growth Plan, creating a single integrated framework. While it places greater emphasis on housing supply and infrastructure delivery, natural heritage protections remain consistent with previous policy. For this project, PPS 2024 maintains prohibitions on development within key natural heritage features unless no negative impacts can be demonstrated, requiring Environmental Impact Studies and coordination with the Grand River Conservation Authority (GRCA) and the Ministry of Environment, Conservation and Parks (MECP). The PPS also supports efficient infrastructure planning, in this case the proposed bridge reconstruction occurring within the existing rail corridor to minimize environmental disturbance. The following sections of the PPS were reviewed and considered relative to this project:

- Chapter 3: Infrastructure and Facilities
  - 3.1 General Policies for Infrastructure and Public Service Facilities
  - 3.9 Public Spaces, Recreation, Parks, Trails and Open Space
- Chapter 4: Wise Use and Management of Resources
  - 4.1 Natural Heritage
  - 4.6 Cultural Heritage and Archaeology
- Chapter 5: Protecting Public Health and Safety
  - 5.1 General Policies for Natural and Human-Made Hazards
  - 5.2 Natural Hazards
- Chapter 6: Implementation and Interpretation
  - 6.2 Co-ordination

3.2 Regional and Local Planning Policy

3.2.1 Region of Waterloo Official Plan, 2024

The 2024 Regional Official Plan (ROP) sets the long-term land-use vision for Waterloo Region, emphasizing growth within existing urban areas and strong protection of natural heritage systems. The G2G Pedestrian Trail and Conestogo River crossing fall within the Region's Greenlands Network, which safeguards valleylands, watercourses, wetlands, and connected natural features. Infrastructure projects in this network require an Environmental Impact Study to demonstrate avoidance and mitigation of environmental impacts. For the proposed bridge works, design must prevent fragmentation of the Greenlands Network and align with regional trail and active transportation objectives.

3.2.2 Township of Wellesley: Greenlands Network and Trail Connectivity Policies

The Township of Wellesley is predominantly rural and agricultural, with the G2G Pedestrian Trail forming an important recreational and active transportation corridor through its Greenlands Network. The Township's Official Plan (2022) designates the area as a Significant Valley and includes Environmentally Sensitive Landscapes associated with watercourses and natural features. The G2G Trail's alignment along the former rail corridor provides both community connectivity and an ecological linkage, highlighting the

need to balance agricultural land use with protection of valley systems, natural heritage connectivity, and trail function.

4. Phase 1: Problem or Opportunity Statement

Phase 1 of the Municipal Class Environmental Assessment process requires the proponent (Regional Municipality of Waterloo) to document the factors demonstrating the need for the project and to develop a clear statement of the problem or opportunity to be addressed. This statement forms the foundation of the assessment, guiding the scope of the study and shaping the overall direction of the project. The following problem or opportunity statement has been prepared for this Municipal Class Environmental Assessment.

4.1 Problem

The absence of a bridge crossing over the Conestogo River creates a significant discontinuity in the Goderich to Guelph (G2G) Rail Trail. Trail users are currently required to detour onto the local road network to bypass the river crossing, which reduces user safety, accessibility, and overall trail functionality. This condition undermines the intended continuity of the regional trail system and limits its effectiveness as a safe, off-road active transportation and recreational corridor.

4.2 Opportunity

Existing railway bridge piers and abutments at the crossing location present an opportunity to re-establish the trail connection. Reconstructing a pedestrian bridge at this location would restore continuous trail access, improve safety and user experience, and enhance regional active transportation connectivity. The project provides an opportunity to leverage existing infrastructure while respecting natural heritage features.

5. Consultation

5.1 Communications and Consultation Overview

Consultation is a central component of the Municipal Class Environmental Assessment (MCEA) process, ensuring two-way communication between proponents and stakeholders, including the public, review agencies, municipalities, and Indigenous communities. Effective consultation helps exchange information, and identify concerns, improve decision-making.

The MCEA outlines minimum mandatory points of contact, which vary by project Schedule. Mandatory consultation typically occurs near the end of Phase 2 to present the problem, alternative solutions, and the preferred approach, followed by a Notice of Completion for Schedule B projects. Municipal Councils were kept informed, and Indigenous communities were contacted directly throughout the process.

A central focus of the community engagement process was to involve property owners in the study area, review agencies, Indigenous communities, and the broader public in shaping the preferred bridge reconstruction solution. Key engagement activities included:

- Creating and updating a comprehensive contact list.

- Notifying the adjacent property owners, agencies, stakeholders, Indigenous communities, and interested residents.
- Discussing with adjacent property owners about potential access for construction purposes.
- Posting project information on the Regional Municipality of Waterloo's website.
- Holding a Public Meeting inviting all interested parties to attend, obtain information about the project, provide comments and ask any question they may have.
- Ensuring Public Meeting materials were available online.
- Meeting and corresponding with key review agencies.

5.2 Public Notifications

5.2.1 Notice of Commencement

The Notice of Commencement was first issued on March 4, 2025, introducing the project and included the contact information for the Regional Municipality of Waterloo. This Notice was distributed via direct mail to area residents and posted on the Region's project webpage. This notice was also posted on several social medial posts including Facebook. Sign boards were also installed by the side of the road (Line 86) to inform commuters about the project.

5.2.2 Notice of Public Consultation Centre

The Notice of Public Consultation Centre was distributed and posted through the same media platforms used for the Notice of Commencement. The Notice invited anyone with an interest in the project to view online the Public Meeting materials and provide feedback.

5.2.3 Notice of Completion

The Notice of Completion will be distributed and posted in the same manner as previous notices concurrently with the posting of this report.

5.3 Agency and Stakeholder Engagement

Key agencies and stakeholders were informed and engaged, as needed, throughout the project's progress including:

- Ministry of the Environment, Conservation and Parks
- Ministry of Natural Resources
- Grand River Conservation Authority
- Department of Fisheries and Oceans
- Ministry of Citizenship and Multiculturalism
- Township of Wellesley
- County of Wellington
- Waterloo Regional Police Service
- Township of Wellesley Fire Department

5.4 Indigenous Communities Engagement

The Mississaugas of the Credit First Nation and the Six Nations of the Grand River have been contacted to inform them about this study and obtain any comments. The Six Nations of the Grand River responded with interest in this project. To date, the Mississaugas of the Credit First Nation and the Six Nations of the Grand River have been involved in the review of the Natural Heritage Report and also participated in Archeological field investigations in the summer of 2026. The Mississaugas of the Credit First Nation have provided comments. Representatives from both Mississaugas of the Credit First Nation and Six Nations of the Grand River were present during the Stage 2 Site Assessment conducted on July 16th, 2026. ARA completed the field assessment with no findings. A complete study/report shall be submitted to Mississaugas of the Credit First Nation and the Six Nations of the Grand River for their review and approval. Ongoing consultation with Six Nations of the Grand River is anticipated through the construction phases of this project. Consultation is attached to the Natural Heritage Report completed for this project.

5.5 Public Engagement

One Public Meeting was held on Thursday, October 16, 2025 from 6:00 p.m. to 8:00 p.m. at the Wallenstein Bible Chapel on 4522 Herrgott Road, Wallenstein. The Public Meeting presented the findings of the assessment of alternatives considered. Members of the Project Team were in attendance to answer any questions from the public. Comments and information regarding this study were collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*.

Approximately 540 responses from the general public were received through the Region's project webpage. The majority of the comments received were positive towards the project as it will establish the continuity of the Guelph to Goderich trail (G2G Trail) and prevent users of the trail to take a detour on local roads, where safety concerns exist. Some concerns were associated with safety to accommodate pedestrians and cyclists as well as costs associated with the construction of the project.

6. Existing Conditions

The Goderich-Guelph (G2G) Rail Trail established in 2015, is a 132-kilometre multi-use recreational corridor that follows a former CP rail line between Guelph and Goderich and is managed through a partnership between G2G Rail Trail Inc., local municipalities, and community stewardship groups. G2G Rail Trail Inc. is a not-for-profit, charitable community organization dedicated to enriching quality of life and promoting sustainable community development by advancing and preserving diverse trails and greenways (G2G Rail Trail Inc., 2023).

The trail is open year-round to walkers, runners, and cyclists, offering a smooth and accessible experience along the abandoned rail bed. Through stewardship efforts and community partnerships, the trail has seen continuous improvements (G2G Rail Trail Inc., 2023). It functions as both a regional active transportation corridor and a recreational amenity, links numerous rural communities, natural areas, and cultural features.

In the broader regional context, the G2G Rail Trail is a key regional multi-use recreational corridor (Region of Waterloo Official Plan, 2024; G2G Rail Trail Inc., 2023). Where projects intersect with or connect to the G2G Trail, special attention should be given to trail continuity, safe access, and construction timing consistent with the Region of Waterloo Official Plan (2024) policies supporting active transportation and

recreational connectivity. Within the Study Area, trail function and demand (including recreational use, commuter potential, regional connectivity) has been considered in project planning.

6.1 Natural Environment

The following discussion outlines the existing environmental conditions within and adjacent to the project limits and identifies natural heritage areas and/or features of environmental sensitivity and/or significance based on the review of all background resources and field investigations. See Error! Reference source not found..

6.1.1 Physiography and Soils

The project is located on the western edge of the Oxford Till Plain physiographic region. The region is made up of well-marked glacial valleys, surface drumlins and flutings, and kames (Chapman and Putnam, 1984). The region is composed of pale brown till and calcareous loam where Middle Devonian limestone is the dominant material, although grey or pale brown dolostone is also abundant. The dominant soil type is Guelph loam, a typical Grey Brown Luvisol, developed under Maple-Beech forests.

The project area is primarily composed of St. Clements silt loam and Grand loam. St. Clements soils have developed on well-drained soil materials composed mainly of silty clay loam and silty clay (Presant and Wicklund, 1971). They are highly erodible and require careful management on slopes. The Grand series soils occur on well-drained alluvial sediments with predominantly loam and silt loam textures, primarily on river floodplains where they are highly susceptible to flooding (Presant and Wicklund, 1971).

6.1.2 Designated Natural Areas

Designated natural areas include areas identified for protection by the Ministry of Natural Resources, Land Information Ontario (LIO) database, GRCA online mapping and The Regional Municipality of Waterloo Official Plan maps.

No Provincially Significant Wetlands, Area of Natural and Scientific Interest and Environmentally Sensitive Landscapes were identified within or adjacent to the project area.

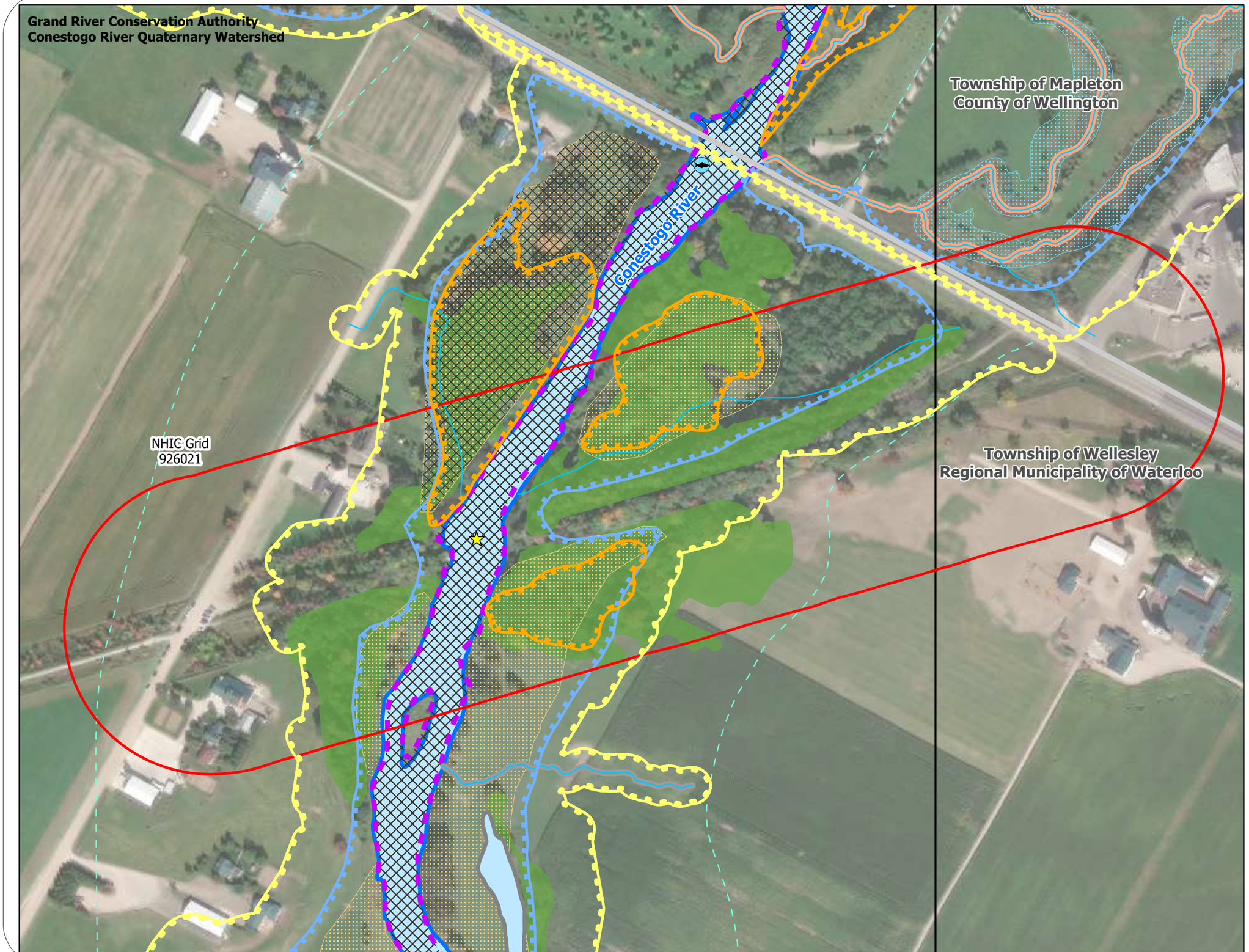
Evaluated wetlands have been documented on both sides of the Conestogo River upstream and downstream of the railway crossing. One evaluated wetland pocket is located south of the railway crossing, on the west side of the Conestogo River. All wetlands are located within the river floodplain. Several unevaluated wetlands have also been shown within background sources outside the project limits, north of Line 86 and east of the Conestogo River.

6.1.3 Aquatic Habitats and Communities

The project area is located within the Conestogo River subwatershed and within the Grand River watershed. The Study Area is located within the jurisdiction of Grand River Conservation Authority (GRCA) and the Ministry of Natural Resources (MNR), Guelph District.

The Conestogo River is a main tributary of the Grand River. The Conestogo River starts in the Damscus-Kennilworth area of the Township of Wellington North and flows through the towns of Glen Allan, Wallenstein, Hawkesville, and St. Jacobs before joining the Grand River in the Village of Conestogo. Conestogo Lake is a dam-controlled flood management reservoir located at the midpoint of the river

system. The Conestogo River supports a cold-water regime as outlined in Land Information Ontario database (ARA, 2019).



LEGEND

- G2G Pedestrian Trailway Bridge Reconstruction
- Study Area - 120m from Railway Footprint
- ARA Survey Point
- Watercourse
- ARA Watercourse - Unknown Thermal Regime
- ARA Watercourse - Warm Thermal Regime
- Waterbody
- ARA Waterbody - Cold Thermal Regime
- ARA Waterbody - Unknown Thermal Regime
- Municipal Boundary
- Natural Heritage System - Places to Grow Act
- Provincially Tracked Species
  1km by 1km Grid Square
- Species At Risk Act - Critical Habitat
  Silver Shiner
- Species At Risk Act - Risk Distribution
  Black Redhorse, Rainbow, Silver Shiner, Wavy-rayed Lampmussel
- Wetland - Unevaluated as per OWES
- Wetland - Regionally Significant as per OWES
  Conestogo River 2 Wetland Complex
- Wooded Area

Grand River Conservation Authority

- Floodplain - Engineered
- Regulation Limit
- Wetland

0 30 60 90 120 M

N

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G2G Pedestrian Trailway Bridge Reconstruction

Natural Heritage Screening

LGL Est. 1971 LIMITED
environmental research associates

Project	TA2600061	**Figure**	2
Date	2026-09-18	**Prepared By**	AME
Scale	1:3,000	**Verified By**	EBL

Aquatic habitat assessment was conducted on June 25, 2025, examining instream and riparian conditions 50 m upstream and downstream of the former railway right-of-way. The reach had very slow or stagnant flow, slightly murky water, and backwatering around the west pier. Habitat consisted of deep flat and pool areas near the piers, with riffles farther upstream and downstream. Riparian cover was sparse, made up of willows, Manitoba maple, grasses, and forbs, with adjacent pasture and informal trails present. Substrates along both banks ranged from sand and silt to cobble, gravel, and boulders, with deeper water near the piers and a gravel shoal downstream. Instream vegetation occurred within 1 m of the shoreline, and riparian vegetation included a variety of herbaceous species. Young-of-year fish were observed along both banks, and crayfish were abundant throughout the reach.

6.1.3.1 Fisheries

According to available background information, the fish community of the Conestogo River includes a diverse mix of cool-water and warm-water species, ranging from minnows and darters to bass, sunfish, suckers, and perch. Some species, such as Rock Bass, Smallmouth Bass, White Sucker, and Yellow Perch, are consistently recorded across multiple data sources, indicating they are well-established in the system. Others appear less frequently, reflecting more localized or less common occurrences. Overall, the species present show a range of thermal preferences and tolerances, highlighting the ecological diversity of the river. Although not listed in the databases, Brown Trout are also present in the tailwaters below Conestogo Lake due to annual stocking, though natural reproduction in the river is limited.

6.1.3.2 Aquatic Species at Risk

Although not identified in the fish species at risk list, according to aquatic Species at Risk mapping (DFO, 2025) and the Natural Heritage Information Centre (NHIC) database (MNR, 2025), there are records for four aquatic Species at Risk in the Conestogo River:

- Silver Shiner (*Notropis photogenis*), Threatened (SARA/SARO)
- Black Redhorse (*Moxostoma duquesnei*), Threatened (SARA/SARO)
- Rainbow mussel (*Villosa iris*), Special Concern (SARA/SARO)
- Wavy-rayed Lampmussel (*Lampsilis fasciola*), Special Concern (SARA), Threatened (SARO)

The Department of Fisheries and Oceans (DFO) SAR mapping also identified critical habitat for Silver Shiner in this reach of the Conestogo River. Critical habitat has recently been defined for Silver Shiner as the following: the entire bankfull channel width, the meander belt width and the associated riparian vegetation extending 30m out from the meander belt width is habitat necessary to support the life processes of the Silver Shiner (DFO, 2022).

A visual mussel survey was conducted on June 25, 2025 using an underwater viewer to examine the wadable substrate between the centre pier and the bank for over 20 minutes. No live mussels or shells were observed, however water clarity was slightly murky at the time. Despite the lack of confirmed evidence, mussel presence is still assumed due to suitable habitat conditions.

6.1.4 Vegetation and Vegetation Communities

The area is primarily composed of deciduous forest along the Conestogo River, with low-lying sections supporting Fresh-Moist Lowland Deciduous Forest and upland areas containing Fresh-Moist Sugar Maple–Black Maple Forest, adjacent to the trailway trail and along the rail embankment. The lowland forest is dominated by Manitoba Maple and willows, with a sub-canopy of similar species and an understory heavily

influenced by Common Buckthorn due to past disturbance. Ground vegetation includes goldenrods, Dame's Rocket, and sedges. The upland forest is dominated by Sugar Maple, Black Maple, and American Elm, with an understory of Choke Cherry and abundant Buckthorn, and a ground layer of avens, Dame's Rocket, and goldenrods. There is wetland habitat present along the base of the railway embankment, north of the bridge as well as a narrow wetland feature confirmed northwest of the bridge. This wetland was flagged with GRCA staff in June 2026.

A total of 72 vascular plant taxa were recorded within the project area. Of the 72 plant species, 37 (55%) are native to Ontario and 33 (45%) are introduced and non-native to Ontario.

No plant species at risk has been observed to be present within the project area.

6.1.5 Wildlife and Wildlife Habitat

The forested habitats within the project area provide the highest-quality wildlife habitat, offering food, shelter, and movement corridors that connect directly to the larger forest system and the Conestogo River floodplain. These forests also contain features suitable for Species at Risk bats, including trees with cavities, crevices, or sloughing bark, as well as crevices in the existing bridge piers. A leaf off assessment was completed previously by NRSI, and a total of six trees were identified as supporting potential SAR bat roosting habitat (NSRI, 2023a). LGL completed wildlife habitat surveys during leaf on conditions and confirmed these trees within the property boundary and documented incidental snags outside of the original footprint. A bat acoustics study was also completed, as summarized further in Section 6.1.7.1.

6.1.5.1 Breeding Birds

Thirty-three bird species were recorded in the project area. Several wetland and river associated species, including Belted Kingfisher, Great Blue Heron, and Osprey, were also detected along the watercourse. Evidence of breeding was noted for 26 species, with 10 classified as probable breeders, mainly territorial males recorded singing during both survey visits (on June 24 and July 4, 2025)—and 16 considered possible breeders. Although no confirmed nesting activity was observed, pairs of Osprey and Downy Woodpecker were observed during site visits. One probable breeder, Eastern Wood-Pewee, is listed as Special Concern, and most species recorded are protected under federal or provincial legislation. Two area-sensitive species, Hairy Woodpecker and White-breasted Nuthatch, were also detected in suitable forest habitat within and adjacent to the project area.

6.1.6 Significant Wildlife Habitat

A preliminary review of Significant Wildlife Habitat (SWH) indicated that most SWH types were unlikely to occur in the area, though several categories such as bat maternity colonies, colonial nesting bird habitat, raptor habitat, and habitat for species of conservation concern, which required further assessment. Updated fieldwork by LGL in 2025 confirmed the presence of SWH for Species of Conservation Concern, as Eastern Wood-Pewee (a Special Concern species) was repeatedly detected and is considered a probable breeder in the surrounding forest. Wood Thrush was not observed in 2025 but remains possible based on recent nearby records. No evidence of colonial nesting birds, including swallows, was found on the bridge piers, abutments, or surrounding slopes along the riverbank during field visits, and although Osprey were observed flying near the site, no nests or territorial behaviour were detected. The area does not meet criteria for bat maternity colony SWH, as suitable wildlife tree density is insufficient and man-made structures such as piers do not qualify. However, potential habitat for Species at Risk bats remains present and is addressed separately.

6.1.7 Species at Risk Screening

The Species at Risk (SAR) screening for the project area was completed using a combination of desktop review and recent field data. Nineteen SAR were identified through this process, with Eastern Wood-pewee and Little Brown Myotis confirmed as present near the proposed bridge crossing based on field investigations. DFO mapping indicates potential habitat for four additional aquatic SAR: Silver Shiner, Black Redhorse, Wavy-rayed Lampmussel, and Rainbow Mussel. These species may occur within the Conestogo River in the vicinity of the crossing, and their presence and habitat requirements warrant consideration during project planning.

6.1.7.1 SAR Bats and Bat Habitat

The project area has the potential to support several 'Endangered' bat species, including Little Brown Myotis, Northern Myotis, Eastern Small-footed Myotis, Tri-colored Bat, and three migratory species recently uplisted to 'Endangered' in Ontario. Although no overwintering or swarming habitat is present, suitable summer roosting and foraging habitat may occur in bridge crevices, deteriorating concrete structures, and trees with cavities, exfoliating bark, or hanging leaf clusters. Maple trees may provide roosting habitat for Tri-colored Bat and Eastern Red Bat. Acoustic monitoring conducted in July 2023 detected five bat species, including four SAR. Activity patterns indicated that maternity roosts are unlikely to be present near the proposed bridge, and the area is instead used primarily for foraging and commuting.

6.1.7.2 Eastern Wood-pewee

The Eastern Wood-pewee, listed as 'Special Concern' in Ontario, prefers mid-canopy forest edges, clearings, and mature stands with sparse understory, including some park-like habitats. It was recorded within the project area and is considered a probable breeder.

6.1.7.3 Silver Shiner

The Silver Shiner is listed as 'Threatened' provincially and federally and typically inhabits clear, moderately flowing streams with gravel or cobble substrates. DFO has identified this reach of the Conestogo River as Critical Habitat for the species. While suitable riffle and pool habitats occur nearby, the immediate crossing location lacks the swift-water conditions required for spawning.

6.1.7.4 Black Redhorse

The Black Redhorse is listed as 'Threatened' provincially and federally and occurs in medium to large rivers with moderate to fast flows and gravel-to-cobble substrates. While suitable riffle and pool habitats exist in the Conestogo River, the crossing location lacks preferred spawning habitat. Deeper pools downstream, however, may provide suitable overwintering habitat.

6.1.7.5 Wavy-rayed Lampmussel

The Wavy-rayed Lampmussel is listed as 'Threatened' provincially and Special Concern federally and occupies clear, medium-sized rivers with steady flow and stable sand-to-gravel substrates, often near shallow riffles. Its regulated habitat includes the watercourse and 30 m of adjacent natural vegetation. Host fish species, including Smallmouth and Largemouth Bass, are present in the Conestogo River. Suitable aquatic habitat and substrates for this mussel occur at the crossing location.

6.1.7.6 Rainbow Mussel

The Rainbow Mussel is listed as 'Special Concern' provincially and federally and occurs in shallow, well-oxygenated small to medium rivers, often near emergent vegetation, with cobble, gravel, or sand substrates. Its larvae require attachment to host fish, several of which, such as Smallmouth Bass, Largemouth Bass, and Yellow Perch, are present in the Conestogo River. Suitable habitat and substrates for this species occur at the crossing area, with some instream vegetation present downstream.

6.2 Technical Environment

6.2.1 Utility Infrastructure

Based on site observations and previous correspondence with Bell, Enbridge, Hydro One, and G-Tel, the following utilities are in the vicinity of the project site:

- Buried Bell utilities on the north and south sides of Line 86;
- 6" diameter buried Enbridge gas main on the north side of Line 86;
- Buried Enbridge gas service on the west side of the existing driveway at 7290 Line 86;
- 4" diameter buried Enbridge gas main on the west side of Powell Road;
- Overhead hydro lines on the north and south sides of Line 86; and
- Buried storm service along the south side of Line 86.

None of the utilities listed above will be impacted by the construction of a new crossing with the possible exception of the aerial hydro lines that may affect access from Powell Road to the abandoned rail right of way. Depending on the depth of the truss, the clearance to the overhead power lines at Powell Road will need to be confirmed.

6.3 Hydraulics

The Grand River Conservation Authority (GRCA) has noted that the Regulatory Flood Elevation (RFE) for the project location is 354.7m CGVD28. Since the new superstructure of the new bridge will be well above this elevation and the existing piers are utilized, hydraulic impacts are not anticipated.

6.4 Foundation Investigations

Foundation investigation was not conducted for the following reasons:

1. Access to undertake investigations, particularly at the centre pier, would be difficult, costly and have environmental impacts.

2. DDA was able to obtain the Ontario Ministry of Transportation Foundation Report for the Line 85 adjacent Conestoga Bridge; and

3. The installation of the pedestrian bridge on the existing piers would impose significantly lower dead and live loads than those carried by the piers during rail operations between 1904 and 1990.

Many North American jurisdictions have adopted a design approach that, if the increase in loading on a substructure component is less than 15%, then no additional foundation investigations are considered.

6.5 Cultural Heritage Environment

6.5.1 Archaeological Resources

A combination Stage 1-2 archaeological assessment was completed between May and July 2026. The assessment was limited to the project lands and a 10 m buffer, as all proposed site alterations and soil disturbances will be restricted to this area. The Stage 1 assessment found a substantial amount of the area to be disturbed by modern activities, which was confirmed during the Stage 2 assessment. The remainder of the area that was found to have archaeological potential was tested at 5 m intervals. No archaeological resources were encountered during the assessments, and no further archaeological assessment is being recommended. Representatives from the Mississaugas of the Credit First Nation and Six Nations of the Grand River were present during the Stage 2 field assessment conducted on July 16, 2026.

6.5.2 Built Heritage Resources and Cultural Heritage Landscapes

A historical background and preliminary heritage assessment concluded that the abutments and piers associated with the former CPR over the Conestogo River are a significant part of the history of the former railway line and should be preserved (Unterman McPhail Associates, 2017).

7. Phase 2: Alternative Solutions

7.1 Alternatives

This section presents the alternative solutions that have been considered for the G2G Pedestrian Trailway Bridge Reconstruction Project, which is located southwest of the village of Wallenstein, between Region Line 86 / Wellington County Road 86 (Line 86) and Powell Road, where the abandoned rail corridor crosses the Conestogo River.

Before evaluating the alternative solutions, options were considered for the span/configuration of the new pedestrian bridge. Three options were considered: one single span, two spans utilizing the existing or a new center pier, and three spans utilizing only the east and west piers. The **Table 1** compares the advantages and disadvantages of three options.

Table 1. Comparison of Bridge Span Alternatives

Criteria	*Single Span (132 m)*	*Two Spans (66 m + 66 m)*	*Three Spans (33 m + 66 m + 33 m)*
Use of Existing Piers	*No piers used*	*Uses centre pier*	*Uses east and west piers*
Cost	*Highest; heavy structure and complex construction*	*Lower; efficient material use*	*Highest of all options (per prior study)*
Constructability	*Requires large cranes at river level; high environmental impact*	*Easier; launching possible; less heavy lifting*	*Difficult; crane access limited, especially on west side*
Environmental Impact	*Significant due to crane access*	*Reduced if launched; only centre pier work needed*	*Higher; two piers require rehabilitation*
Structural Considerations	*Long span increases vibration and geometric control challenges*	*Efficient structure; more bridge type options*	*Lighter approach spans but must match centre span depth*
Heritage Value	*No pier retained*	*Retains and reuses one heritage pier*	*Retains two piers but increases maintenance*
Maintenance Needs	*Lowest (no piers)*	*Moderate (one pier)*	*Highest (two piers + more bearings)*
Risk During Construction	*High due to complex erection*	*Moderate; river level fluctuations affect pier work*	*Higher; two piers in river increase risk*
Overall Suitability	*Not warranted for a 3 m pedestrian bridge*	*Most balanced option (cost, constructability, heritage)*	*Less favourable due to cost, access, and maintenance*

Based on the above, a two span and three span pedestrian bridge were carried forward as alternative solutions. The alternatives considered are described in the following:

Alternative 1 – Do nothing. This alternative was used as a base case comparison to other more viable alternatives or strategies.

Alternative 2 –New structure on new supports (new two-span superstructure and piers).

Alternative 3 –New structure on the original centre pier (new two-span truss bridge supported on a “jacketed” existing centre pier.

Alternative 4 – New structure on both existing piers (new three-span truss bridge supported on rehabilitated / jacketed existing east and west piers).

7.2 Evaluation Criteria and Methodology

In order to identify the most suitable design alternative for the proposed pedestrian bridge, each alternative solution was evaluated using a structured set of criteria that reflect environmental, technical, economic, and heritage considerations. Table 2 have been developed to evaluate the alternatives carried forward for detailed evaluation.

Table 2. Alternative Solutions Evaluation Criteria

Category	Evaluation criteria
Environmental Impacts	Assesses the extent of disturbance to the river, valley, and surrounding natural environment during construction and long-term operation.
Sustainability	Evaluates material reuse, carbon footprint, and the degree to which each option minimizes resource consumption and supports long-term environmental stewardship.
Constructability	Considers the practicality of construction, including site access, required equipment, staging constraints, and overall feasibility.
Capital Costs (cost in Brackets)	Compares the initial construction cost of each option, including materials, labour, and contingencies.
Life Cycle Cost	Examines long-term expenditures related to maintenance, rehabilitation, and replacement over the bridge's service life.
Durability	Evaluates expected structural longevity and resistance to deterioration under environmental exposure and loading conditions.
Risk	Assesses uncertainties related to construction challenges, subsurface conditions, cost volatility, and potential schedule delays.
Heritage	Considers the extent to which each option preserves or enhances remaining historical elements of the original bridge structure.

7.3 Evaluation of Alternatives

Table 3 details the comparative evaluation of the alternatives. The evaluation is qualitative and has been informed through documentation of existing conditions and consideration of feedback from potentially affected and interested agencies and stakeholders. The "Do Nothing" solution (Alternative 1) has been used as a base case comparison. Alternative 1 does not address the problem or opportunity statement and is therefore not a viable overall preferred solution.

Table 3. Evaluation of Alternatives

Evaluation Criteria	Alternative 1: Do Nothing	Alternative 2: New Two-Span Bridge on New Piers	Alternative 3: New Two-Span Bridge on Existing Centre Pier	Alternative 4: New Three-Span Bridge on Existing East & West Piers
Environmental Impacts	No construction impacts, but long-term deterioration of the existing structure may pose safety and environmental risks.	Highest construction impact due to demolition, new pier construction, dewatering, and extended in-river work.	Lowest impact: only one pier rehabilitation and launching reduces valley disturbance.	Moderate to high impact: two pier rehabilitations and additional west-bank access requirements.
Sustainability	No material use, but also no reuse of existing infrastructure; long-term degradation reduces sustainability.	Lowest sustainability: removal of an existing pier and construction of a new one increases carbon footprint.	Highest sustainability: reuses one existing pier and avoids additional access construction.	Moderate sustainability: reuses two piers but requires more rehabilitation work and access modifications.
Constructability	No construction required, but structure remains unusable and unsafe.	Most complex: new foundations, dewatering, and extensive in-river work.	Easiest: only one pier rehabilitation, simpler access, and compatible with launching.	More difficult: two pier rehabilitations, challenging west-side access, and need for continuous truss.
Capital Cost	No immediate cost, but long-term liability and eventual replacement costs remain.	High cost due to new substructure and foundation work.	Lowest cost: minimal new substructure work and efficient reuse of existing pier.	Highest cost: two pier rehabilitations and more complex construction.
Life-Cycle Cost	Deferred costs accumulate; long-term deterioration increases future expenses.	Lowest long-term cost due to new, durable substructure.	Moderate long-term cost: one rehabilitated pier requires future maintenance.	Highest long-term cost: two rehabilitated piers increase maintenance needs.
Durability	Structure continues to deteriorate,	Most durable: new foundations and substructure	Moderate durability: one rehabilitated pier	Least durable: two rehabilitated piers introduce more

Evaluation Criteria	Alternative 1: **Do Nothing**	Alternative 2: **New Two-Span Bridge on New Piers**	Alternative 3: **New Two-Span Bridge on Existing Centre Pier**	Alternative 4: **New Three-Span Bridge on Existing East & West Piers**
	reducing safety and service life.	provide longest lifespan.	reduces long-term performance slightly.	long-term maintenance concerns.
Risk	High safety and liability risk due to ongoing deterioration and potential structural failure.	Highest construction risk: new foundations, dewatering, and unknown subsurface conditions.	Lowest risk: only one pier rehabilitation reduces uncertainty.	Moderate risk: two pier rehabilitations increase potential for overruns and construction challenges.
Heritage	Existing heritage elements remain but continue to degrade without preservation.	Lowest heritage value: removes one historic pier.	Highest heritage value: preserves and rehabilitates one original pier.	Moderate heritage value: preserves two piers but requires more intervention.

Table 4 presents a comparative scoring of the three bridge design alternatives using the established evaluation criteria. Each criterion is rated on a scale from 1 to 5, where higher scores indicate better performance relative to environmental impact, sustainability, constructability, cost, durability, risk, and heritage considerations. Deck material alternatives are not considered in this assessment. The total score for each alternative reflects its overall suitability within the context of the project objectives. As shown in Table 4, The highest ranked option is the two-span bridge which utilizes the rehabilitated centre pier (Alternative 3).

Table 4. Comparative Scoring of Alternative Solutions

Evaluation Criteria	Alternative 2: New Superstructure on New Substructure	Alternative 3: New Two-Span Bridge on Rehabilitated Centre Pier	Alternative 4: New Three-Span Bridge on Rehabilitated East & West Piers
Environmental Impacts	1	3	1
Sustainability	1	5	3
Constructability	3	5	3
Capital Cost (Cost in Brackets)	3	5	1
Life-Cycle Cost	5	3	1
Durability	5	3	1
Risk	1	5	3
Heritage	3	3	1
Total	22	32	14

7.4 Preferred Solution – Alternative 3

Alternative 3 has been selected as the preferred solution (**Figure 3**), which involves the construction of a new two-span steel truss bridge supported by the existing abutments and a rehabilitated centre pier. The centre pier rehabilitation consists of installing a 150 mm thick cast-in-place concrete jacket using self-consolidating concrete and continuous vertical and circumferential reinforcing steel doweled into the original pier, restoring its structural capacity while maintaining its form.



Figure 3. Rendering of the Preferred Solution

Several truss configurations remain feasible: half-through; through; or deck truss, with the final selection to be made during detail design. At this stage, the design team favours a deck truss because it provides improved panoramic views for users and aligns well with the existing bearing elevations at the abutments and pier.

Access for rehabilitating the centre pier is expected from the east side of the river using a low-level rock causeway. The hydraulic and environmental impacts of this causeway have not yet been assessed; if it proves unsuitable, a trestle system may be used instead. Access from the east bank will be obtained through private property, minimizing environmental disturbance.

For superstructure erection, launching is the preferred method. This avoids the significant cost and environmental impact associated with mobilizing large cranes on both sides of the river and constructing access pads and ramps.

A standard metal railing is proposed consisting of balusters spaced at 100 mm (clear). The steel for the railing could be atmospheric corrosion resistant, or it could be galvanized and or coated. This will be determined during detailed design in discussions with the Region.

The railing will be designed to be bicycle height. Given the height of the bridge, it might be desirable to increase the railing to provide even more of a barrier for pedestrians (**Figure 4**).



Figure 4. Rendering of the New Pedestrian Bridge

7.5 Preliminary Construction Works

Below is a preliminary description of the sequence of required construction works:

1. The contractor will access the site from the south-east side through the property on Hergott Road, using the existing gravel road.
2. A temporary gravel or temporary timber mat access road will be built along the privacy fence to reach the fence gate. Beyond the gate, a staging area within the east floodplain will be prepared for construction equipment and materials.
3. Environmental protection measures will be installed, including heavy-duty silt fencing along the access area and a turbidity curtain in the water around the centre pier to control sediment.
4. Approximately 200 mm of topsoil will be removed to build a compacted gravel working pad. The topsoil will be stored on site for later restoration.

5. After the site is secured, a qualified biologist will relocate fish from the work area in the river.
6. The contractor will then repair the east abutment and the centre pier to prepare them for the new bridge.
7. Similar access and environmental protection measures will be installed on the west side, including a gravel path to the west abutment.
8. The west abutment will be repaired and prepared to receive the new bridge.
9. Once all concrete repairs are completed, the prefabricated bridge span will be delivered from the west side via Powell Road.
10. The bridge truss will be slowly pushed across the river from the west side to the east side using the incremental launching method. Temporary sliding bearings and counterweights will be used to safely move the bridge across the centre pier.
11. When the bridge reaches its final position, it will be lowered onto permanent bearings, and the temporary bearings will be removed.
12. After the bridge structure is in place, the contractor will install the stringers, railing panels, and 50 mm thick deck boards.
13. A threshold plate will be installed to cover the gap between the bridge and the abutments.
14. Safety railings will be installed at the bridge approaches using concrete Sono tube foundations.
15. Finally, the bridge handrails will be installed.

7.5.1 Site Access

Access to the east bank at the level of the river would require extensive clearing and grading to create a ramp from the abandoned rail bed and forested slope. Using a private property located to the southeast of the existing rail embankment, would allow for easier access. The access through the adjacent owner's land has been deemed feasible and will result in relatively minor environmental impacts. An agreement will need to be established to permit use of this access if possible. It is anticipated that a temporary access road can be constructed using a combination of granular material and timber swamp mats. Trees will be retained along this route, with a few potential tree removals required near the proposed staging area within the east floodplain. Without access through the noted property, trees will need to be removed, and a ramp constructed from the embankment in the southeast quadrant. This is feasible but will have both financial and environmental implications and has not been considered in this Report.

Access to the west bank at the river elevation for large equipment seems impractical. There is a steep and narrow existing access trail to the north of the rail embankment on the west side. It is steep and is not considered to be stable for large equipment. Extensive clearing and grading could create an access ramp.

To use the abandoned rail embankments (trail) for access to the east and west abutments, pruning and removal of some trees overgrowing the embankment may be required. The abandoned rail (trail) will be used for the bridge.

8. Environmental Impacts, Mitigation Measures, Compensation, And Monitoring

8.1 Surface Water

The following section discusses the impact assessment, based on the preferred pedestrian bridge design and construction works being considered to date.

There will be no additional permanent instream footprint associated with the preferred bridge design. The two-span bridge will extend over the river on the centre pier. The west instream pier and the east piers will remain as is and not be incorporated into the final bridge design. The delaminated outer surface of the centre pier will be removed, and concrete restored to match the existing pier footprint.

In order to access the pier to conduct the concrete works, it is currently proposed that a temporary rock fill causeway be built instream between the centre pier and the eastern shoreline of the Conestogo River, at a 1:1 slope. Geotextile will be present along the bottom of the rock fill, to aid in the removal of the material and minimize disturbing existing substrates upon removal. The causeway footprint will measure approximately 3 m wide (road base) and extend out on a 1:1 slope to ensure a stable access and elevated approximately 30 cm above the water level. Turbidity curtains will be installed instream upstream and downstream of the work area to keep existing substrates undisturbed, within the work area.

Additional temporary fill will extend around the pier, within 3 m of the base, at a 1:1 slope. As water depth varies, total temporary rock fill area (causeway and pier) is estimated to measure approximately 240 m^2 (below the high-water mark).

8.2 Climate Change Considerations

Climate change considerations for the proposed bridge includes ensuring that the works are designed and built to include resiliency to more extreme storm event and reduction of carbon emissions both during and after construction. Considerations include avoiding the idling of construction equipment, and ensure equipment is in good working order to reduce inefficiencies in the operation of the equipment, in addition to increasing tree and vegetation cover from existing conditions will be considered in the next phase of the design. At this stage, it is anticipated that the proposed pedestrian bridge does not negatively impact climate change, nor it will be affected by climate change effects.

8.3 Source Water Protection

Based on the MECP Source Protection Information Atlas, the project area is located within the Grand River Source Protection Area. The project area is not within a designated vulnerable area or in the vicinity of other at-risk drinking water systems. Due to the nature of this project and proposed works, permanent negative impacts to existing and future sources of drinking water are not anticipated.

8.4 Aquatic Habitat Impacts: Fisheries

The habitat present within the 240 m^2 area of the temporary instream works supports a mix of cobble, boulder and gravel substrates overlain by silt. The habitat impacted is characterized as flat morphology, with a transition to pool habitat downstream of the crossing. There is some instream vegetation growing along the bank edge and the banks support herbaceous species and grasses. Impacted herbaceous vegetation will be restored with a native seed mix after construction.

Within the work areas identified, there is potential for two SAR fish species, Silver Shiner and Black Redhorse to be present. Turbidity curtains will be installed instream to limit downstream impacts during pier rehabilitation. The instream habitat encompassed by the curtains is estimated to be 345 m^2. This area will not be available for fish use during construction. A fish relocation will be required within this work zone to ensure no fish are trapped. The affected habitat does not appear to support spawning habitat for the SAR species and Silver Shiner prefers faster water, which is not present here at this location. However,

conducting instream work outside of spawning window for these species will further mitigate potential indirect impacts to all fish species in the Conestogo River.

Silver Shiner habitat encompasses the wetted width of the watercourse, the associated meander belt width, and an additional 30 m of terrestrial habitat. At the project location, the meander belt width was estimated based on the outer limits of the upstream and downstream meanders. Within the delineated Silver Shiner habitat, approximately 3,254 m² of habitat above the high-water mark is anticipated to be temporarily impacted by the proposed works. Including habitat both below and above the high-water mark, the total area of Silver Shiner habitat affected is estimated at 3,599 m². Permanent impacts within Silver Shiner habitat are expected to be limited. No permanent increase in the project footprint below the high-water mark is proposed, as the existing pier will be repaired on a like-for-like basis. While temporary disturbance and loss of riparian and floodplain vegetation are anticipated, these areas will be reseeded and replanted within the same growing season to restore vegetative cover.

The two mussel species identified by DFO may also be present in the instream work area and vicinity. Although live mussels have not been observed, appropriate substrates for these species are present and as such, minimizing the instream work area is recommended. A mussel relocation will be required prior to laying down the rock fill around the pier and for the temporary causeway, with methods defined in future permitting, at the detailed design phase of the project.

No instream work is to occur between October 1- July 15.

8.5 Terrestrial Habitat Impacts: Vegetation and Vegetation Communities

There will be both temporary and permanent impacts to vegetation as some tree removals will be required along the abandoned railway bed alignment to accommodate the trail and bridge works, as well as along the temporary access roads described above. Access from the east side of the river is required to complete the pier reconstruction work. Several options for access were evaluated. The abandoned railway bed is elevated with steep slopes, and although trails are present at the base of the slope, reaching them would require traversing the steep, treed embankment through mature maple forest. Additional fill would also be required to establish safe access from this approach.

The landowner managing the property immediately south of the railway right-of-way has offered access through their pasture, which is characterized as cultural woodland. This option minimizes tree removals and follows an existing disturbed area where vegetation has already been impacted by cattle and vehicular activity. The approximate area of cultural woodland affected is estimated to be 772 m² however the access route will be aligned to avoid tree removals and pruning to the extent possible.

Near the river crossing at the end of the proposed access route, a laydown area is proposed to store concrete and restoration materials and to provide a small parking area. The working pad is estimated to measure approximately 13 m × 15 m (195 m²), resulting in impacts to cultural meadow habitat. Two trees may require removal near the east end of the laydown area; however, the most open portion of the floodplain was selected to minimize tree disturbance. No sensitive or rare vegetation species were identified within the proposed work area. To facilitate site restoration following construction, geotextile fabric overlain with granular material will be placed within the working pad footprint to allow for easier removal after completion of works.

There are a limited number of trees requiring removal; however, it is recommended that the site be surveyed in the winter prior to construction works to confirm pruning and removals. Doing this work in

the winter would also avoid breeding bird and material roosting bat windows, as referenced below in Section 8.6.

8.6 Wildlife and Wildlife Habitat

Some habitat will be removed along the already disturbed railway footprint and along the temporary access roads required for construction as discussed above. These impacts are considered minor and are primarily associated with edge management (pruning, cultural meadow). No permanent impacts to floodplain vegetation are expected.

There is potential for impacts to wildlife during the construction stage due to increase traffic, noise, and disturbance to wildlife habitat. To minimize risks, all construction areas and access roads should be cordoned off with fencing to reduce wildlife collisions and encounters within the work zone.

To protect nesting birds during the breeding season, vegetation removal should be avoided between April 1 and August 31 of any given year. If clearing is necessary during this period, nest sweeps should be conducted by a qualified avian biologist. No clearing may occur if active nests are identified.

Based on surveys conducted to date, the existing piers are not anticipated to support bird nests or roosting bats. To protect bats in the maternal roosting period, all cavity tree removals should be avoided between March 15-November 30 of any given year as identified by MECP (March 20, 2026 correspondence).

8.6.1 Displacement of Rare, Endangered Wildlife or Significant Wildlife Habitat

Although one potential bat maternal roosting tree was noted in a previous study, the *Species at Risk Bat Monitoring Results* (NRSI 2023b) near the laydown area, it does not appear that this tree will require removal.

Eastern Wood Peewee (Special Concern species) is considered a probable breeder within the forest in the Study Area. Limiting impacts to treed habitats and conducted removals outside of the MBCA has been recommended.

8.7 Cultural Heritage Environment

8.7.1 Archaeological Resources

A Stage 1 Archaeological Assessment has been completed covering the project area. The Stage 1 assessment identified several indicators of archaeological potential near the study area, including Powell Road, Wellington Road 86, and the historical Guelph & Goderich Railway. No evidence of potential for deeply buried archaeological resources was identified through background research. The assessment also considered existing land conditions that may have removed or reduced archaeological potential, including previous grading, development, permanently wet areas, exposed bedrock, and steep slopes. No previously assessed areas requiring no further archaeological work were identified within the property. The property survey and review of historical and environmental information identified several areas of no archaeological potential, while the remainder of the study area was determined to retain archaeological potential and therefore required further assessment.

The Stage 2 assessment did not identify any archaeological resources within the study area; therefore, no further archaeological assessment is recommended for the assessed lands. The remainder of the property

was not assessed as part of the current project and does not require further assessment unless additional site alterations are proposed in the future. Any archaeological potential modelling and associated recommendations for these areas should be completed at that time in support of the proposed works.

8.7.2 Built Heritage Resources and Cultural Heritage Landscapes

Preservation does not preclude the construction of a new superstructure. Unterman McPhail Associates, 2017 recommended the following mitigation measures:

- The visual character of the right-of-way be conserved by incorporating sensitive landscape designs into future uses of the route and by means of public interpretation programs.
- Preservation of individual structures be undertaken to maintain the landscape value of the right-of-way.
- Future planning for the right-of-way leading to physical changes should consider the assessment, preservation, conservation and interpretation of heritage resources associated with site, landscapes and archaeology throughout all phases of the design process.

All the recommendations above have been considered in selection of the preferred solution and design concept and will continue to be considered in the next phases of the project design.

8.8 General Project Planning and Mitigation

Construction related impacts can first be mitigated by minimizing the extent of disturbance wherever possible through coordination of project related planning, including design, staging, and scheduling. Mitigation related to staging of construction includes prioritizing project components in such a way that disturbance within the same construction area would be minimized (i.e. coordination of all disturbance activities in a manner that reduces the impact at these locations).

- Minimize vegetation and tree removals through construction extents by strategic positioning of the design footprint and storage/laydowns areas within cultural/previously disturbed or open areas to the extent feasible;
- Minimize construction area to the extent possible;
- Use appropriate tree protection/ESC measures for any work around tree resources within the project area to help protect trees identified to be retained;
- No vegetation removal is to occur between April 1 to August 31 of any given year in order to protect birds afforded protection under the *Migratory Birds and Convention Act* (MBCA);
- No instream work is to occur between October 1- July 15 to protect both spring and fall spawners (OMNR 2013; DFO 2013);
- The initiation of instream work should occur when freshwater mussels (if present) are easily detected (not burrowed deep in substrate). It is anticipated that agencies will specify that a mussel salvage will be required prior to instream work occurring. Salvage would occur when water temperatures are higher than 16 °C, which may between June 1-September 30th in Ontario (Mackie et al., 2008), however the timing of this activity is also dependent upon the fisheries window restriction; and,
- To protect bats in the maternal roosting period, all cavity tree removals are to be avoided between March 15-November 30 of any given year (timing window subject to approval by MECP).

8.8.1 Mitigation Measures during Construction

The extent of construction related activity should be effectively isolated and secured from adjacent natural lands through the installation of erosion and sediment control measures to mitigate the potential for silt and sediment entry into the river and adjacent lands. The erection of silt fencing around the laydown area will also discourage the entry of wildlife using the floodplain area (i.e. turtles, amphibians, small mammals) into the work zone, thereby minimizing incidental encounter and the risk of incidental mortality during construction.

A standalone Erosion and Sediment Control (ESC) Plan should be developed and implemented for the site that minimizes risk of sediment transport into adjacent retained vegetation communities or to the aquatic habitat of the Conestogo River during all phases of the project. This plan should include:

- Methods to isolate the construction area;
- Timing of effective ESC measures, where ESCs shall be installed before starting work to prevent the entry of sediment into the watercourse or adjacent areas. Inspect regularly during the course of construction and conduct regular maintenance and repairs as necessary;
- Clearly identified staging areas; and,
- Develop a plan to dispose of any water accumulated onsite from pooled stormwater.

The following construction notes are recommended on the ESC plan (to be developed during Detail Design):

Tree Protection

- Trees shall be felled to avoid damaging standing trees that are to be preserved. No trees shall be felled into or across the river;
- Any canopy and root pruning required should be completed in accordance with good arboricultural practices; and
- Tree protection perimeter ESC control should be installed to protect preserved trees along the access and laydown areas.

Instream/near stream works

- No fording of the Conestogo River shall occur, with the exception of accessing the river via the temporary causeway for the pier restoration works;
- All activities, including maintenance procedures, shall be controlled to prevent the entry of petroleum products, debris, rubble, concrete or other deleterious substances into the water;
- Vehicular refueling and maintenance shall be conducted a minimum of 30 metres from the water. Recommend that a dedicated fueling area be shown on the ESC plan;
- A turbidity curtain shall be installed around the instream work area (upstream and downstream) and tie into the existing east bank. The curtain is to be installed prior to any instream work commencing and removed only after instream materials have been removed from the river;
- Ensure clean-up measures are suitably applied so as not to result in further alteration of the bed and/or banks of the watercourse;
- Ensure that all equipment which comes in contact with water is free of fluid and leaks and is externally cleaned / degreased and fuel lines covered.
- For machinery used on the causeway, these vehicles should be using biodegradable lubricating oils;

- The proponent/contractor shall monitor the weather several days in advance of the onset of the project to ensure that the works will be conducted during favourable weather conditions. Should an unexpected storm arise, the contractor will remove all unfixed items from the Regional Storm Flood Plain that would have the potential to cause a spill or an obstruction to flow, e.g., fuel tanks, porta- potties, machinery, equipment, construction materials, etc.
- Fish and Mussels stranded within the instream work area (defined by the upstream and downstream limits of the turbidity curtain) shall be captured and released live in suitable habitat outside of the work area under the supervision of a qualified aquatic biologist. *A License to Collect Fish for Scientific Purposes* (MNR) and a *Species at Risk Permit* (SARA) from the DFO are both required in order to conduct this work given the presence of SAR fish species.

Other ESC and Protection Measures

- Heavy duty non-woven filter fabric (Terrafix 270R fence or equivalent) is recommended as a sediment control around the laydown area;
- For access roads, existing trails will be used to the extent possible. Where access road upgrades are required (i.e. addition of granular material), this material shall be removed at the end of construction;
- All dewatering/unwatering shall be treated and released to the environment at least 30 metres from the river and allowed to drain through a well-vegetated area. No dewatering effluent shall be sent directly to a natural area or allowed to drain onto disturbed soils within the work area. These control measures shall be monitored for effectiveness and maintained or revised to meet the objective of preventing the release of sediment laden water;
- Ensure that a Spills Management Plan (including materials, instructions regarding their use, education of contract personnel, and emergency contact numbers) is on-site at all times for implementation in event of an accidental spill during construction. An emergency spill kit shall be kept on site. A response plan shall also be developed that is to be implemented immediately in the event of a sediment release.
- All decommissioned construction materials and debris shall be disposed of offsite in accordance with all federal, provincial and municipal regulations;
- All disturbed areas shall be restored to grade and re-vegetated with native seed mixes; and
- An Environmental Monitor shall be on site and provide advice, to ensure that activities that could have a negative impact to the natural environment are effectively mitigated as construction proceeds, as defined in future permits and approvals.

8.9 Permits and Approvals

The anticipated permits and approvals required prior to construction are summarized in Table 5. Permit and approval requirements will be confirmed and obtained prior to construction through continued consultation with the applicable regulatory agencies.

Table 5 Summary of Potential Environmental Permits and Approvals

Legislation	Permit/Approval/ Authorization	Permit or Approval Required	Agency Consultation/ Next Steps
Fisheries Act	Fisheries and Oceans Canada (DFO) administers the Fisheries Act. A Fisheries Act Authorization (FAA) is the main approval. Letters of Advice (LOA) may be provided when Authorization is not applicable.	Previous agency correspondence indicates that works may be accepted via A Letter of Advice (LoA). However, as Critical habitat for Silver Shiner is present, it is possible that FAA may be required.	A Request for Review (RfR) was updated and has been resubmitted in 2026. At the time of writing this report, decision for FAA vs. LOA was still unknown.
Migratory Birds Convention Act	Not identified.	Not identified with appropriate mitigation (timing mitigation for tree removals).	N/A
Species at Risk Act	Fisheries and Oceans Canada (DFO) is responsible for administering SARA for aquatic species (fish, mussels) A SARA permit is the main approval. Note: Terrestrial species only protected on Federal lands and permits administered by Environment and Climate Change Canada (ECCC).	Required for in-water works or works below the high-water mark. Also required for any works within meander plus 30m of high-water mark for Silver Shiner. Federal SAR species (THR/END)/ habitat impacted: Silver Shiner, Black Redhorse, Permit is anticipated.	A Request for Review (RfR) was updated and has been resubmitted in 2026. SARA permit pending in the Fall of 2026.
Canadian Navigable Waters Act	Conestogo River is considered navigable. Instream temporary works could be described as a Minor Works Order SOR/2021-170.	To ensure navigation is not unreasonably interfered with by construction activities.	Approval granted on July 21, 2026.

Legislation	Permit/Approval/ Authorization	Permit or Approval Required	Agency Consultation/ Next Steps
Environmental Protection Act Regulation 63/16 Registrations under Part II of the Act- Water Taking	Administered by the Ministry of the Environment, Conservation and Parks (MECP) Environmental Activity and Sector Registration EASR (Water taking for Construction Site Dewatering) required for groundwater taking over 50,000 Litres on a single day under normal operation. * Permit to Take Water (PTTW) submissions no longer required. All water taking over 50,000 L is registered.	Not required for this project. Limited ground excavation.	N/A
Endangered Species Act Regulation 242/08	Ministry of the Environment, Conservation and Parks (MECP) administers the Endangered Species Act, 2007 (ESA) in Ontario. ESA permit> Species Conservation Act (transition period)	Potential Provincial SAR species (THR/END)/ habitat impacted: Silver Shiner, Black Redhorse, Wavy Rayed Lampmussel, Bat species.	Follow up with MECP completed in early 2026 via the Information Gathering Form (IGF)- ESA process. Permit deemed not required as ESA no longer valid. See below.
Species Conservation Act Regulation 75/26: Registerable Activities	In March 2026, the Species Conservation Act (SCA) replaced the ESA. Under the new legislation, there is no protection for SC species, as well as federally listed (THR/END) fish/mussels. Applicable to this project, Wavy-rayed Lampmussel (THR Provincially and SC	No permit required. Works are considered a 'Registerable Activity'.	Notice of Activity to be filled and completion of a Conservation Plan completed prior to construction. Wavy-rayed Lampmussel will be **Registered under the new Species Conservation**

Legislation	Permit/Approval/ Authorization	Permit or Approval Required	Agency Consultation/ Next Steps
	federally), will be protected, as well as bat species under the new SCA.		**Registry and a Conservation Plan** produced prior to construction.
Conservation Authorities Act Ontario Regulation:41/24	For project works within a regulated area. GRCA permit Floodplain works, and the instream causeway work to be reviewed with this agency, with regards to flood risk and protections. Wetland impacts also reviewed.	Permit Required	GRCA permit application submitted at detail design. GRCA permit issued in 2026.
Region of Waterloo Woodland Conservation Bylaw 08-026	Several permits exist: Good Forestry Practices Permit, Diameter Limit/Basal area Permit, Woodland Removal Permit	By-Law not applicable for this project as municipality activities are exempt from by-law.	No formal arborist report required however inventory of tree removals will occur prior to works.
Public Lands Act (1990)	Permission to construct on known public lands in Ontario	Work Permit to Construct required	MNR contacted and is currently in consultation with Indigenous communities
Lakes and Rivers Improvement Act	Approval of the bridge design as it relates to water flow	Approval required	MNR contacted and is currently in consultation with Indigenous communities
Fish and Wildlife Conservation Act (1997)	Ministry of Natural Resources (MNR) to allow for handling of fish during fish rescue during construction in-stream works	Licence to Collect Fish for Scientific Purposes required	An application for this permit will be submitted to MNR prior to instream works commencing.

To date, a permit via SARA is pending and there is a possibility that a FAA permit or a Letter of Advice will be issued by DFO. Ontario Regulation 75/26 of the SCA is applicable for activities within habitat of Wavy-

rayed Lampmussel, where harm to a species at risk or its habitat may be permitted without an SCA permit. The works must be registered via the Species Conservation Registry prior to construction. As part of the Registration process, a Conservation Plan must also be completed that identifies the works, adverse effects, mitigation measures to minimize adverse effect as well as conservation measures to minimize any residual adverse effects, as applicable.

Future natural heritage work on this project will be related to refining tree impacts, completing all remaining paperwork required under the SCA and securing fish/mussel permits via the MNR. Restoration and compensation plans and monitoring will also be refined as final permitting/approvals with the DFO is completed.

Permits from the MNR are still pending as noted above.

8.10 Compensation, Restoration and Enhancement Opportunities

Compensation for the loss of vegetation and wildlife habitat or the restoration of degraded areas can provide a net benefit to the natural features and functions that contribute to an overall natural heritage system. All areas impacted by the construction works will be restored to existing condition or better. Native seed with a cover crop will be applied to all disturbed areas. A restoration plan has been established and comprised of native shrubs and trees installed within the floodplain around the staging area and along the banks of the Conestogo River. A detailed tree removal plan has not been completed for this project. It is anticipated that the construction access road will be sited to avoid trees to the extent possible. There will be some pruning also required along the railway trail and a review will be completed to confirm tree removals and pruning required prior to construction start.

Tree pruning and removals are recommended to occur in the winter prior to the start of site works, outside of the breeding bird and maternal roosting windows for bats. To protect bats in the maternal roosting period, all cavity tree removals are to be avoided between March 15-November 30 of any given year. Vegetation removal should also be avoided between April 1 and August 31, inclusive, to minimize impacts on nesting birds during the breeding season. If vegetation clearing is required during this period, a nest sweep should be conducted by a qualified avian biologist prior to clearing. No vegetation clearing shall occur where active nests are identified. Should additional trees be identified for removal, appropriate compensation will be provided and the restoration plan updated.

A draft restoration plan is currently being reviewed by agencies at the time of this report submission, assuming the removal of up two trees.

8.11 Proposed Construction Monitoring

Contract tender documents will specify mitigation requirements. An experienced field representative will monitor construction to ensure erosion control and restoration meet contract specifications while minimizing impacts on the environment, community, and nearby property owners. Inspections will verify mitigation measures and identify corrective actions.

The pending DFO permit(s) and SCA registration will include the provision of qualified professionals conducting fish and mussel salvage works.

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