



Infrastructure Services Staff Report

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Reviewed By: Jared Puppe, Director of Infrastructure Services
Final Review: Senior Management Team

Recommendation:

That the Council of the Township of Woolwich, considering Report IS21-2023 respecting Township Historic Bridge Updates, receives the report for information purposes.

Background:

The Township currently owns three steel truss bridges that are almost all over 100 years old in age. Due to the long standing nature of these structures they are considered to have the potential for heritage significance. A 40-year-old threshold is used as a guiding principle when considering cultural heritage resources in the context of improvements to specified areas. While identification of a resource that is 40 years old or older does not confer outright heritage significance, this threshold provides a means to collect information about resources that may retain heritage value.

All three bridge structures were subject to an Environmental Assessment (EA) review that commenced in 2017 when Staff issued request for proposal (RFP) 2017-17. The review of the structures was subsequently awarded to GM BluePlan Engineering Limited (GM BluePlan) in June of 2017 through Staff Report [E34-2017](#). Staff proceeded through the EA process separately for each of the three structures, understanding that each structure was located in a discrete area of the Township.

Glasgow Street South Bridge (Conestogo Bridge)

Staff brought forward the first recommendation report [IS01-2019](#) with the intent to finalize the EA for the Glasgow Street South Bridge, or Structure #320144, in late 2019. The preferred alternative for the structure was to rehabilitate for vehicle use with ultimate

closure. The majority of the rehabilitation budget (~83%) was funded through upper government grants. Since the preferred alternative identified ultimate closure of the structure, once bi-annual inspections identify that the bridge is no longer safe, it will be closed to all modes of traffic. As part of the EA, a Cultural Heritage Evaluation Report ([CHER](#)) as well as a Heritage Impact Assessment ([HIA](#)) were both carried out for the structure due to its age. Additional historic details on the Glasgow Street South bridge are included below.

The Glasgow Street South Bridge has a north-south orientation 250m south of Sawmill Road, in the historic Mennonite community of Conestogo. It is a pin-connected Pratt through truss bridge built in 1886 by the Hamilton Bridge and Tool Company. In 1928, it was moved to its current location to carry a single lane of predominantly vehicular and horse and buggy traffic across the Conestogo River in two continuous spans with a total crossing length of 80.4m.

Since 1991 the bridge and immediate area have been rehabilitated five times. The rehabilitations completed on and around the structure following 1991 are summarized below:

- 1991 – new 2” x 6” wood laminate deck along with several stringer replacements;
- 1997 – new 2” x 6” wood laminate deck with the addition of a tar and chip riding surface;
- 2009 – the bridge was closed due to safety concerns caused by overloading of the structure, the bridge was reopened after the completion of the re-tensioning of 15 diagonal truss members and repair of 2 pin connections, signage improvements, installations of speed humps, installation of 3.0m height restriction barriers, and spot welding to the existing bridge railings;
- 2010/2011 – new 2” x 6” wood laminate deck with tar and chip riding surface along with isolated stringer replacement;
- 2017 – Stone armoring of the south-west embankment to protect the road;
- 2018 – Road repairs after flooding occurred.
- 2021 – Township received upper government grant funding to rehabilitate the bridge. The rehabilitation included replacement of structural members and a new wood deck with tar and chip. The bridge was also converted to a one way structure in an attempt to extend its useful life by reducing the amount of traffic utilizing the structure.

It should also be noted that in June 2017, January 2018 and February 2018 water overtopped the roadway south of the Glasgow Street South Bridge and the road/bridge was required to be temporary closed.

The structure is wholly located within the Township’s Ward 3 boundary. The Glasgow Street South bridge is currently open for southbound traffic into Waterloo.

Middlebrook Place Bridge Steel Truss Bridge (Chambers Bridge)

The second structure recommendation report was presented to Woolwich Council in January 2020 ([IS01-2020](#)), with a recommendation to permanently close the Middlebrook Place Steel Truss Bridge and eventually remove it. Since this structure is included as a joint maintenance structure with the Township of Centre Wellington, as part of the Boundary Road Agreement between the two Municipalities, Centre Wellington Staff also took a recommendation report to their Council and also achieved the same endorsement. As a result of the two Municipalities agreeing, the EA was finalized as a closure and removal. Due to the continued use of the structure by cyclists and pedestrians, barricades were erected in Q1 of 2021 to remove all access. Additional historic details on the Middlebrook Place Steel Truss bridge are included below.

The Chambers Bridge was originally constructed in approximately 1845 as a wooden bridge over the Grand River. Subsequently, in 1905 the bridge was replaced at the same location with another structure. The Middlebrook Steel Truss Bridge (#180160), as it is currently known, was originally constructed in the early 1930's, and was moved into its current location in 1946, where it replaced the old 1905 structure. Prior to the current structure being moved into place a new concrete abutment on the west side of the river was constructed to receive the steel structure. Since the bridge was moved into its current location the structure has been rehabilitated approximately three times and closed twice. Due to the age of the Middlebrook Place steel truss bridge, [CHER](#) and [HIA](#) reporting were undertaken for the structure. The rehabilitations completed to the bridge are summarized below:

- 1991 – wood laminate deck was repaired;
- 1992 – areas of corrosion were repaired, and some steel stringers were replaced;
- 1994 to 2002 – the bridge was closed;
- 2002 – new wood laminate deck installed, select steel stringers replaced, approaches restored, additional diagonal braces installed, and upgrades were completed to the guiderail system;
- 2013 – bridge closed again due to significant stringer failure;
- 2021 – barricades installed to prevent unauthorized access.

The structure is located on a boundary road with Centre Wellington and straddles Wards 2/3.

Peel Street Bridge (Winterbourne Bridge)

The process to finalize the EA for the Peel Street Bridge in Winterbourne required three Staff reports, and spanned approximately 4 months, between November of 2020 to February of 2021. Staff's original recommendation included the rehabilitation of the bridge for all uses, but only if an external funding source was obtained, otherwise the bridge would remain closed until its eventual removal once deemed unsafe ([IS26-2020](#)). Council deferred a decision on the initial recommendation, and in a subsequent meeting

requested that Staff review a new single lane structure to replace the existing steel truss bridge. Staff prepared another recommendation report to proceed with an EA for a new structure as the preferred alternative ([IS29-2020](#)). Again, Council deferred a decision on the matter to a later date. Due to the public outcry that preceded Staff's recommendation to permanently close the existing structure, Staff brought an additional recommendation report that provided three options for Council to consider ([IS06-2021](#)). Initially, Council supported the recommendation to proceed with a new structure to replace the steel truss bridge at Committee of the Whole. Subsequently at the next Council meeting, Council had a change of heart and the decision was ultimately changed to support the pedestrian conversion alternative, which is how the EA was eventually finalized as a pedestrian conversion.

As part of the detailed design exercise to convert the Peel Street Bridge into a pedestrian only structure, alternatives were reviewed with the public to determine the preferred decking type, and alignment, as well as the preferred railing style. The recommended design was presented to Council through staff report [IS12-2022](#), which was endorsed by Council. Additional historic details on the Peel Street bridge are included below.

The Peel Street Bridge, also known as the Winterbourne Bridge or Structure #270148, was constructed in the early 1900's and is a two-span steel truss bridge located on Peel Street, 600m west of Katherine Street in Winterbourne. The structure straddles Wards 2/3. The bridge has been closed since 2017 due to concerns regarding its structural adequacy and safety.

As part of the EA process, a [CHER](#) and [HIA](#) were completed for the Peel Street bridge. Since the bridge was constructed, it has been rehabilitated multiple times and closed twice. The rehabilitations completed to the bridge are summarized below:

- 1971 – timber deck was replaced;
- 1983 – new 2x4 laminated treated timber deck installed, along with some structural steel repairs;
- 1987 – rehabilitation of the concrete piers;
- 1990 – reconstruction of the east abutment;
- 1994 – miscellaneous structural steel repairs;
- 2001 – the bridge was closed due to increased use and damage as a result of the closure of the Conestogo Bridge, the 2x4 laminated timber deck was replaced with the aid of the Mennonite Community and the bridge was subsequently reopened;
- 2017 – bridge closed again due to significant structural issues;
- 2021 – barricades installed to prevent unauthorized access.

Comments:

Glasgow Street South Bridge (Conestogo Bridge)

As mentioned previously, the Glasgow Street South Bridge was rehabilitated and reopened for one-way vehicular traffic, as well as contraflow cycling and horse and buggy traffic in 2022. With the reduction in vehicular traffic that is permitted to use the structure, Staff anticipate that the structure has the potential to remain open for approximately 20+ years before another major rehabilitation may be required. Unfortunately, steel truss bridges were not originally designed to carry today's larger commercial/agricultural vehicles, and as such, this bridge experiences intermittent overloading as well as oversized vehicles that can damage the bridge. A prime example of misuse of the structure occurred soon after the bridge reopened again in 2022, when farm equipment damaged the height restrictor on the north end of the bridge. Staff will continue to undertake Ontario Structure Inspection Manual (OSIM) reviews of the bridge every two years to determine the structure's condition. Once the bridge is deemed to be unsafe through an engineer's review, the intent is to close the bridge.

Middlebrook Place Bridge Steel Truss Bridge (Chambers Bridge)

The EA for the Middlebrook Place Steel Truss Bridge was finalized with the preferred alternative to permanently close and remove the structure. The Township of Centre Wellington's Council recently passed a motion to have their Staff explore alternatives with Woolwich to maintain the river crossing for pedestrian uses. Woolwich Council also passed a motion to have Staff continue to communicate with Centre Wellington Staff and report back to Council with additional information. Due to the increased public interest in the Middlebrook Place Steel Truss Bridge, Staff had GM BluePlan revisit the structure to undertake an additional structural review as well as coring the existing concrete footings to determine if they could be reused. The structural review completed shows that the bridge is continuing to degrade at a fast rate. Most notably, steel stringers that the wood deck rests on have completely failed in the end bays, causing the wood deck to lose contact with the stringer top flanges. GM BluePlan's technical memorandum for the Middlebrook Steel Truss Bridge is included in Appendix A.

If the bridge is rehabilitated, replaced, or removed, at a minimum, the bridge will require turn around areas to be installed at either end of the structure to ensure an area is provided for vehicles to turnaround safely. Should the structure be removed or replaced, Staff intend to commemorate the structure, as was recommended in the Cultural Heritage Evaluation Report/Heritage Impact Assessment, through photo documentation as well as commemorative plaquing. Staff will work with the Townships Heritage Committee, as well as the public, to ensure that the structure is commemorated appropriately.

Peel Street Bridge (Winterbourne Bridge)

The Peel Street Bridge in Winterbourne is currently closed to all modes of traffic, and is waiting for budget approval to move ahead with the preferred alternative to convert the

existing structure for pedestrian use. Staff have already acquired the land for the turnaround on the west side of the Grand River, and are actively working to acquire the land for the east side turnaround. Unfortunately, the Township continues to spend time and resources on this closed structure in the interim, as the current barricades have been damaged several times in an effort to access the structure.

Overall Public Consultation

The project team undertook public consultation for the three structures independently to ensure that the public had opportunities to provide feedback for each structure. Initial public meetings for each structure took place at the Townships administration building, in Elmira. Subsequent public meetings for Peel (Foundation Christian School, 28 Katherine Street South, West Montrose) and Middlebrook (Bethel Mennonite Church, 8 Line West, Elora) were hosted at venues closer to the actual structures location in an attempt to glean additional public feedback.

All of the EAs were completed as Schedule 'B' projects, which require two mandatory points of contact with project stakeholders (residents, review agencies, indigenous communities). The first point of contact was completed by issuing the notice of study commencement, where interested parties were informed about the project and requested to provide feedback. Staff also undertook two public consultation centres (PCC) for each structure, for a total of six engagement opportunities in total for the three structures. All notices for the structures were posted in the Woolwich Observer, and in the case of the Middlebrook structure, the notices were also posted in the Wellington Advertiser. Staff were also cognisant that the structures has the potential to impact the local Mennonite Community, and as a result specific targeted consultation was undertaken. Interestingly, through the consultation, Staff learned that a bridge in Centre Wellington on Weisenberg Road was more important to the community that the Middlebrook steel truss bridge, since the Centre Wellington structure provides direct access to a local meeting house. Responses from the community in relation to the Peel Street bridge were all centered around maintaining a crossing for vehicular and agricultural use.

Interdepartmental Impacts:

Pedestrian only structures are typically a part of Recreation and Community Services asset portfolio. Should the Middlebrook Steel Truss Bridge be converted to a pedestrian structure, due to the size and complexity of these existing river crossings, Infrastructure Services (IS) will continue to plan for and maintain the Middlebrook Place bridge as well as the Peel Street bridge.

Financial Impacts:

Since recent presentations to Council from interested community groups have provided their own cost estimates to undertake removals and replacements, Staff requested that GM BluePlan review and update the current cost estimates for removal as well as for a

pedestrian replacement. Updated costs are included below, as well as the anticipated ongoing maintenance costs for a new pedestrian structure.

2023 Middlebrook Place Removal Cost

Preparation and Removals	\$340,000.00
Road Works	\$105,000.00
Sub total	\$445,000.00
Engineering (20%)	\$89,000.00
Contingency (15%)	\$66,750.00
Geotechnical and Excess Soil	\$15,000.00
Total	\$615,750.00

2023 Middlebrook Place Pedestrian Replacement Cost

Preparation	\$203,000.00
Structure Works	\$1,145,000.00
Road Works	\$138,000.00
Sub total	\$1,486,000.00
Engineering (15%)	\$222,900.00
Contingency (15%)	\$222,900.00
Geotechnical and Excess Soil	\$15,000.00
Total	\$1,946,800.00

Annual maintenance of a new pedestrian structure would consist of yearly bridge cleaning and washing (~\$1,000), as well as a deck replacement in approximately 20 years, at a cost between \$15,000 to \$20,000.

As the Peel Street bridge conversion project was deferred during the 2023 budget deliberations, Staff have taken to opportunity to update the budget for inclusion in the 2024 capital budget.

2023 Peel Pedestrian Conversion Budget

Pedestrian Conversion	\$2,250,000.00
Turnarounds	\$445,000.00
Engineering/Inspections	\$155,000.00

Total	\$2,850,000.00
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Strategic Plan Impacts:

The completed Environmental Assessments and associated preferred alternatives for the tree steel truss bridges with Woolwich supports the Township of Woolwich’s strategic direction to “*Manage and maintain all municipal infrastructures with an emphasis on continuous improvement and greater efficiencies*”, with a goal to “*Optimize the Use of Municipal Infrastructure*”.

Conclusion:

The Township currently owns three steel truss bridges that have the potential for heritage significance due to their age. Currently, only one of the three structures is open for use, while the other two are barricaded and remain closed. The EA for Peel Street currently directs staff to convert the bridge for pedestrian use, while the EA for Middlebrook directs staff to remove the structure without replacement.

Attachments:

1. 2023 Middlebrook Place Bridge – Technical Memorandum