Glasgow Street South Bridge
Schedule C Phase 2 Consultation
Municipal Class Environmental Assessment
Public Consultation Centre
Township of Woolwich
Public Consultation Centre

Glasgow Street South Bridge

Schedule C – Phase 2 Consultation Municipal Class Environmental Assessment

Township of Woolwich Municipal Office Council Chambers

February 20, 2018
5:30 to 8:00 pm
Presentation Summary

➢ Overview of EA Process
➢ Study Objectives
➢ Problem and Opportunity Definition
➢ Background Studies
➢ Alternative Solutions
➢ Evaluation of Alternative Solutions
➢ Preliminary Recommended Solution
➢ Next Steps (EA Process and Timeline)
Truss Bridge
Alternative Solutions
1) Do Nothing
2) Closure
3) Removal
4) Repair for Pedestrians
5) Repair for Vehicles
6) Replacement

Exhibit A.2 Municipal Class EA Planning and Design Process

Alternative Design Concepts to be Determined, If Replacement is Preferred.

We are HERE
Council gives authorization to proceed

Anticipated Path
Study Objectives

The Township has initiated a Schedule C Municipal Class Environmental Assessment (EA) study with the following key objectives:

- Consider a reasonable range of appropriately planned potential solutions;
- Consider impacts to all aspects of the environment (social, cultural, natural environment, technical and economic);
- Select a preferred solution through a transparent decision-making process; and,
- Encourage public participation throughout the process.
Problem and Opportunity Definition

A) Problem:
- Structural inspections have identified the need for repairs or replacement of the Glasgow Street South Bridge to maintain or increase the current 5 tonne load limit.
- Due to age and condition, future repair costs will increase, become more frequent and require significant capital investment to extend the life span of the structures.
- There is ongoing non-compliance of turning movements at the intersection of Glasgow Street South and Millennium Boulevard.

B) Opportunity:
The Township plans to determine a strategy to address potential load limit exceedances on the Glasgow Street South Bridge, to identify the short and long term plan for the bridge, as well as non-compliance of allowable turning movements at the intersection of Glasgow Street South and Millennium Boulevard.
Glasgow Street South Bridge
Glasgow Street South and Millennium Boulevard Intersection
Transportation and Traffic Study

➢ Transportation and Traffic analysis completed within and adjacent to the Study Area.
  ➢ Analysis completed using latest available traffic data provided by the Township and Region of Waterloo.

➢ Approximately 1000 vehicles per day utilize the Glasgow Bridge
  ➢ Data showed that there were approximately 75 instances of two or more vehicles on the bridge at the same time, despite posted limit of one vehicle on the bridge at a time due to the load limit.
  ➢ As traffic volumes increase, potential for exceedance of the load limit will continue to increase.

➢ The most suitable alternative travel route is Northfield Drive East
  ➢ If the Glasgow Street South bridge was closed, Northfield Drive East has sufficient capacity to accommodate additional traffic from Glasgow Street South.
Alternate Routes
Load Limit Exceedances – How Much Do Vehicles Weigh?

➢ "Curb Weight" is the mass of the vehicle excluding payload (passengers and cargo)

➢ GVWR (Gross Vehicle Weight Rating) is the maximum operating mass of the vehicle, as specified by the manufacture.

➢ GVWR = Curb Weight + Payload

➢ Ex. 2019 F-350 DRW 6.7L Crew Cab
  ➢ Curb Weight of approx. 3.5 tonnes
  ➢ GVWR of 6.4 tonnes

Curb Weight of Various Vehicles:

2.7 tonnes, or less
- Full Size Pickup
- Mini Pickup
- Minivan
- SUV
- Utility Van

2.7 to 4.5 tonnes
- Crew Size Pickup
- Full Size Pickup
- Mini Bus
- Minivan
- Step Van
- Utility Van

4.5 to 6.3 tonnes
- City Delivery
- Mini Bus
- Walk In

Cultural Heritage and Heritage Impact Study

- Documented as the oldest truss bridge in Woolwich Township and the second oldest truss bridge in the Grand River Watershed.

- Not designated under Part IV of the Ontario Heritage Act, not listed as a heritage bridge on the Ontario Heritage Bridge List.

- Identified as having heritage significance in:
  - Spanning the Generations, A Study of Old Bridges in Waterloo Region (PHCS 2004a), Waterloo Region; and,
  - Grand River Watershed Heritage Bridge Inventory (2013).

- Study recommends consideration for designating the truss bridge under the Ontario Heritage Act.

- Preference from a heritage perspective is to leave the structure in place, minimizing impacts of repairs.
Cultural Heritage and Heritage Impact Study

➢ The Glasgow Street South Bridge was found to have heritage significance due to the following:

➢ Oldest existing truss in the Township and was built by the Hamilton Bridge and Tool Co.;

➢ Association as a gateway structure marking the entrance to the Mennonite community of Conestogo;

➢ Construction – truss configuration and use of connecting pins;

➢ Views of the bridge from the approaches; and,

➢ Views from the bridge of the surrounding rural landscape and the Conestogo River.
Environmental Impact Study

➢ There are no nationally or provincially rare vegetation communities or flora in the Study Area.

➢ There are no Provincially Significant Wetlands present in the Study Area.

➢ Wildlife habitat is considered common and well represented upstream and downstream of both bridges.

➢ The following Species at Risk or their habitat have the potential to be present in or adjacent to the Study Area:

➢ Through implementation of appropriate mitigation measures, none of the proposed alternatives will result in significant long term impacts to natural features identified within the Study Area.
Bridge Condition Assessment

➢ The bridge is in poor condition and requires rehabilitation.

Key concerns are:

➢ Sagging / loss of tension in tension members (diagonals, laterals);
➢ Severe erosion of southwest embankment and streambed around abutments and piers;
➢ Severe corrosion of rivet heads; and,
➢ Severe corrosion of bearings and disengagement of roller pins.
Southwest embankment, susceptible to erosion

Severe corrosion and section loss in end post

Disengagement of roller pins

Distortion of bottom chord

Sagging of bottom laterals

Severe corrosion and crack in bottom chord
**Alternative Solutions**

- **Truss Bridge Alternative 2:** Permanently Close Bridge
- **Truss Bridge Alternative 3:** Removal Without Replacement
- **Truss Bridge Alternative 4:** Rehabilitate for Pedestrian Use
- **Truss Bridge Alternative 5:** Rehabilitate for Vehicular Use
- **Truss Bridge Alternative 6:** Replace
- **Truss Bridge Alternative 7:** Rehabilitate for Vehicular Use with Ultimate Closure

**Intersection Alternatives:**
- **Intersection Alternative A:** Do Nothing
- **Intersection Alternative B:** Remove Median
- **Intersection Alternative C:** Install Raised Median
- **Intersection Alternative D:** Disconnect Glasgow Street South from Millennium Boulevard

**Note:**
- Alternative 1 (Do Nothing) was not carried forward because it leads to one of the other alternatives in the very near future.
- Alternative 6 (Replacement) is recommended to occur at a new location due to the meandering nature of the river.
# Summary of Alternative Solutions - Truss Bridge:

<table>
<thead>
<tr>
<th></th>
<th>Property Impacts</th>
<th>Impacts to Business and Adjacent Land Uses</th>
<th>Public Safety</th>
<th>Visual Impacts</th>
<th>Aquatic Habitat and Fish Passage</th>
<th>Vegetation</th>
<th>Wildlife Habitat</th>
<th>Species at Risk</th>
<th>Built Heritage</th>
<th>Archeological Potential</th>
<th>Compliance with Current Design Standards</th>
<th>Constructability</th>
<th>Traffic (Vehicular, Pedestrian, Cyclist, etc.)</th>
<th>Capital Costs</th>
<th>Structure Longevity Concerns</th>
<th>Maintenance and Operating Costs</th>
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**OVERALL RANKING:**

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<tr>
<th>Closure</th>
<th>Removal</th>
<th>Rehabilitate (Pedestrian)</th>
<th>Rehabilitate (Vehicular)</th>
<th>Replace</th>
<th>Rehabilitate (Vehicular) and Closure</th>
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<tr>
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## Financial Projections - Truss Bridge:

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<th>Year</th>
<th>Alternative 2: Closure</th>
<th>Alternative 3: Removal</th>
<th>Alternative 4: Rehabilitate (Pedestrian)</th>
<th>Alternative 5: Rehabilitate (Vehicular)</th>
<th>Alternative 6: Replace</th>
<th>Alternative 7: Rehabilitate (Vehicular) and Closure</th>
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<tr>
<td>2020</td>
<td>$475k</td>
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<td>$875k</td>
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<td>2025</td>
<td>-</td>
<td>-</td>
<td>x</td>
<td>x</td>
<td>-</td>
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<td>2030</td>
<td>-</td>
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<td>x</td>
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<td>2035</td>
<td>$150k (misc. repairs)</td>
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<td>x</td>
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<td>2045</td>
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<td>2018 Dollars</td>
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**Note:**
- Costs do not include HST, but include 15% Contingency and 15% Engineering Fees
- Current investment required (“Invest. Req’d”) based on present value determined using a Level 1 Financial Analysis in accordance with the Ministry of Transportation Ontario’s Structural Financial Analysis Manual (SO-11, 1993), assuming a 3% discount rate
REHABILITATE BRIDGE FOR VEHICULAR USE WITH ULTIMATE CLOSURE is the Recommended Solution:

➢ Rehabilitation to maintain structure at a 5 tonne load limit;
➢ After rehabilitation, structure is anticipated to require closure within 10 to 20 years;
➢ Region, City and Township should explore the need and alternative locations for a river crossing;
➢ Initial capital cost for:
  ➢ Rehabilitation to roller bearings, pin connections at bearings, concrete repairs, deck replacement, upgrades to traffic barrier;
➢ 15 to 30 year projected costs for:
  ➢ Routine maintenance (no further large capital investments); and,
  ➢ Closure of the structure, construction of turnarounds with potential barricades
Alternative Solutions

Truss Bridge Alternative 2: Permanently Close Bridge

Truss Bridge Alternative 3: Removal Without Replacement

Truss Bridge Alternative 4: Rehabilitate for Pedestrian Use

Truss Bridge Alternative 5: Rehabilitate for Vehicular Use

Truss Bridge Alternative 6: Replace

Truss Bridge Alternative 7: Rehabilitate for Vehicular Use with Ultimate Closure

Intersection Alternative A: Do Nothing

Intersection Alternative B: Remove Median

Intersection Alternative C: Install Raised Median

Intersection Alternative D: Disconnect Glasgow Street South from Millennium Boulevard

Alternative 7 is the Recommended Solution

Note: If vehicular traffic is to be maintained on Glasgow Street South, it is intended that the corresponding intersection alternative would discourage vehicular traffic from utilizing Glasgow Street South to prolong the useful life of the bridge.

The Recommended Solution for the Intersection will be assessed following the PCC.
The Township installed the existing median on Millennium Boulevard in 2011 that only permits eastbound emergency vehicle and horse and buggy traffic to turn onto Glasgow Street South.

Shortly thereafter, Township staff observed the AADT on Glasgow Street South decreased by 50% compared to the 2010 traffic data; however, incidents on non-compliance traffic movements are increasing, leading to increased traffic on Glasgow Street South.

Non-compliant traffic movements include:

- Disobeying the posted sign and making a left turn over the deterring median; and,
- Making a U-turn at the end of the median to travel north on Glasgow Street South.

In 2014, 66% of vehicles travelling east on Millennium Boulevard made a non-compliant left turn over the median.
Alternative Solutions - Intersection:

A) Do Nothing
   - Maintain intersection in its current configuration.
   - Possibility of ongoing illegal traffic movements.

B) Remove Median
   - Remove median and permit all eastbound traffic on Millennium Boulevard to turn onto Glasgow Street South.

C) Install Raised Median
   - Install raised median to prevent motorists from disobeying the left turn restriction over the median.
   - Potential for motorists to complete U-turns east of the median.
   - Prevents emergency vehicle and horse and buggy left turning movements.

D) Disconnect Glasgow Street South from Millennium Boulevard
   - Disconnect Glasgow Street South and Country Squire Road from Millennium Boulevard, but connect Glasgow Street South to Country Squire Road.
   - Traffic attempting to access Glasgow Street South from the south would be required to use University Avenue East and Country Squire Lane.
Intersection Alternative D:
Disconnect Glasgow Street South from Millennium Boulevard

Existing

Proposed
Next Steps:

Environmental Assessment – Process and Timeline

**Phases 1 and 2**

- a) Publish Notice of Project Initiation  
  March 2018
- b) Hold Public Information Centre (PIC No.1)  
  February 20, 2019
- c) Determine Staff Preferred Solution for Intersection  
  Winter/Spring 2019
- d) Township Council decision on Staff selection of Preferred Solution  
  Spring/Summer 2019
- e) Review and confirm choice of Schedule (Completes Phase 2)  
  Spring/Summer 2019
- YOUR INPUT IS IMPORTANT -

Comment Sheets are Available at this Public Information Session

Please Submit by March 20th, 2019

THANK YOU