A. Recommendations

THAT Council receive Staff Report CSOPS.19.078, entitled “Bridges 2, 3 and 13 Environmental Assessment Progress Report 2” and consider the following recommendations;

A: THAT Council adopt the solution identified in the Bridge 2/3 (6th Sideroad) Progress Report that positions 2 options as equally preferred: permanently closing and removing the existing bridges; or replacing existing bridges with single lane bridges;

B: THAT Council adopt the solution identified in the Bridge 13 (Main Street, Heathcote) Progress Report that positions replacing the existing bridge with a single lane bridge or structure as the preferred option;

AND THAT Council approve the issuance of the “Notice of Completion” for the thirty-day review for Bridges 2, 3 and 13.

B. Overview

Bridges 2/3 on the 6th Sideroad and Bridge 13 in Heathcote have been identified as requiring improvements or replacement due to age and deteriorating condition. Concurrent Environmental Assessments have been conducted on both bridge sites to assist in selecting a preferred solution. This report is the final report (Progress Report 2) on the draft conclusion of the EA and prior to the notice of completion and finalization of the Project Files.

C. Background

The Town began (notice of commencement April 11, 2019) environmental assessments under the Environmental Assessment Act to determine the preferred methods of improvement to address structural conditions and roadway safety at bridge site 2/3 on the 6th Sideroad (see Attachment #3) crossing the Mill Creek and bridge site 13 on Main Street (see Attachment #4) crossing a tributary of the Beaver River in Heathcote.
The bridges have severe deterioration, do not meet current standards and have been posted with reduced load ratings. Bridges 2/3 (B2/3) is posted at 10 Tonne and Bridge 13 (B13) is posted at 5 Tonne. The annual inspection in 2019 has identified that replacement of structures B2/3 will be needed within the next 1 to 5 years and the condition index is described as poor. The 2019 inspection report also identified that major repairs are required on B13. Although the bridge condition index of B13 is positioned as “good” the report author cautions that the design and construction of the foundation is unknown.

Study Conclusion – Bridge Site 2/3

The EA, has completed the phases associated with a Schedule ‘B’ project, and has identified two preferred solutions (see Attachment #1).

Permanently Close and Remove the Existing Bridges

This option would see a continuation of lower load limits as the bridges deteriorate. Eventually, the condition of the bridges would reach a point of closure to ensure public safety. At this point a detour and areas for turn-around would be put in-place. The bridges would also eventually need to be removed.

Replace the Bridges with Single-Lane Bridges

This option has a much higher cost than closure, but it would eliminate load postings, improve road safety and avoid the need for a long term detour. Part of the EA process included gaining input from the public. Local users of the bridge and near-by residents expressed strong opinions that the bridges should not be closed. Reasons included the need to access farm lands and that a detour would cause additional travel on routes characterized as being less safe.

Traffic counts for this bridge site have been documented as “low-volume” at 98 vehicles per day, which is well below the 400 AADT (Average Annual Daily Traffic) threshold for low volume identified by the MTO Structural Manual.

The EA Study considered the options outlined in the Table below the table also provides a brief summary of the option and cost:

<table>
<thead>
<tr>
<th>Bridge 2/3 Options</th>
<th>Estimated Cost</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do Nothing</td>
<td>$0</td>
<td>Doing nothing will eventually result in closure.</td>
</tr>
<tr>
<td>Permanently Close and Remove the Existing Bridges (Preferred Solution)</td>
<td>$525,000</td>
<td>Equally preferred solution and one that could be implemented in stages.</td>
</tr>
</tbody>
</table>
Committee of the Whole  
November 18, 2019  
CSOPS.19.078  
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## Bridge 2/3 Options

<table>
<thead>
<tr>
<th>Bridge 2/3 Options</th>
<th>Estimated Cost</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repurpose the Bridge to Non-Vehicular Traffic</td>
<td>$300,000</td>
<td>Will ultimately result in on-going repairs and the need to remove the bridges.</td>
</tr>
<tr>
<td>Rehabilitate the Existing Bridges</td>
<td>$675,000</td>
<td>Repairs would be short lived and high maintenance costs would continue with no improvement to the load carrying capacity.</td>
</tr>
<tr>
<td>Replace with Single Lane Bridges (Preferred Solution)</td>
<td>$1,700,000</td>
<td>Equally preferred solution, with a high cost, but allows for a long service life and increased load capacity and is an opportunity to increase the structures resilience to climate change</td>
</tr>
<tr>
<td>Replace with Two Lane Bridges</td>
<td>$2,300,00</td>
<td>It is often considered that single lane bridges should be replaced with two lanes for safety and future development, however with no projected development in this area and the very low traffic – two lanes were ruled out</td>
</tr>
</tbody>
</table>

### Study Conclusion – Bridge Site 13

The EA, has completed the phases associated with a Schedule ‘B’ project, and has identified a preferred solution (see Attachment #2).

**Replace Existing Bridge with Single Lane Bridge**

This option has a high cost however it would eliminate load postings, provide a low maintenance solution (especially with a concrete culvert) and provide a solution more resilient to climate change impacts such as increased flooding and erosion.

The EA Study considered the options outlined in the Table below the table also provides a brief summary of the option and cost:

<table>
<thead>
<tr>
<th>Bridge 13 Options</th>
<th>Estimated Cost</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do Nothing</td>
<td>$0</td>
<td>Significant safety issues would persist and eventually the bridge would fail or be closed due to limited load carrying capacity.</td>
</tr>
<tr>
<td>Rehabilitate the Existing Bridge</td>
<td>$225,000</td>
<td>Even with this amount spent the underlining foundation of the bridge is not improved and the load capacity would remain a 5 tonne.</td>
</tr>
<tr>
<td>Bridge 13 Options</td>
<td>Estimated Cost</td>
<td>Summary</td>
</tr>
<tr>
<td>-------------------</td>
<td>----------------</td>
<td>---------</td>
</tr>
<tr>
<td>Replace with a Single Lane Bridge (Preferred Solution)</td>
<td>$575,000 to $750,000</td>
<td>The preferred option, the cost is high, however it includes an option to replace with a concrete culvert and improves resilience, safety and load capacity.</td>
</tr>
<tr>
<td>Replace with Two Lane Bridges</td>
<td>$1,000,000</td>
<td>Based on the extremely low volume road traffic and no development potential, a single lane bridge meets the needs of this crossing.</td>
</tr>
<tr>
<td>Rehabilitate and Download Bridge to Residents</td>
<td>$100,000</td>
<td>The landowners would need to be willing participants in the transfer of land and bridge structure.</td>
</tr>
</tbody>
</table>

**Other Considerations for Bridge 13**

Although this bridge services only three properties it is the only available and viable access to the properties, farm and home. An alternative road was considered but no viable route is available.

This bridge site was identified as having some cultural heritage value, but the heritage features do not prevent altering or replacing the bridge. However, some professional documentation and or sympathetic modifications or salvage should be expected.

Traffic counts for the bridge are expectedly low and are between 2 and 16 AADT. It was identified, anecdotally, during the study that large commercial vehicles frequently make use of the bridge and are very likely to be over the 5 tonne load limit posted on the bridge. This over-weight use of the bridge should be addressed with the landowners to prevent further damage to the bridge and avoid potential safety concerns.

It is technically possible to sell or “give” the bridge to the landowners that use the bridge. However, the buyers would need to be willing and the advantage to the landowners is not apparent, unless they are threatened by complete loss of access.

The 2019 Bridge Inspection Report indicates that B13 should be repaired in the next 1 to 5 years. This inspection report identifies costs of $172,000 in total. This is a similar cost to the high and low cost estimate in the EA of $100,000 to $225,000 under the options to rehabilitate.

**D. Analysis**

**Bridges 2/3**

Staff recommend completing the EA project file based on selecting closing and removing the existing bridges and replacing the existing bridges with single lane bridges, as equally preferred solutions. This will also permit the Town to release the notice of completion and conclude the
EA. Council will then have the option to consider which of the two solutions to proceed with during 2020 budget deliberations.

Alternatively, as the study proponent, Council can reject the draft conclusion of the EA study and take the opportunity to re-order the assessment criteria and direct staff to change the preferred solution.

Bridge 13

Staff recommend completing the EA project file based on selecting the option of replacing with a single lane bridge. This will also permit the Town to release the notice of completion and conclude the EA. Council will then have the option to consider when to proceed with the design and construction during 2020 budget deliberations.

Alternatively, as the study proponent, Council can reject the draft conclusion of the EA study and take the opportunity to re-order the assessment criteria and direct staff to change the preferred solution.

E. The Blue Mountains Strategic Plan

Goal #5: Ensure Our Infrastructure is Sustainable
Objective #2 Avoid Unexpected Infrastructure Failure and Associated Costs and Liability
Objective #4 Ensure that Infrastructure is Available to Support Development

F. Environmental Impacts

Significant alterations to municipal infrastructure require prescribed environmental study, which take into consideration the impacts the solutions could have on the natural and cultural environment. The level of impacts in each option are weighed against other impacts such as cost. Options for mitigating natural and cultural impacts (such as historic significance) are also put forth.

G. Financial Impact

Each alternative has a financial estimate associated with it and these are outlined in the Analysis Section of this report. According to the 2019 Bridge Inspection Report almost $5.3 million in bridge repair and replacement costs are needed within the next 5 years. Included in this list are the two bridge Sites in these EAs.

The EA study cost estimate for replacement of Bridges 2/3 with a single lane bridge is $1.7 million, which aligns with the Inspection Report figure for two lane bridges of $2 million. The alternative solution of closing and removing the bridges is estimated at $525,000.

The EA study cost estimate for replacement of Bridge 13 with a single lane bridge is between $575,000 and $750,000 depending on the design approach (bridge or culvert).
The 2020 Budget deliberations will provide Council with an opportunity to select which bridge options to advance within the results of final project files.

H. In Consultation With

Jim McCannell, Manager of Roads and Drainage

I. Public Engagement

The topic of this Staff Report is the subject of a Public Information Centre which has taken place on July 9, 2019. Those who provide comments at the Public Information Centre, including anyone who has asked to receive notice regarding this matter, will be included on the notification list associated with these bridge projects.

J. Attached

1. Attachment 1 Bridge Site 2/3 Executive Summary
2. Attachment 2 Bridge Site 13 Executive Summary
3. Attachment 3 Bridge Site 2/3 Location Map
4. Attachment 4 Bridge Site 13 Location Map

Respectfully submitted,

_____________________________________
Jeffery Fletcher
Manager of Solid Waste and Special Projects

For more information, please contact:
Jeffery Fletcher
ManagerSolidWaste@thebluemountains.ca
519-599-3131 extension 238
Executive Summary

STUDY OVERVIEW & OBJECTIVE

Bridges 2 & 3, also known as the Mitchell’s Creek Bridges, are concrete monolithic T-beam bridges that are connected by a short stretch of 6th Sideroad. The bridges were constructed in the 1930’s. The existing structures have a single span each, a driving platform width of 4.75 m and an overall width of 5.5 m. Bridge 2 has a span of 7.5 m, while Bridge 3 has a span of 7.9 m. An Average Annual Daily Traffic (AADT) of 100 vehicles per day has been estimated at this stretch of 6th Sideroad. The Average Daily Traffic (ADT) taken from the Town’s ongoing traffic counts in the vicinity of the bridges supports this estimate with an ADT of 98. There is limited growth in this area, and no projected increases, keeping the traffic volumes below the threshold of 400 AADT for low-volume roads noted in the MTO Structural Manual.

The existing bridges have several deteriorated elements, including abutments, girders and soffits, as well as substandard barriers and approach guide rail. They have been posted with a 10 tonne load limit. The existing bridges are considered to be deficient with respect to load capacity and barrier protection.

Town of The Blue Mountains has identified the need to determine the most appropriate bridge management strategy with respect to these structures. In consideration of the existing conditions, the Problem/Opportunity Statement, which sets the framework for the remainder of the Study, is as follows:

“Town of The Blue Mountains’ Bridges 2 & 3 show signs of deterioration and have been posted with a 10 tonne load limit. The Town has identified the need to assess alternative solutions for this crossing to provide an improved crossing or alternative route that will be most safe and cost effective, while minimizing impacts to the surrounding residents and environments.”

ALTERNATIVE SOLUTIONS

Six alternative solutions were explored with respect to the natural, social, physical and economic environments.

Alternative A is to do nothing, under which no repairs will be completed on the bridges and they will continue to deteriorate and the load capacity of the structures will continue to decrease.

Alternative B is to permanently close and remove the existing bridges. With this alternative, turnaround points would be placed at either end of the bridges and all through-traffic would be permanently detoured onto alternate roads. There are reasonable alternate routes and there is limited traffic across the bridges. The road would require widening at the ends to create a cul-de-sac for turning around.
Alternative C is to repurpose the bridges to non-vehicular traffic. With this alternative, turnaround points would be placed at either end of the bridges and all through-traffic would be permanently detoured onto alternate roads. Non-vehicular traffic would continue to be allowed on the bridges. The bridges will continue to deteriorate, but at a slower rate without vehicular traffic, and the load posting would not be an issue. The road would require widening at the ends to create a cul-de-sac for turning around.

Alternative D is to rehabilitate the existing bridges. This will not resolve load capacity issues but will resolve deterioration issues and increase safety.

Alternative E1 is to replace the bridges with single-lane bridges. This alternative addresses load capacity and barrier protection deficiencies.

Alternative E2 is to replace the bridges with two-lane bridges. This alternative will address all the deficiencies of load carrying capacity, and barrier protection.

ENVIRONMENT INVENTORY

The purpose of the environment inventories is to provide the existing information from which the assessment of the alternative solutions can be based. A description of the Study Area has been developed considering existing land uses and developments, and the natural environment, physical environment, economic environment and cultural/heritage environment. This will be further expanded to consider the improvement alternatives once they have been identified.

A screening checklist for the bridges, and a Cultural Heritage Evaluation was completed by Stantec Consulting Ltd., with field work undertaken on March 29, 2017. The evaluation identifies Bridges 2 & 3 as having no cultural heritage value or interest under Ontario Regulation 9/06. No further cultural heritage assessment is required for any work to proceed.

A Stage 1 Archaeological Assessment was carried out by Stantec Consultants Ltd., with the field work completed on June 8, 2018. The assessment indicates that the Study Area retains archaeological potential for the discovery and recovery of both Indigenous and Euro-Canadian archaeological material. Any areas that are not considered previously disturbed or low lying and wet are recommended to have a Stage 2 Assessment undertaken if it is to be disturbed during construction.

No geotechnical investigation has been completed. An investigation will be required for some of the proposed alternative solutions, and the scope of the investigation will be defined once the preferred solution is identified.

With respect to the economic environment, the associated costs incurred in implementing and maintaining the structure improvements are considered. The costs are considered in relation to the extent of required upgrades or improvements to the existing bridges and construction of
new bridges. In addition, impacts to abutting lands are considered as part of the economic environment given the associated costs to obtain any required lands.

The Natural Environment inventory is ongoing, but the preliminary investigation identifies habitat for Species of Conservation Concern and spawning habitat within the areas adjacent to the bridges and under the bridges.

**PRELIMINARY PREFERRED ALTERNATIVE**

An evaluation of the alternative solutions was completed based on information received prior to the Public Information Centre. On the basis of this evaluation, the preliminary preferred solution is to either permanently close and remove the existing bridges or replace the bridges with single lane bridges. Both alternatives address all aspects of the Problem Statement.

Additional public feedback received between July 5th and 9th, after the preliminary evaluation had been completed is included in Appendix B. This feedback will be incorporated along with any information received at and after the Public Information Centre in the final evaluation, which will be presented in the Project File.
Executive Summary

STUDY OVERVIEW & OBJECTIVE

Bridge 13, also known as the Heathcote Bridge, is a timber deck on steel girder bridge at the end of Main Street in Heathcote in Town of The Blue Mountains. The structure is estimated to have been built in the 1950’s. The existing structure has a single 8.7 m span with an overall width of 5.3 m and a driving platform width of 4.5 m. The structure crosses a tributary of the Beaver River.

An Average Annual Daily Traffic (AADT) of 20 vehicles per day has been estimated at this structure, which provides access to two properties on the East side of the watercourse. The ADT taken from the Town’s ongoing traffic counts in the vicinity of the bridge supports this estimate with an ADT of 16. Recent counts suggest an even lower ADT of only 2 vehicles. There is limited growth in this area, and no projected increases, which keeps the traffic volumes well below the threshold of 400 AADT for low-volume roads noted in the MTO Structural Manual.

The existing bridge has several deteriorated elements, including decking and bearings, as well as not having barriers or approach guide rail. The structure has been posted with a 5 tonne load limit.

Town of The Blue Mountains has identified the need to improve the bridge, which is considered to be deficient with respect to load capacity and barrier protection.

Recent failure of a corner of the approach due to erosion was noted by the Town on May 15, 2019. Temporary repairs are being completed.

In consideration of the existing conditions, the Problem/Opportunity Statement, which sets the framework for the remainder of the Study, is as follows:

“Town of The Blue Mountains has identified the need to evaluate alternative solutions for the management and improvement of the Bridge 13 crossing in order to improve safety at the bridge. The existing bridge is considered to be deficient with respect to barrier protection, load capacity and signage.”

ALTERNATIVE SOLUTIONS

Seven alternative solutions were explored with respect to the natural, social, physical and economic environments.

Alternative A is to do nothing, under which no repairs will be completed on the bridge and it will continue to deteriorate and the load capacity of the structure will continue to decrease. The
structure will eventually require full closure, which is not practical, as the bridge is the only access to two properties.

**Alternative B** is to permanently close and remove the existing bridge. This alternative is not practical, as the bridge is the only access to two properties. This alternative was not considered further.

**Alternative C** is to repurpose the bridge to non-vehicular traffic. This alternative is not practical, as the bridge is the only access to two properties. This alternative was not considered further.

**Alternative D** is to rehabilitate the existing bridge. This will not resolve load capacity issues, but will resolve deterioration issues and increase safety.

**Alternative E1** is to replace the bridge with a single-lane bridge. This alternative addresses load capacity and barrier protection deficiencies.

**Alternative E2** is to replace the bridge with a two-lane bridge. This alternative will address all the deficiencies of load carrying capacity, and barrier protection. However it has the greatest impact to the environment as well as the greatest life cycle cost.

**Alternative F** is to rehabilitate and then download the bridge to the two property owners on the East side of the watercourse. This alternative requires minor rehabilitation work prior to downloading, but removes the structure from the Town's structure inventory. This will eliminate the future costs associated with the structure from the Town's budget, including maintenance and biannual inspection.

**Alternative G** is to provide alternate access to the two property owners on the East side of the watercourse. This will eliminate the need to maintain the structure, but will require access across a number of properties, new road construction and, depending on the road accessed, new bridge construction.

**ENVIRONMENT INVENTORIES**

The purpose of the environment inventories is to provide the existing information from which the assessment of the alternative solutions can be based. A description of the Study Area has been developed considering the existing land uses and developments, and the natural environment, physical environment, economic environment and cultural/heritage environment.

A screening checklist for the Bridge and a Cultural Heritage Evaluation was completed by Stantec Consulting Limited, with field work undertaken on March 29, 2017. The evaluation identifies Bridge 13 as having cultural heritage value or interest under Ontario Regulation 9/06, meeting one criteria of the regulation. An impact assessment was included within the Cultural Heritage Evaluation Report, addressing the potential for alterations and demolition as part of the Municipal Class Environmental Assessment process. It concluded that the optimal alternative was to
maintain the existing structure, while reclaiming structural elements, and constructing a sympathetic structure was the second preferred alternative.

A Stage 1 Archaeological Assessment was carried out by Stantec Consultants Limited, with the field work completed on June 8, 2018. The Assessment indicates that the Study Area retains archaeological potential for the discovery and recovery of both Indigenous and Euro-Canadian archaeological material. Any areas that are not considered previously disturbed or low lying and wet are recommended to have a Stage 2 Assessment undertaken if they are to be disturbed during construction.

No geotechnical investigation has been completed. An investigation will be required for many of the proposed alternative solutions, and the scope of the investigation will be defined once the preferred solution is identified.

With respect to the economic environment, the associated costs incurred in implementing and maintaining the structure improvements were considered. The costs have been considered in relation to the extent of required upgrades or improvements to the existing bridges and construction of a new bridges. In addition, impacts to abutting lands have also been considered as part of the economic environment given the associated costs to obtain any required lands.

The Natural Environment inventory is ongoing, but the preliminary investigation identifies no habitat for Species of Conservation Concern or spawning habitat within the areas adjacent to the bridge.

**PRELIMINARY PREFERRED ALTERNATIVE**

An evaluation of the alternative solutions was completed based on information received prior to the Public Information Centre. On the basis of this evaluation, the preliminary preferred solution is to replace the bridge with another single lane structure. It best addresses all aspects of the Problem Statement. This alternative will require further investigation into the appropriate cultural heritage mitigation measures associated with the final structure replacement.

Any information received at and after the Public Information Centre will be used to refine the weight of the evaluation criteria, which may re-order the ranking of the alternatives and may change the preferred solution. The final evaluation and recommended solution will be presented in the Project File.
BRIDGES 2 & 3 - STUDY AREA

Bridges 2 & 3 (Mitchell’s Creek Bridges) are located on 6th Sideroad
Bridge 13 (Heathcote Bridge) is located on Main Street.