

# Economic Development Forum #1 – Impacts of the Bridge State of the Infrastructure (SOTI) report

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Thursday April 25, 2019

Bognor Community Centre

# General Background

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- All Municipalities are required by legislation to complete bi-annual inspections on all bridges and structures that span greater than 3 metres.
- In an effort to spread out the costs, Meaford completes the inspection process each year on roughly half of the structures through a contract with the Ainley Group. The current six year agreement is from 2016 through 2021.
- In 2015 Council approved the development of a Bridge State of the Infrastructure (SOTI) report to assist in the long term planning for maintenance, rehabilitation, reconstruction and financing of all municipal structures.

# Bridge SOTI Process

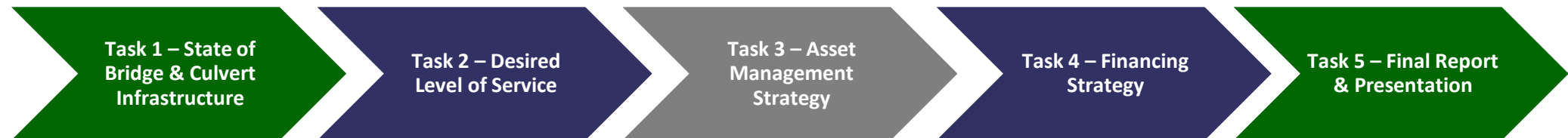
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- In June 2015 the Municipality, through the then Operations Department, issued an RFP to develop a State of the Infrastructure Report for the Municipality’s bridges and culverts that was similar to the requirements of the Ministry of Infrastructures “Building Together: Guide for Municipal Asset Management Plans” document .
- This project included, but was not limited to, the following major tasks:
  - Task 1: Inventory the Current State of Bridge and Culvert Infrastructure
  - Task 2: Develop Desired Levels of Services – Bridges and Culverts
  - Task 3: Asset Management Strategy – Bridges and Culverts
  - Task 4: Financing Strategy – Bridges and Culverts
  - Task 5: State of the Infrastructure Report – Bridges and Culverts Documentation and Presentation to Council

# Bridge SOTI development

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- On July 9, 2015 Council awarded the RFP to the Ainley Group and DFA Infrastructure to prepare the SOTI report
- On September 28, 2015, Brian Wickenheiser, P. Eng., from the Ainley Group made a presentation to Council relating to Tasks 1 & 2
- Subsequently on May 16, 2016 Mr. Wickenheiser and Derek Ali, MBA, P. Eng., from DFA Infrastructure made a presentation to Council relating to tasks 3 & 4



# Task 1 – State of Bridge & Culvert Infrastructure

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- Municipality currently has ownership and responsibility for 80\* bridge and culvert structures (> 3 m span)
  - 22 structures within former Town of Meaford limits
  - 22 structures in former Sydenham Township
  - 32 structures in former St. Vincent Township
  - 1 structure on St. Vincent – Sydenham Townline
  - 2\* structures on Holland – Sydenham Townline deviation road (shared with Chatsworth)
  - 1\* structure on Euphrasia – St. Vincent Townline (shared with Grey Highlands)

# Task 1 – State of Bridge & Culvert Infrastructure

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- Total estimated current value of the 80 bridge & culvert structures is \$53.3 M (2015 dollars)
- Total estimated replacement cost of the 80 bridge & culvert structures is \$80.0 M (2015 dollars)
- 77 of the structures are located on Meaford's road network or the Georgian Trail and are 100% Meaford's responsibility

# Task 2 – Desired Level of Service

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- In October 2015, Council adopted a Desired Level of Service for all municipal bridges and structures as follows;
  - To have no bridge or culvert structures with Maintenance or Recommended Work Needs (as identified on the OSIM inspection reports) falling into the “Urgent” or “1 – 2 Years” timing windows
  - Development of annual bridge & culvert maintenance program to extend the life of existing structures, with approximately half of the structures completed each year on a rotating basis similar to inspection program (biennial maintenance)

# Task 2 – Desired Level of Service

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## “Needs Timing” Cost Summary

| NEEDS TIMING | COST               |
|--------------|--------------------|
| URGENT       | \$5,969,500        |
| 1 – 2 YEARS  | \$2,529,650        |
| <b>TOTAL</b> | <b>\$8,499,150</b> |

- In the 3 to 10 year Needs Forecast, there is an additional \$22.5M, for a total of \$31M of required work within 10 years.



# Task 3 – Asset Management Strategy

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- A 50 Year Outlook (to 2066), intended to cover a major portion of each structure's life cycle, which can last 75 years or more.
- Prioritization of work based on the results of the biennial OSIM inspections and identified public safety related to the use of the structure. The priority and timing of work required could change over a period of time and will be dependent on the results of future OSIM inspections.

# Task 3 – Asset Management Strategy

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- Annual Maintenance that will include both reactive and preventative maintenance to:
  - Correct deficiencies identified from the inspections
  - Prevent deterioration of structures that are in good condition
  - Address safety
- Load Limit Postings are to be adjusted to address safety concerns noted in OSIM inspections. These load limit reductions are necessary (not optional) and require passage of by-law to be recognized/enforceable.

# Asset Management Strategy #1

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- All structures will be kept in service (i.e. no closures).
- All costs will be the responsibility of the Municipality regardless of full or partial ownership by Grey County or any of the neighbouring municipalities.

| CAPITAL COST | MAINTENANCE COST | TOTAL COST   | AVE. COST/YR |
|--------------|------------------|--------------|--------------|
| \$90,986,979 | \$7,938,373      | \$98,925,352 | \$1,978,500  |

- Financing of this strategy was not completed as it would not be in the best interests of the Municipality to maintain the status quo since a number of the structures are owned in whole or in part by other Municipalities.

# Asset Management Strategy #2

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- All structures will be kept in service (i.e. no closures).
- Responsibility for the capital and maintenance costs will rest with the respective owners (i.e. 50% of 1 structure with Grey Highlands)
- Guide rail rehabilitation work will be eliminated for structures where full structure replacements are anticipated within 10 years

| CAPITAL COST | MAINTENANCE COST | TOTAL COST   | AVE. COST/YR |
|--------------|------------------|--------------|--------------|
| \$82,431,038 | \$7,374,565      | \$89,805,603 | \$1,796,100  |

# Asset Management Strategy #3

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- Same as Strategy No. 2, **plus** permanent closure of the following structures effective January 2016 due to safety concerns coupled with low traffic counts:
  - Structure No. 10
  - Structure No. 21
  - Structure No. 22
  
- Undertaking Environmental Assessments (EA) and demolition of closed structures

| CAPITAL COST | MAINTENANCE COST | TOTAL COST   | AVE. COST/YR |
|--------------|------------------|--------------|--------------|
| \$77,727,403 | \$7,115,035      | \$84,842,438 | \$1,696,800  |

# Asset Management Strategy #4

- Same as Strategy No. 3, **plus** permanent closure of the following structures at the end of their life:
  - Structure No. 15 (+/- 2019)
  - Structure No. 46 (+/- 2035)
  - Structure No. 59 (+/- 2022)
  - Structure No. 133 (+/- 2025)
  - Eliminate Structure No. 62
  - Download Structure No 113
  
- Undertaking Environmental Assessments (EA) and demolition of closed structures

| CAPITAL COST | MAINTENANCE COST | TOTAL COST   | AVE. COST/YR |
|--------------|------------------|--------------|--------------|
| \$69,537,441 | \$6,652,556      | \$76,189,997 | \$1,523,800  |

# Asset Management Strategy – Selection Approach for Closure Candidates

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The following approach was taken when considering which structures should be considered:

1. Structures with rehabilitation/replacement identified in the “Urgent” time frame were considered first;
2. Then structures with values for capital works  $\geq$  \$250,000;
3. Structures within the Meaford urban area were removed from consideration (i.e. 30, 31, 35, & 38) due to higher level of use/need;
4. Structures on dead end roads (were removed from consideration as they would isolate property owners (i.e. 2, 9, & 10);
5. Structures that were already closed were removed from consideration (i.e. 10, 21, & 22);
6. Structures that are on Class 3 roadways were removed from consideration.

# Task 4 – Financing Strategy

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Two Financing Strategies were considered

## **Base Funding Only**

intended to assess how far the baseline funding provided by the Municipality would go towards financing each Asset Management Strategy

## **Tax Increases**

designed to fully fund each Asset Management Strategy over the 50 year period while remaining within the Municipality's Debt Management Policy limits



# Task 4 – Financing Strategy

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## Financing Strategy A – Base Funding

- In all options Strategy A is insufficient in the long term to fund the structure needs and repay debt
- In Option #4, Strategy A is sufficient in the short term only from 2016 to 2024 then fails to meet the needs.

## Financing Strategy B – Tax Increases

- In all options, Strategy B is sufficient, but would require annual tax increases over the next ten years ranging from a low of 3.7% to a high of 19.8% per year, plus additional tax increases beyond that, dedicated solely to bridges and culverts.

# SOTI Conclusions

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- The state of the Municipality's bridges and culverts is declining.
- Four (4) Asset Management Strategies were identified and are intended to address the Municipality's bridge and culvert needs over the next 50 years, based on the results of the 2014 and 2015 OSIM inspections.
- Asset Management Strategy No. 4, which includes closure, elimination or download of 9 structures, offers the best opportunity for lowering overall costs.

# SOTI Conclusions

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- If the Municipality is guided by base funding and is willing to accept exceedances of its debt policy limit over the short term, then Financing Strategy 4A offers the most realistic funding option for the next eight years (i.e. 2016 and 2024). During this period, the Municipality can re-assess the bridge and culvert needs based on future OSIM inspections and refine the financing strategy.
- If the Municipality is guided by full funding of the needs, then Financing Strategy 4B would offer the most economical solution. However, taxes increases would be significant.
- The Provincial Approved Repayment Limit (ARL) would be met under all financial strategies.

# Council Adopted Plan

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In June 2016 Council adopted the SOTI report as a guiding document by using Strategy 4 in the creation of long term capital plans and annual budgets.

Council also provided the following additional direction;

- Develop 2017 budget to include the recommended increase in bridge funding from the current \$60,000 annually to \$360,000;
- Develop 2017 budget to include the recommended 1% dedicated tax rate increase to support additional bridge funding;
- Direct staff to draft a by-law establishing a separate and specific Reserve Fund for bridge rehabilitation, reconstruction and major maintenance;

# Council Adopted Plan

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- Transfer \$10,000 from reserves to proceed with a Municipal Class EA – Phase 1 approach for the permanent closure of Bridge 010 and subsequent road allowance closure and sale;
- Transfer \$25,000 from reserves to complete a Municipal Class EA – Phase 1 and Phase 2 approach for Bridge 021 and Bridge 022 to identify alternatives to address the emergency bridge closure that is in effect on these structures; and
- Transfer \$25,000 from reserves to complete a Municipal Class EA – Phase 1 and Phase 2, and possible hydraulic analysis approach for Bridge 028 to identify rehabilitation/replacement alternatives.
- Transfer \$48,000 from reserves to provide engineering services for rehabilitation activities on Bridge 030

# Bridge & Structure Works Completed

| Year | Structure         | Project Type             | Total Cost         |
|------|-------------------|--------------------------|--------------------|
| 2017 | Structure 021&022 | Environmental Assessment | \$ 47,250          |
| 2017 | Structure 030     | Rehabilitation           | \$ 590,200         |
| 2018 | Structure 008     | Guiderail                | \$ 34,450          |
| 2018 | Structure 009     | Guiderail                | \$ 19,700          |
| 2018 | Structure 011     | Guiderail                | \$ 19,100          |
| 2019 | Structure 013     | Guiderail                | \$ 30,250          |
| 2018 | Structure 014     | Guiderail                | \$ 17,200          |
| 2018 | Structure 016     | Guiderail                | \$ 15,100          |
| 2018 | Structure 018     | Guiderail                | \$ 17,100          |
| 2018 | Structure 025     | Rehabilitation           | \$ 94,700          |
| 2018 | Structure 039     | Rehabilitation           | \$ 347,950         |
| 2018 | Structure 047     | Rehabilitation           | \$ 66,500          |
| 2018 | Structure 049     | Rehabilitation           | \$ 56,600          |
| 2018 | Structure 051     | Rehabilitation           | \$ 221,600         |
|      |                   | <b>TOTAL</b>             | <b>\$1,577,700</b> |

\$66,750 was spent in 2018 on maintenance contracts to complete deck cleaning, brush & vegetation removal and minor patching

# 2019 Bridge & Structure Works

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| Year | Structure     | Project Type             | Total Cost          |
|------|---------------|--------------------------|---------------------|
| 2019 | Structure 001 | Rehabilitation           | \$ 5,300            |
| 2019 | Structure 015 | Environmental Assessment | \$ 55,000           |
| 2019 | Structure 017 | Rehabilitation           | \$ 527,550          |
| 2019 | Structure 028 | Replacement              | \$ 25,000           |
| 2019 | Structure 031 | Rehabilitation           | \$ 188,000          |
| 2019 | Structure 038 | Rehabilitation           | \$ 1,165,600        |
| 2019 | Structure 114 | Rehabilitation           | \$ 5,400            |
|      |               | <b>Total</b>             | <b>\$ 1,971,850</b> |

\$75,000 will be spent in 2019 on maintenance contracts to complete deck cleaning, brush & vegetation removal and damaged guiderail post replacements

# Next Steps – Provincial Grants

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- On March 20, 2019, the Ministry of Municipal Affairs and Housing notified municipalities across the Province of a one-time, unconditional grant. The new grant program under the title of “Small and Rural Municipalities Resources to Improve Service Delivery and Efficiency Grant” will provide the Municipality of Meaford \$642,347 for use in 2019 or future years.
- The Province has encouraged municipalities to use these one-off funds for projects designed to “modernize service delivery” and identify “more efficient ways of operating”.
- The CAO will be tabling a report on Monday April 29 outlining eight possible projects.



# Road & Bridge Related Projects

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## Comprehensive Traffic Count Survey - \$152,000

- The foundation of the Municipality's response to road maintenance standards is an accurate traffic count database, recording traffic as Average Daily Traffic (ADT) for each road section. The ADT is used with speed limit to define road classification, which then determines the Municipality's response time to addressing summer and winter road deficiencies.
- Traffic counts were not used in the last SOTI to determine road use or long term needs.

## Bridge State of the Infrastructure (SOTI) Update - \$50,000

- An updated study will highlight all types of bridge construction in the Province of Ontario and the conditions for best use of these structure types.
- The study will look at conventional structures including cast-in-place, slab, beam/girder, concrete boxes, steel culverts and will also explore other less standard designs including but not limited to arch or truss designs, wooden and fiberglass bridges, bailey bridges, etc.
- Cost modeling methodologies will consider the structural performances of bridges based on structural adequacy, life cycle costs and deterioration trends and will need to include an analysis on annual expected operations and maintenance costs.

# Road & Bridge Related Projects

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## Transportation Master Plan - \$100,000

- The current Bridge and Structure SOTI plan shows the need to permanently close a number of structures predominantly in the former southern Sydenham area.
- Although each structure would have an Environmental Assessment (EA) completed to determine the preferred solution (prior to any permanent closure), the EA process looks at each structure individually and not within the context of the broader transportation system
- The Transportation Master Plan will establish the vision for transportation services, assesses existing transportation system performance, forecasts future travel demand and will define actions and policies to address road, bridge and drainage needs within the rural areas and focus on active transportation needs (sidewalks, potential bike lanes, etc.) in the urbanized areas.

## **All three of these projects are integral to each other**

- Traffic Counts are needed to understand traffic volumes for the Master Plan and Bridge closures.
- Bridge Study update is needed to know what roads will remain in use to ensure Master Plan understands traffic flow.
- Master plan is needed to know what bridges can't or shouldn't be closed and what roads need upgrading.

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