



Staff Report

Report To: Dan Best, Chief Administrative Officer
From: **Don Giberson, Environmental Services Director**
Date: April 3 2018
Report: ESD.18.16
Subject: Failure of Mollard Line Culvert Structure #1056

Recommendations:

That South Huron Council receive the report from Don Giberson, Environmental Services Director Re: Failure of Mollard Line Culvert Structure #1056.

Purpose:

The purpose of this report is to notify Council of the Engineers inspection and recommendations regarding the failed culvert structure #1056 on Mollard Line.

Background and Analysis:

On March 6, 2018 during a routine inspection of road culverts after a major flooding event, Transportation Services Department Staff observed unusual deformation of the multi-plate corrugated steel culvert structure #1056 on Mollard Line and raised concerns regarding its' structural integrity.

In 2013 Mollard Line Structure #1056 was inspected by BM Ross Engineers as part of the OSIM inspections that year. Based on the deformation observed at that time, BM Ross recommended that temporary interior bracing be installed inside the structure to extend the life of the structure for three to five years, until the structure could be replaced. The temporary bracing consisted of a 150mm x 150mm wood beam with 100mm x 100mm wood posts at 600mm centers, along with welded steel reinforcements on the structural cracks in the corrugated steel pipe.

In 2015 Mollard Line Structure #1056 was inspected by GMBLuePlan Engineers as part of the OSIM inspections that year and no further deformation or cracking was observed and the temporary bracing was still intact.

After structural concerns were raised on March 6, 2018, GMBLuePlan Engineers were immediately contacted and arrangements made to have Structure #1056 inspected. That same day GMBLuePlan attended the site but were unable to inspect the structure due to high water levels and debris blocking the upstream end of the culvert. Debris was subsequently removed on Thursday March 8, 2018; water levels dropped; and GMBLuePlan were able to carry out their inspection on Monday, March 12, 2018.

On March 13, 2018 GMBLuePlan provided their findings to the Municipality (copy attached). The Engineers observed deterioration and structural deformation of the multi-plate corrugated steel culvert and failures of the temporary interior wood bracing. In GMBLuePlan's opinion, structure #1056 was in a failed state and recommended that the structure be closed to all vehicular traffic until a replacement strategy could be developed.

Accordingly, Transportation Services Department Staff immediately closed Mollard Line in the vicinity of structure #1056 (ie. between South Road and Crediton Road). Precast concrete barriers, along with road closed signage, were installed and area residents were notified. Emergency road closure notifications were issued to emergency services, school buses, utility companies and other maintenance services. Additionally, a Media Release was issued to enhance communication to the public.

After further consultation, GMBLuePlan Engineers confirmed that structure #1056 was beyond rehabilitation and recommended that the only option was complete replacement.

Staff reviewed funding options; potential design/tender/construction time lines and regulatory compliance issues. Based on this, Staff recommend that Mollard Line between South Road and Crediton Road remain closed to vehicular traffic and Structure #1056 be considered for replacement in the 2019 budget process.

Operational Considerations:

Rehabilitation options were considered but are not viable due to the extent of structural failure. Emergency replacement was considered and rejected as this failure did not meet the criteria for an emergency repair due to alternative traffic management options/re-routing and no danger to public safety. It should be noted that at this time, that moving forward on this

project would be problematic and more costly due to lack of engineering, other governmental agency requirements, construction premiums and timing/scheduling restrictions.

South Huron's Strategic Plan:

Section 6.2.2 of the Municipality of South Huron 2015- 2019 Strategic Plan identifies key objectives that are reflective of the collective perspectives of the strategic planning process.

The recommendations and actions outlined in this report are reflective of the following strategic objectives:

Administrative Efficiency and Fiscal Responsibility

Increased Communications and Municipal Leadership

Transparent, Accountable and Collaborative Governance

Financial Impact:

There are no immediate financial implications for the Corporation resulting from the proposed recommendation. Future costs to replace structure #1056 are approximately \$450,000 to \$500,000.

Legal Impact:

There are no legal implications for the Corporation resulting from the proposed recommendation.

Staffing Impact:

There are no staffing implications for the Corporation resulting from the proposed recommendation.

Policies/Legislation:

1. Minimum Maintenance Standards, under the Highway Traffic Act.
2. South Huron Asset Management Plan

Consultation:

Sandy Becker, Financial Services Manager/Treasurer; Dan Best, CAO; and Dwight Kinsman, Roads Foreman were consulted on the preparation of this report.

Related Documents:

1. March 13, 2018 letter from GMBLuePlan Engineers Re: "Mollard Line Culvert Structure No. 1056 Emergency Closure"

Respectfully submitted,

A handwritten signature in black ink, consisting of a large, stylized 'D' followed by several vertical strokes and a long horizontal flourish at the bottom.

Don Giberson, Environmental Services Director