

# **Dean Lake Road Bridge and Culvert – Background Report**

**Prepared by the Municipality of Huron Shores**

**October 2025**



---

## **1. Introduction**

The Dean Lake Road Bridge and adjacent culvert have reached the end of their service life. Both structures are in critical condition, and Dean Lake Road remains closed at this location for public safety. While important to local residents, it represents a significant financial decision for the entire municipality.

This report summarizes the background, inspection findings, and potential options for short-term and long-term solutions. It has been prepared to help Huron Shores residents understand the current situation and participate meaningfully in the Public Information Session on October 22, 2025.

At that meeting, Council will present the available information, discuss possible paths forward, and receive public feedback before determining next steps.

---

## **2. Current Situation**

### **Dean Lake Road Culvert Inspection (TULLOCH Engineering, June 2025):**

- Severe shear failure; the upper barrel slipped off the lower portion.
- Sections missing at the invert; extensive corrosion throughout.
- Sinkholes forming in the roadway surface.
- Full replacement required; the road must remain closed until the culvert is replaced.
- Feasibility and cost of a temporary bridge as an interim solution is being investigated.

---

### **Dean Lake Bridge - Recent Engineering Findings (Q&E and Kresin, 2025; Tulloch, 2024):**

- Deck deterioration: cracking, potholes, moisture ingress, and delamination.

- Structural deterioration: corrosion and section loss in chords, gusset plates, and bearings.
  - Concrete piers and abutments show advanced spalling and delamination.
  - Underwater sheet piling remains in fair to good condition.
  - The bridge was closed in January 2025 after inspection findings identified severe corrosion and section loss in the truss bottom chords and bearing regions.
  - Following detailed analysis by Kresin Engineering (Feb–Mar 2025), the structure was determined safe for limited use under a reduced 6-tonne load posting, down from 10 tonnes previously.
  - The reopening allowed light vehicles only; heavy or commercial vehicles remain prohibited.
- 

### Historical Note

- The Dean Lake Bridge was constructed in 1908 by the Province of Ontario. A bridge of this type would normally have an expected service life of 75 years, with good maintenance extending it to around 100 years. The Dean Lake Bridge has already exceeded that, operating well past its original design life.
  - The bridge had been posted at 10 tonnes since 2020 (per Tulloch’s 2019 load evaluation), reflecting previous section loss and deck limitations.
  - The 2025 reassessment confirmed further deterioration, resulting in the 6-tonne load restriction.
- 

### Dean Lake Bridge and Culvert Cost Estimates (2025 dollars):

- **Interim repairs:** \$800 K – \$1.2 M (1–2 years of limited use) includes cost of culvert and interim repairs.
  - **Major rehabilitation:** \$7.4 M– \$7.8 M (20–25 years, still load-posted) includes cost of culvert and interim repairs.
  - **Full replacement:** \$25 M – \$32 M (75+ years, full capacity) includes cost of culvert and interim repairs.
-

## **Chevis Road – Alternate Route**

Tulloch Engineering was retained to evaluate Chevis Road as the alternative route following the Dean Lake Bridge closure. The assessment reviewed existing road geometry, drainage, surfacing, and sightlines and determined that the current road functions below a 30 km/h design speed. All improvement options were assessed against a 60 km/h design standard with an 8m platform width and double surface treatment consistent with municipal rural road standards.

Tulloch developed several alternatives to address specific deficiencies along the corridor. The following summarizes the options. For detailed plan drawings, design assumptions, and cost breakdowns, refer to Appendix B – Chevis Road Assessment (Tulloch, 2025).

- Improve existing road to 60 km/h standard – \$4.49 M
- Realignment Sections A–C – \$1.18 M – \$2.44 M each
- Woodside Extension Options A–B – \$3.07 M – \$4.30 M
- Combined improvements (e.g., Realignment B + Central + Woodside B) – ~\$7.0 M

The estimates outlined above are all optional, and none of the above-mentioned estimates include costs related to the failed culvert or Dean Lake Bridge repairs. All estimates exclude property acquisition, legal surveying, and HST. Each option would require one construction season following detailed design and regulatory approvals.

---

## **Chevis Road – Environmental and Planning Context**

As part of the Chevis Road Assessment, a desktop environmental review was completed to identify any potential natural heritage or environmental constraints associated with possible road improvement or realignment options. The review did not identify any major environmental concerns that would preclude consideration of the proposed options. Both the Chevis Road and Woodside Drive extension corridors were found to be generally feasible from an environmental standpoint at this preliminary stage.

It is important to note that the review was conducted at a feasibility level only and does not replace the need for a Municipal Class Environmental Assessment (EA) should any option advance to design or construction. The EA classification, likely Schedule B or C, depending on scope and property impacts, would determine the level of study, consultation, and mitigation required for features such as wetlands, watercourses, significant wildlife habitat, or archaeological potential.

From a planning perspective, these findings suggest that future upgrades or realignments remain feasible in principle, subject to completion of the appropriate Municipal Class EA process and incorporation of any required Official Plan mapping or schedule amendments, which could be integrated into the Draft Official Plan project currently underway to ensure policy alignment.

---

**Chevis Road - Traffic Counts and Design Considerations**

Traffic counts were collected in 2024 and 2025. This helps the Municipality document how travel patterns changed after the Dean Lake Bridge closure. In 2024, when the bridge was open, Dean Lake Road carried an average of 241 vehicles per day, while Chevis Road carried about 50 vehicles per day. After the closure in 2025, counts showed 162 vehicles per day on Dean Lake Road (south of the bridge) and 181 vehicles per day on Chevis Road. These counts represent one-way trips, meaning each vehicle is counted once every time it passes the counter, not both directions combined.

It’s important to note that the traffic counts do not influence the engineering design for low-volume rural roads, like Chevis Road. Tulloch’s assessment and cost estimates are based on a 60 km/h design speed and an 8-metre platform width, which represent the standard for rural municipal roads regardless of daily traffic volumes. The traffic data are used to understand travel behaviour, support road classification, confirm service levels, and evaluate whether existing infrastructure continues to meet community needs.

---

**3. Short-Term Options (2025 – 2027)**

Option	Description	Estimated Cost	Key Points
<b>ST-1 – Excavate Culvert (No Connectivity)</b>	Remove failed culvert, backfill, and close crossing permanently.	\$110K – \$125K	All traffic permanently detoured via Chevis Road; begin planning/saving for decommissioning and invest in Chevis Road upgrades.
<b>ST-2 – Culvert Replacement (Bridge Reopens Short-Term)</b>	Replace culvert and reopen bridge temporarily.	\$800K - \$1.2M Includes interim bridge repairs.	Restores vehicular access at 6-tonne load posting; interim bridge repairs required; 1–2 years limited use.

<b>ST-3 – Temporary Modular Bridge over Culvert</b>	Install 40-ft modular rental bridge. Rental cost	\$380K – \$415K (2-year rental) Includes interim bridge repairs.	Provides short-term connectivity, subject to MTO permitting and approval; not a permanent structure. Interim bridge repairs required; 1–2 years limited use.
---	--	--	--

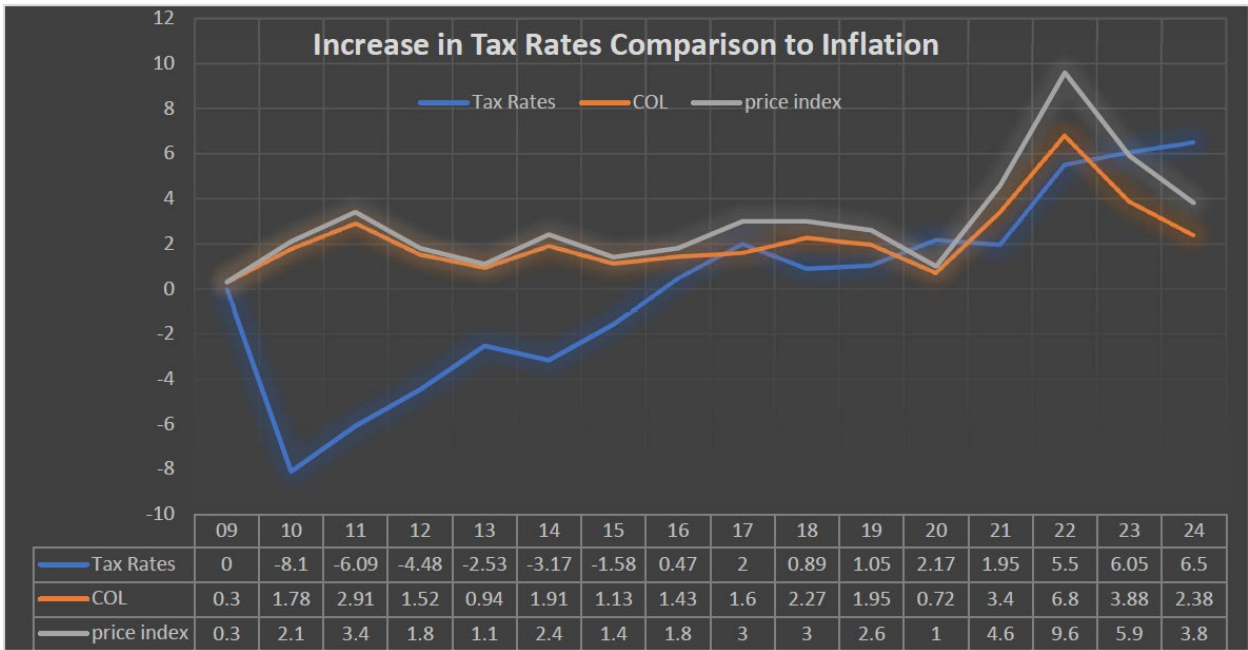
#### 4. Long-Term Options (2027 and Beyond)

Option	Description	Estimated Cost	Service Life	Notes
<b>LT-1 – Decommission Bridge</b>	Stop up and close Dean Lake Bridge and plan for removing superstructure and rehabilitate site, or consider pedestrian conversion.	Decommission \$2.2M includes <b>ST-1</b> + Chevis Road Improvements (\$2.5M - \$5M)	N/A	Culvert removal and plan for decommission. Eliminates future bridge liability and inspection costs; permanent reliance on Chevis Road (\$2.5M-5M).
<b>LT-2 – Major Rehabilitation</b>	New deck, truss repairs, concrete restoration, painting	\$7.4M– \$7.8M includes <b>ST-2</b> + Chevis Road Improvements (\$2.5M - \$5M)	20-25 years	Extends service life; structure remains load-posted.
<b>LT-3 – Full Replacement</b>	New one or two-lane bridge to current standards	\$25M - \$32M includes <b>ST-2</b> + Chevis Road Improvements (\$2.5M - \$5M)	75+ years	Provides full highway load capacity; requires environmental assessment, design, and external funding.

#### 5. Financial & Ratepayer Impact

The Municipality’s long-term financial capacity is a major factor in determining the preferred option for the Dean Lake Bridge and culvert.

Since 2009, the Consumer Price Index (CPI) has increased by 47.8%, while the Municipality of Huron Shores’ cumulative property tax rate increase has been only 0.63% over the same period. This means that municipal spending power has not kept pace with inflation.



The Municipality’s Asset Management Plan shows that our roads, bridges, buildings, and other infrastructure are worth about \$189 million in total. On average, they are in “fair” condition, which means many will need major work in the coming years. To keep everything in good working order, we should be investing about \$3 million per year, but we currently fund only about half that amount. This leaves an annual gap of over \$1 million and a backlog of projects already waiting to be done.

To close that gap over time, property taxes would need to increase by about 2.2% per year for the next 15 years, or by roughly 25% in total. Current reserves are not sufficient to cover large projects like the Dean Lake Bridge without reducing funding for other community priorities, so any decision to move forward with major construction will require new funding or cost-sharing arrangements.

Given these financial realities, it is important to consider how many residents directly rely on the Dean Lake Bridge and how the costs of any major repair or replacement would be shared across the broader tax base. The Dean Lake Bridge directly serves approximately 7.5% of all properties in Huron Shores — roughly 10% of permanent and seasonal residents (based on elector data). The remaining 92.5% of taxpayers would bear the financial impact

of any major rehabilitation or replacement unless a Local Improvement By-law or cost-sharing model were adopted. A Local Improvement By-law is a financing tool under the *Municipal Act, 2001* that lets a municipality complete a public work, such as a road, bridge, or drainage project, and recover part of the cost from the property owners who benefit directly. Typically, the municipality pays a base share of the cost, and the remaining amount is divided among benefitting properties through a special charge on their tax bills over several years.

**Approximate Financial Context (Assuming 100% Tax-Based Funding):**

Option	Estimated Cost	Approximate Impact (2025 Context)	Notes
<b>LT-1 Decommission</b>	\$2M**	~43% if paid in one year, or ~3%/yr over 15 years	Removes future liability but shifts reliance to Chevis Road upgrades.
<b>LT-2 Major Rehabilitation</b>	\$7.4M–7.8M**	~125-165% if paid in one year, or ~8-11%/year over 15 years	Extends service 20–25 years; still load restricted.
<b>LT-3 Full Replacement</b>	\$25–32M**	~540-700% if paid in one year, or ~36-46%/yr over 15 years	Not feasible without senior government support.

*\*\* Not including bridge maintenance or Chevis Road Improvements.*

*Figures are order-of-magnitude estimates for context only. Impacts assume 100% municipal funding and do not account for potential grants, cost-sharing, or use of reserves.*

---

## **Funding History**

Over the past two decades, the Municipality has pursued multiple infrastructure funding opportunities for the Dean Lake Bridge, primarily through senior government programs supporting small and rural communities. Historical records indicate applications were submitted under the 2003 Infrastructure/Tourism/NOHFC initiative, the Ontario Small Town and Rural Development (OSTAR) SuperBuild program in the early 2000s, and later under COMRIF (2008). More recently, applications were made through the Investing in Canada Infrastructure Program – Rural and Northern Stream (2019) and the Health and Safety Water Stream (2025).

Despite multiple attempts, few of these applications were successful, and records do not specify the reasons for the denials. It is presumed that project prioritization, competitive demand for limited funding, and the relative scope or eligibility of the Dean Lake Bridge project compared to other provincial priorities may have contributed to the lack of approvals.

---

## **6. Emergency Services Considerations**

In consultation with an emergency management specialist, staff inquired about the potential impact of extended response times for emergency services resulting from the continued closure of the Dean Lake Bridge and the use of alternate routes. The consultant was asked whether an approximate eight-minute delay (for services responding from Thessalon) would be considered significant from a public safety perspective, and whether the degree of impact would vary among emergency service types (Fire, EMS, or OPP).

From an outcome standpoint, the consultant noted that:

- For Fire Services an eight-minute increase may not alter the outcome of a structure fire where current response times already exceed 16 minutes, as the loss would likely be total at either timeframe. However, shorter response times are critical in preventing spread to adjacent properties. It is noted that the Huron Shores Fire Department has been responding via the existing route since 2012, when the bridge was first lowered to a 10-tonnes load limit (with proportional restrictions for heavier vehicle configurations), and therefore the closure has not introduced any new operational constraints for Fire Services.
- For Emergency Medical Services (EMS) the same delay could be life-threatening in cases of cardiac arrest or stroke but may have minimal impact on lower-severity injuries. For EMS, dispatch is handled provincially through Central Ambulance Communications Centres (CACC) under the Ministry of Health. The closest available ambulance is automatically dispatched using GPS-based Automatic Vehicle Location tracking, meaning coverage is based on availability and proximity, not municipal boundaries.
- For Police Services (OPP), impacts depend on the nature of the call. Response to non-urgent or after-the-fact reports (e.g., theft or property damage) would likely be unaffected, whereas urgent calls involving threats to public safety (e.g., weapons or violence in progress) could be more significantly impacted. Similar to EMS, OPP dispatch uses GPS-based Automatic Vehicle Location tracking, meaning coverage is based on priority, availability, and proximity, not municipal boundaries.



In summary, while an eight-to-fifteen-minute delay is considered operationally significant, its severity depends on incident frequency, type of service, and duration of the closure.

---

## 7. Next Steps

1. **Public Information Session** – October 22, 2025  
Council will present this material and discuss all feasible options.
  2. **Public Comment Period** – Until October 30, 2025  
Residents may submit written feedback to the Municipal Office.
  3. **Council Decision-Making** – November 12, 2025  
Council will consider:
    - Whether to proceed with short-term culvert or access works.
    - Which long-term strategy to pursue for Dean Lake Bridge.
    - How Chevis Road improvements fit into the overall network plan.
- 

## 8. How to Participate

- Attend the **Public Information Session** on **October 22, 2025** at **7:00 p.m.**
  - Review this background report and appendices before the meeting.
  - If you are unavailable to attend, submit feedback in writing by **October 30, 2025** to:  
**Municipality of Huron Shores**  
7 Bridge Street, P.O. Box 460, Iron Bridge ON P0R 1H0  
or via email at **email@huronshores.ca**
- 

## Appendices

### Appendix A – Engineering Inspection Summaries:

- Dean Lake Bridge Recommendation for Closure (Kresin)
- Dean Lake Bridge Closure – Status Update (Kresin)
- Dean Lake Bridge Closure – Status Update 2 (Kresin)
- Dean Lake Bridge Closure – Status Update 3 – Structural Evaluation (Kresin)(Q&E)

- Dean Lake Culvert Inspection (TULLOCH)
- Dean Lake Bridge Rehabilitation/Replacement Feasibility Study (Kresin) & Structural Condition Assessment – Follow-up Inspection (Q&E)
- Dean Lake Bridge Rehabilitation/Replacement Cost Estimate (Kresin) – Single Lane Bridge
- Dean Lake Bridge Steel Repair & Concrete Coring Report (TULLOCH)
- Dean Lake Load Evaluation Condition Assessment (TULLOCH)

#### **Appendix B – Chevis Road Assessment**

#### **Appendix C – Various Cost Estimates**

---

#### **Key Takeaways for Residents**

- Short-term reopening is contingent on culvert replacement and is subject to regulatory approvals and timing restrictions for in-water works.
- The bridge’s remaining life is limited even with repairs.
- Rehabilitation extends service life by 20–25 years but retains load restrictions and requires ongoing inspections and maintenance costs.
- Replacement offers full service but is unaffordable without external funding.
- Decommissioning saves bridge costs but requires upgrading Chevis Road.