ANDREWSVILLE BRIDGE WADING INSPECTION REPORT- JULY 2021

Lanark County, United Counties Leeds & Grenville

Keystone Bridge Management Corp.
Your Bridge Asset Management Specialist

Introduction

Keystone Bridge Management was retained by the County of Lanark to complete a wading inspection of the underside of the Andrewsville Bridge over the Rideau River downstream of Merrickville, Ontario. This is the third wading inspection of the Andrewsville Bridge by Keystone Bridge Management. Keystone previously provided a wading inspection of the bridge in August 2016 and August 2018. Keystone also has provided biennial (OSIM) inspections of the bridge in 2017 and 2019 and will again this year. This report should be read together with the previous reports.

This inspection was completed on July 5, 2021. Harold Kleywegt, P.Eng., was the principal inspector. He was assisted by engineering student Kyle Davis. Sean Derouin of Lanark County and Jacob Ouellette of United Counties of Leeds & Grenville were on hand to observe the beginning of the inspection.

Access to the underside of the bridge was obtained by setting up a 10’ step ladder and 24’ extension ladder on the river bottom. The depth of water and uneven bottom prevented ladder access to about half of the plan area of the truss. River flows were modest during the inspection.

The Rideau River is flowing principally north at the Andrewsville Bridge. Accordingly, the east abutment is on the United Counties of Leeds & Grenville side of the bridge and the west abutment is on the Lanark County side.

The bridge has two spans, a 39.0 m long main truss forming the west span and a 9.2 m steel girder section comprising the east span. The truss has 9 lower chord panel points supporting floor beams spaced at 4.88 m. Floor beams are only located at the interior panel points.

Spanning from floor beam to floor beam on the truss are five lines of steel S200 x 27 stringers spaced at nominally 0.9 m. They directly support the 4.9 m-wide laminated timber deck.

The structural steel framing on the east approach span consists of two main girders, a connecting floor beam and five stringers spaced at 914 mm. The S150 x 19 approach span stringers are a lighter section than the truss stringers.

For this report the area between floor beams is referred to as “Bays.” There are eight bays comprising the truss floor system. They are numbered from west to east with Bay 1 closest to the west abutment and Bay 8 closest to the pier. The stringers are numbered 1 to 5 from south to north (upstream to downstream). This convention has been followed in captioning the images included with this report.

The Bay 1 stringers were not closely inspected as they were replaced in late 2016. Similarly, the approach span stringers were not closely inspected as they were replaced in late 2018.

The primary purpose of the wading inspection is to provide direct access to the underside of the bridge by standing ladders on the river bottom. During the summer months when the river flow is reduced and the water temperature pleasant, this approach is a highly economical means of access as compared to swing stages or raft access.

Although the principal focus is the underside of the bridge, a thorough inspection of the top side and approaches was also provided.

History

There is some uncertainty as to the actual year of construction of the bridge. A historical photo of a 1904 dam break and flood event shows the east end of the bridge submerged with the east abutment presumably lost to scour. The year of construction of the main truss is most likely close to 1900. It is possible that the east approach span was added after 1904.

It is surmised that that the timber deck of the main truss was last replaced in 2008. Other repairs were completed in 2008 as well. Height-restricting portals on the approaches to the bridge were added in 2013. This followed damage to the bridge from an overload in May 2012.

Five steel stringers at the west end of the bridge were replaced in the fall of 2016. In December 2018, following the first winter closure of the bridge, the east approach span stringers and deck were replaced, and all the timber curbs on the main truss span and approach span were replaced. The stringers were replaced due to severe section loss with perforations.

Inspection Findings

Stringers

The seven bays of the main truss numbered 2 to 8 have stringers that are original equipment to the main truss and are therefore well over 100 years old. Previous inspection of these stringers confirmed generalized corrosion and significant section loss; however, no perforations were present.

During the 2021 wading inspection select areas with heavy slab rust (laminar corrosion) were hammer tapped as in previous inspections. This time, the stringers were found to have perforated webs in two locations. Perforation of a web signifies a 6.9 mm thickness of steel section loss. Generalized web thinning of the stringers and significant section loss of the stringer flanges was also noted. It is estimated that the five stringers acting together as a deck system have lost approximately 50% of their intended strength at this time.

In some locations there was very pronounced section loss of either the top or bottom flange of a stringer. Full section loss was incised horizontally to an estimated depth of 6 mm on the top flange at one inspected location.

All lines of stringers were examined for signs of permanent deformation such as would form under an overload. No evidence of permanent deformation was present.

The stringers were generally plumb; however, stringer 4 of bay 8 is slightly inclined at the bearing. One other stringer end had mild inclination at a floor beam support.

Despite closing the bridge to winter traffic as of 2018, thus minimizing salt corrosion, it is clear that the structural steel of the floor system has continued to experience ongoing corrosion. The corrosion may be from historical salt content chemically bound to the steel. Salts in the preservative of the timber deck may also be contributing to the corrosion. The outlook is continued degradation of the structural capability of the truss floor system.

Floor Beams

The floor beams span transverse to the axis of the truss and are connected to the lower chord panel points of the truss. They support the stringers and help stabilize the trusses. The floor beams' condition

has changed very little in the past seven years. The upstream and downstream ends of each of the seven floor beams are generally more heavily corroded than the middle sections. None of the corrosion on the floor beams is of a critical nature. That is, the load capacity of the truss is not governed by the floor beam condition.

A comparison of the floor beam condition change over time was made by careful comparison of 2018 imagery to 2021 imagery. A small increase in paint loss is clear. It was not possible to discern an increase in section loss. A small amount of additional section loss would be expected.

Timber Deck

The timber deck could be visually examined from above and below. The deck on the truss dates to 2008. The deck on the east approach span was replaced in late 2018. The timber is generally sound and competent. The timber is nail-laminated, so that wheel loads are shared by multiple planks acting in unison. Thus, the system is tolerant of limited deterioration such as checking and decay. The timber deck on the main truss has at least five years of estimated remaining service life. The timber curbs on ether side of the deck were replaced in 2018 and are in good condition. The anchor bolts fastening the curbs to the deck have loosened due to drying shrinkage of the curbs and should be tightened. The running boards are in fair-to-good condition with some spot replacement indicated on the main truss.

Concrete

The concrete in the two abutments and pier is lightly reinforced, lacks air entrainment, is of low strength, and is affected by alkali-aggregate reactivity. This is resulting in slow but gradually accelerating disintegration of the concrete. The disintegration is most pronounced on the upstream upper surfaces of the pier, and the upstream side of the east abutment. The disintegration of the east abutment may also be exacerbated by ice scour.

Presently the disintegration front is about to affect the main truss bearing at the upstream east corner. The concrete around the bearing is incompetent, and eventually the concrete under the bearing will also become incompetent.

Repair of the concrete is still possible without having to provide temporary support to the truss. However, the window for easy repair is rapidly closing.

Dry-Stone Retaining Walls

The east approach to the bridge has nominally 35 metres of dry-stone masonry retaining walls forming a causeway to the bridge. The walls are up to about 2.7 m high. The downstream side of the west approach has a similar dry-stone wall. These walls would have been originally constructed with a steep batter. The internal composition of the walls is not known. There is no evidence of iron or steel ties to internally support the walls.

The walls exhibit bulging, displacement, and localized dislodgement of stone. It is remarkable that they are still standing.

Some sections of the wall are partly collapsed. This is most notable on the west approach and at the eastern terminus of the downstream east wall. Erosion from turtle nesting has contributed to the partial collapse.

It is not anticipated that the dry-stone walls make the approaches vulnerable to catastrophic loss. That is to say, the slow deterioration of the walls will not cause a large collapse and full loss of the road platform. However, an extreme flood event or a seismic event could produce large scale failure of the walls and loss of the road. Certainly, a portion of the wall could collapse unexpectedly at any time and compromise the road surface.

Restoration of the walls would require almost complete reconstruction using salvaged material from the walls, most likely augmented by modern practises such as internal ties.

There is considerable risk exposure to the Municipalities arising from the condition of the dry-stone walls.

Railings

The approaches and bridge possess “safety” railings. All the railings are generally in a neglected state of repair, and do not conform to any current codes for guide rail or bridge railings. The deterioration of the dry-stone walls has resulted in settlement and displacement of the footings for the approach railings.

Scour

A nominal 0.5 m deep depression in the embankment in the upstream west corner of the truss was noted for the first time in 2021. The embankment is enclosed at this location by the west abutment and a reinforced concrete retaining wall.

Significant scour in front of the west abutment footing appeared after 2018 spring flooding. It is possible that some embankment material is “leaking” from gaps under the abutment footing or retaining wall footing. This would explain the noted depression in the embankment.

The Rideau River channel under the bridge is “lined” with natural blocky limestone. There is minor scour associated with the pier, and some suspected general scour between the pier and east abutment.

Trusses

There has been no observable deterioration of the trusses above the level of the bridge deck over the past seven years. Similarly, below the deck level, the bottom chords and connection gussets at the panel points show no observable change.

There is no evidence of any recent high or wide load damage to the trusses or upper sway bracing and portals.

Structural Evaluation

A simple structural evaluation was completed to establish some confidence in the residual capacity of the corroded stringers. There is some uncertainty with respect to the actual section properties of the stringers. They are certainly 8” high by 4” flange width Imperial stringers. Reference to historical section properties suggests there were about 10 rolled “S” shaped 8 x 4 beams with weights of 17 to 18.4 pounds per foot. The closest currently available section has a metric designation of S200x27 and an equivalent Imperial designation of S8x18.4. As the properties of the S200x27 section are reliably known, and the other similar sections will have closely similar structural attributes, this section was used as a starting point in the analysis.

The section was artificially weakened by reducing the combined flange area by half. The weakened section has 54% of the bending capacity of the original section.

Assuming a historical yield strength of 210 MPa, the weakened beam is predicted to plastically yield at an unfactored moment of 27 kN.m.

The unfactored weight of the deck and girders requires approximately 15% of the reduced girder capacity. Depending on assumptions around load distribution, a 5-tonne vehicle will require an additional 40% of the reduced capacity of the girders.

The upshot of this simple analysis is that the present 5-tonne load limit on the bridge is realistic but not conservative. Continued corrosion of the stringers will gradually erode the capacity of the bridge to the point that a 5-tonne load limit is no longer valid.

A 5-tonne single truck load limit is the practical lowest load rating for a bridge. Any posting lower than that is effectively a bridge closure according to the Bridge Code.

Synopsis

The Andrewsville Bridge has already greatly exceeded its normal anticipated service life. Despite significant effort to extend the life of the bridge, ongoing corrosion, concrete deterioration, and an aging main timber deck pose ever increasing risk of localized failures. The dry-stone retaining walls that support the bridge approaches are misshapen and are no longer considered reliable. Safety appliances such as bridge railings and approach railings are inadequate.

Restoration

Bridge

The existing bridge cannot be restored to full truck loading. It is conceivable that the bridge can be restored to a 20-tonne single truck load rating. To achieve this the floor beams and stringers together with the deck will need to be replaced. Significant concrete restoration will also be required. To maximize the life of the restoration, the truss should be painted. It may be necessary to dismantle the truss and make shop repairs and complete strengthening ahead of painting the members. The cost of the truss work will greatly exceed $1,000,000.

Approaches

The existing dry-stone retaining walls have heritage value, although this may not have been officially recognized. To reconstruct them with fidelity to the original construction will require highly skilled and exceedingly scarce specialist masons. The cost is expected to be prohibitive.

The alternative to reconstruction would be simple embankment widening with low retaining walls designed to defend against river scour. This would almost double the footprint of the causeway in the river on the east side and would encroach on flood plain and possibly private property on the west side.

Rust in Peace

The bridge can remain open with the current 5-tonne load posting for a few more years. However, every year that the bridge remains open, the risk of localized failure and liability exposure increases. It is the writer's recommendation to plan on fully closing the bridge to traffic within five (5) years. Until such time as the bridge is closed, regular monitoring of the approaches and bridge surface will be required to capture any untoward developments.

An annual comprehensive inspection of the bridge and approaches will be required.

Vehicle Trespass

Despite clearance portals at each approach to the bridge, and advance warning signs, incidents of oversize vehicle and possibly over-weight vehicle trespass is known to be occurring. Such incidents put the security of the bridge in peril and add to the overall risk. Moreover, heavy axle weights could cause a failure of the dry-stone approach walls.

Failure modes

The bridge stringers are presently the weakest component of the deck system. Should a stringer become slightly overloaded, it will permanently bend in the loaded direction or crush where it rests on a floor beam, abutment, or pier. This can result in local overloading of the timber deck, and an obvious "soft spot" will develop in the deck. The above is all premised on a light over-load such as a 7.5 tonne vehicle. It is very possible that a failure such as this will develop in the next five years. Fortunately, a failure such as this will be relatively benign, but would lead to a closure of the bridge, pending local strengthening or permanent closure.

If a loaded triaxle truck attempted to cross the bridge, the failure would be catastrophic and plainly visible to any following traffic. A gross overload such as this would likely not be benign and could result in the complete loss of the bridge.

Failure of the drystone retaining walls is anticipated to be of a relatively slow progressive mode exacerbated by rainfall, traffic and time. There should be some warning of the failure as the road platform narrows. However, under a severe flood, failure could occur suddenly and progress rapidly. A heavy rainfall event with gullying could also result in rapid failure.

Future Inspections

A more thorough inspection, especially of the stringers, is strongly recommended within two years. Several days of field measurement and documentation are recommended to achieve a strong objective understanding of the level of deterioration of the stringers so that their reduced capacity can be more precisely determined. A large stable raft may expedite such an inspection.

A coring and probing survey of the timber deck should also take place concurrently.

Summary Remarks

The Andrewsville Bridge has surpassed its useful life and is rapidly approaching the need to either invest major capital in its rehabilitation or renewal or close it to vehicle traffic. The road approaches to the bridge are failing and represent increasing risk to road users as they continue to degrade.

Several million dollars will be required to meaningfully extend the life of the existing bridge and improve the road approaches. The least costly alternative is to close the bridge, which is expected to be necessary within five years.

An environmental assessment study (EA) is strongly recommended at this time. An EA study will formalize an acceptable approach to dealing with end of useful life considerations for the Andrewsville Bridge, following well established guidelines. Options that will need full consideration include:

- Closure
- Conversion to pedestrian use only
- Rehabilitation
- Replacement

A do-nothing option for the bridge does not merit consideration even though it is typically considered in an EA study.

Signature

Keystone is very pleased to be of continuing service in the monitoring and management of the Andrewsville Bridge. We trust this report will be helpful in determining the future of this structure. Thank you for this opportunity to be of service.

Harold Kleywegt, P.Eng.
Managing Director

Photos

Figure 1: South elevation

Figure 2: East approach

Figure 3: Bay 2 overview

Figure 4: Bay 3 overview

Figure 5: Bay 4 overview

Figure 6: Bay 5 overview

Figure 7: Bay 6 overview

Figure 8: Bay 7 overview

Figure 9: Bay 8 overview

Figure 10: Stringer 2 perforation in bay 8

Figure 11: Floor beam 7 north end

Figure 12: Floor beam 7 south end

Figure 13: Floor beam 6 north end

Figure 14: Floor beam 6 south end

Figure 15: Floor beam 5 north end

Figure 16: Floor beam 5 south end

Figure 17: Floor beam 4 north end

Figure 18: Floor beam 4 south end

Figure 19: Floor beam 3 north end

Figure 20: Floor beam 3 south end

Figure 21: Floor beam 2 north end

Figure 22: Floor beam 2 south end

Figure 23: Floor beam 1 north end

Figure 24: Floor beam 1 south end

Figure 25: NE bearing

Figure 26: NE girder end web stiffening

Figure 27: East face of pier

Figure 28: East abutment and causeway from south

Figure 29: East span west end soffit

Figure 30: East span east end soffit

Figure 31: East abutment

Figure 32: Bulging retaining wall in SE

Figure 33: NW truss bearing

Figure 34: West approach

Figure 35: External stringer 1 condition Bay 6

Figure 36: Deck boards end detail

Figure 37: West abutment

Figure 38: Looking west between stringers 2 and 3

Figure 39: Stringer 3 perforation in bay 5

Figure 40: West face of pier

Figure 41: SW portal base

Figure 42: Sinkhole in SW corner

Figure 43: South channel upstream

Figure 44: North channel downstream

Figure 45: North pier truss bearing

Figure 46: Pier top north end

Figure 47: Railing south side of causeway

Figure 48: Bulging retaining wall north-east quadrant

Figure 49: Blocked drainage opening through causeway

Figure 50: North-east quadrant dry-stone retaining wall

Figure 51: Drainage opening through causeway

Figure 52: Undercut railing base in north retaining wall east end

Figure 53: North dry-stone retaining wall east approach

Figure 54: Grade change / bump over pier

Figure 55: Pier top south side from west

Figure 56: Typical bottom chord connection

Figure 57: Typical top chord connection

Figure 58: South pipe railing

Figure 59: Typical compression diagonal bracing tie plate

Figure 60: Damaged running boards

Figure 61: Deck surface looking west

Figure 62: South side truss

Figure 63: West portal

Figure 64: Wind and sway bracing

Figure 65: North truss

Figure 66: North truss section

Figure 67: NW portal base

Figure 68: NW damaged approach railing

ANDREWSVILLE BRIDGE REPORT #PW-29-2021

Public Works Committee

August 25, 2021

Sean Derouin, Public Works Manager

BACKGROUND

- The Andrewsville Bridge (MTO Site No. 015-0013) spans the Rideau River and provides access to the Parks Canada swing bridge which crosses the UNESCO World Heritage site, the Rideau Canal at Nicholson's Locks.
- Constructed in the early 1900's, the Bridge is composed of two simply supported structures: a 38-metre span steel through- truss with timber deck (west approach); and a 10-metre span timber deck on a rolled steel girders (east approach).
- Andrewsville Bridge has had a 5-tonne load limit imposed since 1952, which is the same load limit of the adjacent swing bridge. Average Annual Daily Traffic (AADT) is less than 200.
- Structural inspections have identified that the bridge has outlived its normal service life noting the original steel superstructure continues to deteriorate at an ever-increasing rate. The other concern is the stability of the 70 metre drystone retaining wall on the south approach that is at risk of collapse.

BACKGROUND

2005

- Investigation and Recommended Rehabilitation Report Completed recommending replacing the asphalt overlaid wood deck; upgrading bridge and approach railings; and repairing the substructure.

2007

- Structural Evaluation Report was completed to confirm the existing 5 tonnes load limit is still acceptable.

2008

- Wooden deck and curb replacement; and repairs to the stringers, bearing seats and ballast walls.

2012

- Inspection and update to the 2007 Structural Evaluation Report completed to confirm the 5 tonne load posting was sufficient.
- Recommendation was given to close the bridge to vehicular traffic if a major rehabilitation was not completed.
- A Public Information Session (PIC) was held to review the recommended options.
- May 4th; A transport damages the bridge resulting in indefinite closure.
- June; County Council commits to keep the bridge open with each Municipality contributing an upset amount of $50,000 over a period of 5 years for required repairs.

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BACKGROUND

2013

Height restriction barriers and signage installed to prevent oversized vehicles. Bridge structural repairs completed to allow reopening of the bridge in March.

2015

Annual inspection identifies stringer repairs required at North end of the bridge.

2016

Enhanced wading inspection completed.

Replaced north span stringers.

Lanark County agrees to provide a maximum of $60,000 (matched by UCLG), From Nov 2016 to Nov 2028 to maintain a 5 tonne load limit.

2018

Enhanced wading inspection completed.

By-law passed approving recommendation to close the bridge to traffic on an annual basis from December 1st to March 31st to prolong the lifespan of the bridge by eliminating further corrosion as a result of de-icing materials being tracked across the bridge.

South span girders, bearings and timber deck replaced.
Timber curbs replaced on entire structure.

DISCUSSION: Expenditures

Andrewsville Bridge Summary - Lanark County Share Only (50%)

Current End Date of Funding: April 27, 2028

Date	Description	Financial Allocation	Amount Spent	Amount Remaining	Notes
1-Nov-12	Motion PW-2012-104	$ (50,000.00)		$ (50,000.00)	UCLG also allocating $50,000
31-Dec-13	2013 Annual Expenditures		$ 32,554.70	$ (17,445.30)	
31-Dec-14	2014 Annual Expenditures		$ -	$ (17,445.30)	No charges against fund
31-Dec-15	2015 Annual Expenditures		$ -	$ (17,445.30)	No charges against fund
27-Apr-16	Motion PW-2016-52	$ (60,000.00)		$ (77,445.30)	UCLG also allocating $60,000
31-Dec-16	2016 Annual Expenditures		$ 22,015.66	$ (55,429.64)	
31-Dec-17	2017 Annual Expenditures		$ -	$ (55,429.64)	No charges against fund
31-Dec-18	2018 Annual Expenditures		$ 4,931.08	$ (50,498.56)	
31-Dec-19	2019 Annual Expenditures		$ 43,119.18	$ (7,379.38)	
31-Aug-21	2021 Annual Expenditures (to date)		$ 1,770.88	$ (5,608.50)	
		$ (110,000.00)	**$ 104,391.50**		

Max combined funds remaining **$ (11,217.00)**

Notes:

Motion PW-2012-104 - (Funds available over 4 years)

PW2014-000173 - $1,119.61 recovered from Economical Mutual for damages MVA 7/Sep/14; in addition to above

Motion PW-2016-52 - (Funds available over 12 years) (April 2016 - April 2028)

DISCUSSION: Updated Inspection

- Updated enhanced wading inspection completed on July 5, 2021 (Appendix A-Report)
- Previous wading inspection in 2018 noted general corrosion and significant section loss in the stringers but in this years inspection, **two large perforations in the webs** were identified.
- Generalized web thinning of the stringers and section loss of the flanges were also noted.
- A structural evaluation was completed to confirm the existing 5-tonne is still suitable.
- The drystone retaining walls are slowly deteriorating and are at risk of failure.
- The structural steel of the floor system has continued to deteriorate despite closing the bridge to winter traffic as of 2018.
- Report recommends closing bridge within 5 years.
- Report recommends an Environmental Assessment study (EA) be completed to investigate the future options of the bridge.

ANALYSIS & OPTIONS

1. Advertise a Request for Proposal (RFP) for a Municipal Class Environmental Assessment (EA) report to asses alternative options for Andrewsville Bridge and recommend the preferred option such as:
   I. Close Bridge
   II. Convert to pedestrian only bridge
   III. Rehabilitate Bridge
   IV. Replace Bridge
   V. Download bridge jurisdiction to the lower tier local Municipalities.
   VI. Do nothing.
2. Work within existing allocated funds, conducting yearly inspections until the inspection yields a recommendation to close the bridge.
3. Close bridge to traffic.

LANARK COUNTY

FINANCIAL IMPACT

1. EA Study:
   - Anticipated to cost $20K to $30K
2. Work within existing budget:
   - $11K remaining @ ~$3,500/year on inspections, a total of 3 more years.
- Close Bridge to Traffic
   - Anticipated ~$10K to $15K for signage and gates.

CONCLUSION

- PW recommends proceeding with an RFP to complete an EA study to investigate the preferred alternative option to address the near end useful life of the Andrewsville Bridge.
- The results of the RFP bid submissions would be presented to the Sept 22 PW Committee meeting for approval prior to proceeding with award.
- UCLG have been consulted with and are in agreement with this recommendation. Following the committee's decision, UCLG will be taking this back to their Council.
- The cost of the EA study can be accommodated within the existing 2021/22 Engineering budget.

LANARK COUNTY

ATTACHMENTS

- Appendix 'A' – Andrewsville Bridge Wading Inspection Report - July 2021

MINUTES
SEVENTH MEETING OF 2021
PUBLIC WORKS
COMMITTEE OF THE WHOLE

The Public Works Committee of the Whole met in regular session on Wednesday, August 25, 2021 immediately following County Council at the Lanark County Administration Building, 99 Christie Lake Road, Perth, Ontario.

Members Present:	Chair E. McPherson, Warden C. Lowry and Councillors P. McLaren, J. Hall, C. Lowry, R. Minnille, B. Dobson, K. Van Der Meer, J. Fenik, E. McPherson, B. Campbell,, B. Crampton, R. Kidd, D. Black, S. Redmond, S. Fournier, and R. Scissons.
Staff/Others Present:	K. Greaves, CAO L. Drynan, Clerk/Deputy CAO C. Whiticar, Deputy Clerk T. McCann, Director of Public Works S. Derouin, Public Works Manager
Regrets:	Councillor S. Mousseau

PUBLIC WORKS

Chair: Councillor E. McPherson

1. CALL TO ORDER (Reminder please silence all electronic devices)

The meeting was called to order at 5:43p.m.
A quorum was present.

2. DISCLOSURE OF PECUNIARY INTEREST

None at this time.

3. APPROVAL OF MINUTES

MOTION #PW-2021-57

MOVED BY: K. Van Der Meer **SECONDED BY:** B. Crampton

"THAT, the minutes of the Public Works Committee meeting held on June 23, 2021 be approved as circulated."

ADOPTED

4. ADDITIONS AND APPROVAL OF AGENDA

MOTION #PW-2021-58

MOVED BY: J. Fenik **SECONDED BY:** J. Hall

"THAT, the agenda be approved as presented."

ADOPTED

5. DELEGATIONS (10 MINUTES)

6. QUESTIONS OF THE DELEGATION FROM COUNCIL

7. PRESENTATIONS

i) Public Hearing for Closing and Sale of Parts of County Road 7 and County Road 19
Director of Public Works, Terry McCann

MOTION #PW-2021-59

MOVED BY: B. Crampton **SECONDED BY:** B. Dobson

"**THAT**, the Committee recess at 5:44 p.m. in order to hold a Public Hearing for the proposed closing and sale of portions of former County Road 7 and County Road 19, as outlined in Report #PW-23-2021 and Report #PW-24-2021 (June 23, 2021 Public Works Committee); Motion #PW-2021-48 and Motion #PW-2021-49 approved at the June 23, 2021 County Council Meeting."

ADOPTED

MOTION #PW-2021-60

MOVED BY: K. Van Der Meer **SECONDED BY:** J. Hall

"**THAT**, the Public Hearing close and the Committee return to regular session at 5:48pm."

ADOPTED

MOTION #PW-2021-61

MOVED BY: C. Lowry **SECONDED BY:** S. Redmond

"**THAT**, there being no objections from the public, the Clerk presents the necessary By-law at the September 8, 2021 meeting of County Council to stop-up, close and sell a portion of the former County Road 7, Being Part of Lots 21 & 22, Concession 11, Geographic Township of Bathurst, now Tay Valley Township, County of Lanark, designated as Parts 2 and 4, Registered Plan 27R11665 to the abutting property owner(s) for $1."

ADOPTED

MOTION #PW-2021-62

MOVED BY: C. Lowry **SECONDED BY:** S. Redmond

"**THAT**, there being no objections from the public, the Clerk presents the necessary By-laws at the September 8, 2021 meeting of County Council to stop-up, close and sell a portion of former County Road 19, Firstly: Part of the East half of lot 2, Concession 10, Geographic Township of Bathurst, now Tay Valley Township, County of Lanark, designated as Part 2 on 27R8134 and Secondly: Part of Lot 3, Concession 10, Geographic Township of Bathurst, now Tay Valley Township, County of Lanark, designated as Part 6 on 27R10623 to the abutting property owner(s) for $1."

ADOPTED

8. COMMUNICATIONS

i) AORS - Certified Road Supervisory Senior Certification - Darwin Nolan

Council directed staff to pass on congratulatory messaging to Darwin Nolan.

ii) Concerns regarding speeding in Appleton

Council discussed the issue of speed and working in partnership with the OPP moving forward. Council touched on the potential to use cameras in enforcement, similar to the red-light cameras used in Ottawa.

T. McCann advised that this is an ongoing problem (1-2 complaints a week) and that staff believe that the traffic calming policy needs to be updated. He also noted that with the OPP establishing a County wide Police Service Board, we will be better able to discuss issues, such as this and what the legislation with respect to using cameras.

Councillor Kidd noted that the extra-large signage being used west of County Road 17 work very well and has cut down on speed complaints since their installation.

MOTION #PW-2021-63

MOVED BY: C. Lowry **SECONDED BY:** S. Redmond

"**THAT**, staff bring back a report to the Public Works Committee with a recommendation to update the traffic calming policy."

ADOPTED

iii) Autonomous Vehicle - MTO

MOTION #PW-2021-64

MOVED BY: B. Campbell **SECONDED BY:** B. Crampton

"THAT, the communications for the August Public Works Committee meeting be received as information."

ADOPTED

9. CONSENT REPORTS

10. DISCUSSION REPORTS

i) Report #PW-28-2021 Posted Speed Reduction: County Rd 12 (Markle Rd.) Page 9 - 13
Public Works Manager, Sean Derouin

S. Derouin presented a power point presentation, please see attached.

Council directed staff to share information related to policy changes, such as this one that would affect local tiers, with local municipal staff before bringing to County Council to ensure appropriate local input is sought.

MOTION #PW-2021-65

MOVED BY: R. Kidd **SECONDED BY:** B. Dobson

"**THAT**, County Council approve a speed reduction on County Road 12 (Markle Rd), to 60 km per hour, from the existing 50 km/hr reduced speed zone, westerly for 900 m.

AND THAT, the Clerk prepares the necessary by-law, for presentation at the September 8th Meeting of County Council, to establish the speed reduction on County Road 12 (Markle Rd.) as outlined in this report;

AND THAT, the Clerk prepares the necessary by-law, to amend the existing by-laws 81-44 and 2004-24 to define the actual limits of the existing 50 km/hr reduced speed zone.

AND THAT, the Clerk sends Report #PW-28-2021 to the Lanark County OPP Detachment, and the Clerk for the Township of Lanark Highlands for information."

ADOPTED

ii) Report #PW-29-2021 Andrewsville Bridge — Page 14 - 18
Public Works Manager, Sean Derouin

S. Derouin presented a power point presentation, please see attached.

S. Derouin took questions from Council and clarified that the nearest bridge is approximately 5km down the road.

B. Dobson provided background on his position for the bridge, noting its legacy of 150 years.

The Committee had a discussion with respect to the position of Parks Canada's willingness to partner on the project.

Councillor Fenik discussed the swing bridge upgrades in the Town of Perth, noting that it may be worth County Council writing MP Scott Reid to seek support in obtaining federal funding through grants to pay for the proposed restorations.

MOTION #PW-2021-66

MOVED BY: D. Black **SECONDED BY:** S. Redmond

"THAT, the Public Works Committee recommends that County Council proceed with an RFP to complete an EA study to investigate the preferred alternative option in order to address the near end useful life of the Andrewsville Bridge;

AND THAT, the RFP be conditional upon the United Counties of Leeds & Grenville's partnership on the project;

AND THAT, the results of the RFP bid submissions be presented to the Public Works Committee on September 22, 2021."

ADOPTED

iii) Report #PW-30-2021 2021 Construction Update — Page 19 - 25
Public Works Manager, Sean Derouin

S. Derouin provided a power point presentation, please see attached.

MOTION #PW-2021-67

MOVED BY: B. Campbell **SECONDED BY:** J. Fenik

"**THAT**, Report #PW-30-2021, 2021 Construction Update be received as information."

ADOPTED

11. VERBAL REPORTS

i) Climate Action Committee — Page 26 - 27

Councillor Fenik provided an update on the Climate Action Committee, please see summary attached.

The Committee discussed in detail the tasks of the workplan. Clerk L. Drynan provided clarification of the timelines and details.

MOTION #PW-2021-68

MOVED BY: J. Fenik **SECONDED BY:** R. Kidd

"**THAT**, the Public Works Committee, based on a recommendation from the Climate Action Committee endorse the resolution adopted by the City of Stratford with respect to a request to phase out Ontario's Gas Plants."

ADOPTED

MOTION #PW-2021-69

MOVED BY: R. Kidd **SECONDED BY:** J. Fenik

"**THAT,** the Climate Action Committee provide a formal report to County Council regarding the Climate Action Committee Workplan."

ADOPTED

12. DEFERRED REPORTS

13. CONFIDENTIAL REPORTS

14. NEW/OTHER BUSINESS

15. ADJOURNMENT

The Committee adjourned at 6:53p.m. on motion by Councillors

Casey Whiticar, Deputy Clerk

MINUTES
NINTH MEETING OF 2021
PUBLIC WORKS
COMMITTEE OF THE WHOLE

The Public Works Committee of the Whole met in regular session on October 27, 2021 immediately following County Council at the Lanark County Administration Building, 99 Christie Lake Road, Perth, Ontario.

Members Present:	Chair E. McPherson, Warden C. Lowry and Councillors P. McLaren, J. Hall, C. Lowry, R. Minnille, B. Dobson, K. Van Der Meer, J. Fenik, E. McPherson, B. Campbell,, B. Crampton, R. Kidd, S. Mousseau, D. Black, S. Redmond, S. Fournier, and R. Scissons.
Staff/Others Present:	K. Greaves, CAO C. Whiticar, Deputy Clerk T. McCann, Director of Public Works S. Derouin, Public Works Manager
Regrets:	Councillor

PUBLIC WORKS

Chair: Councillor E. McPherson

1. CALL TO ORDER (Reminder please silence all electronic devices)

The meeting was called to order at 6:12 p.m.
A quorum was present.

2. DISCLOSURE OF PECUNIARY INTEREST

None at this time.

3. APPROVAL OF MINUTES

MOTION #PW-2021-77

MOVED BY: J. Fenik **SECONDED BY:** S. Fournier

"THAT, the minutes of the Public Works Committee meeting held on September 22, 2021 be approved as circulated."

ADOPTED

4. ADDITIONS AND APPROVAL OF AGENDA

MOTION #PW-2021-78

MOVED BY: K. Van Der Meer **SECONDED BY:** S. Redmond

"THAT, the agenda be approved as presented."

ADOPTED

5. DELEGATIONS (10 MINUTES)

i) Hwy 15 Entrance Concerns
Tom Bourne, Principal, Calvary Christian Academy/Calvary Christian High School

Deferred.

6. QUESTIONS OF THE DELEGATION FROM COUNCIL

7. PRESENTATIONS

i) FoodCycler Overview — Page 7 - 37
Michelle Vala, Climate Environmental Coordinator
Alex Hayman, Director of Strategic Solutions
Christina Zardo, Manager of Municipal Solutions

M. Vala presented a power point presentation, please see attached.

C. Zardo shared a power point presentation, please see attached.

Members of Council had a discussion regarding the presentation and directed staff to share with the Clerks of the local municipalities. The Committee had a discussion regarding inclusion of the initiatives in the 2022 budget deliberations.

CAO K. Greaves recommended that a standard dollar figure be included in the 2022 budget for consideration, in which the sub-committee could draw from throughout the year to fund initiatives, such as the FoodCycler progam.

8. COMMUNICATIONS

i) Ontario Good Roads Association: Call for Nominations 2022-2023 Board of Directors

ii) Town of Carleton Place: Request for Amendment to Lanark County By-Law 2015-30 Off Road Vehicles

MOTION #PW-2021-79

MOVED BY: J. Fenik **SECONDED BY:** S. Mousseau

"THAT, the communications for the October Public Works Committee meeting be received as information."

ADOPTED

MOTION #PW-2021-80

MOVED BY: S. Redmond **SECONDED BY:** B. Crampton

"**THAT**, staff prepare a report based on the request from the town of Carleton Place to amend Lanark County By-Law 2015-30, Off Road Vehicles."

ADOPTED

9. CONSENT REPORTS

10. DISCUSSION REPORTS

i) Andrewsville Bridge RFP Results — Page 38 - 44

Staff was directed to share the Andrewsville Bridge RFP Results report with the "Friends of Andrewsville Bridge" group.

MOTION #PW-2021-81

MOVED BY: R. Scissons **SECONDED BY:** S. Mousseau

"**THAT,** public works staff proceed with the RFP process to complete an EA study which would allow for the investigation of the preferred alternative option to address Andrewsville Bridge's future usage."

ADOPTED

ii) County Road 19 Speed Limits New Info Update — Page 45 - 53

Council had a lengthy discussion regarding the proposed options presented by S. Derouin. Some concerns discussed included precedent setting and liability on the County.

Following points made by Warden Lowry, Council had a lengthy discussion about the process that has resulted in the request to amend the speed limits; with many noting they felt uncomfortable with it.

MOTION #PW-2021-82

MOVED BY: J. Hall **SECONDED BY:** J. Fenik

"**THAT**, County Council approve a speed reduction on County Road 19 (Bennett Lake Rd.), as outlined in this report;

AND THAT, the Deputy Clerk prepares the necessary by-law, for presentation at the November 10 Meeting of County Council;

AND THAT, the Deputy Clerk sends Report #PW-34-2021 to the Lanark County OPP Detachment, for information."

ADOPTED

11. VERBAL REPORTS

i) Report of the Lanark County Climate Action Committee — Page 54 - 74
Councillor John Fenik

MOTION #PW-2021-83

MOVED BY: J. Fenik **SECONDED BY:** K. Van Der Meer

"THAT, the Report of the Lanark County Climate Action Committee be received as information."

ADOPTED

MOTION #PW-2021-84

MOVED BY: J. Fenik **SECONDED BY:** B. Crampton

"**THAT**, the Public Works Committee recommend that Lanark County Council endorse the recommendation from the Lanark County Climate Action Committee in that the procurement of any replacement or new County fleet and/or equipment be electric in nature, when possible to align with the County's Climate Action Plan;

AND THAT, all local municipalities be encouraged to follow the lead with respect to electric purchases of fleet and equipment;

AND THAT, County Council and Staff remain mindful of 'Theme 9: Climate Change and Air Quality' (page 68) and 'Theme 11: Energy' (page 70) of the * Integrated Community Sustainable Plan for Lanark County, adopted as part of the County Official

Plan in June 2012 during budget deliberations and when making capital and operational decisions for the corporation."

ADOPTED

12. DEFERRED REPORTS

13. CONFIDENTIAL REPORTS

14. NEW/OTHER BUSINESS

i) FoodCycler Overview - *Discussion and/or Staff Direction*

MOTION #PW-2021-85

MOVED BY: S. Mousseau **SECONDED BY:** B. Dobson

"**THAT**, Report #PW-32-2021, FoodCycler Pilot Program, be received as information;

AND THAT, a project fund for the Climate Action Committee be considered in the 2022 Budget Deliberations.;

AND THAT, requests to spend funds from the proposed 'project fund' be approved by Council through a report to the Public Works Committee."

ADOPTED

15. ADJOURNMENT

The Committee adjourned at 7:17p.m. on motion by Councillors Fournier and Scissons

Casey Whiticar, Deputy Clerk

ANDREWSVILLE BRIDGE REPORT #PW-33-2021

RESULTS OF RFP SUBMISSIONS FOR EA STUDY

Public Works Committee

October 27, 2021

Sean Derouin, Public Works Manager

PURPOSE

- To provide the PW Committee with the results of the RFP submissions to complete an EA study on Andrewsville Bridge.

BACKGROUND

- On August 25, 2021, the PW Committee agreed to proceed with advertising an RFP for an EA study on Andrewsville Bridge to investigate the preferred alternative options available to address the near end useful life of the Bridge, and for the results to be presented to the Committee for approval to proceed.
- The PW Committee also required confirmation that Leeds and Grenville will commit 50% of the required funds to proceed with the study.

DISCUSSION

- A total of three submissions were received and Jewell Engineering was determined to be the most feasible bid.
- Leeds and Grenville has confirmed they will commit 50% of the required funds to complete the EA Study, and they already have an approved budget to do so.

FINANCIAL IMPACT

- With a remainder of $5.6K committed to Andrewsville Bridge, the total additional amount required to cover the County portion of the study =$15K.
- With the EA taking place over 2 years, PW can accommodate the $15K within the existing Engineering Budget.

ANALYSIS & OPTIONS

1. Proceed with Award to Jewell Engineering to complete the EA Study
2. Do Nothing
3. Close bridge to traffic.

STAFF RECOMMENDATION

- PW recommends proceeding with an RFP to complete an EA study to investigate the preferred alternative option to address Andrewsville Bridge's future usage.

Bridge Inspection Report

Andrewsville Bridge

Road Name:	*Andrewsville Main St*
Site ID:	*B40*
Structure Type:	*Truss-Through*
Owner:	*County of Lanark*
Built:	*1900*
Length:	*47.7 m*
Width:	*5.1 m*
Spans:	*1*
Spans Arrange:	*38.5 (truss) 9.2 (girder)*
Feature Under:	*Water*
Crossing:	*Rideau River*
Location:	*500m west of County Rd 23*

AADT:	*300*	**Latitude:**	*44.95115000*
Lanes:	*1*	**Longitude:**	*-75.81913300*
Skew:	*0 °*	**Orientation:**	*N-S*
Speed:	*20 km/h*	**Road Width:**	*4.4 m*
Trucks		**Load Posting:**	*5*

Inspection Date:	*July-05-21*
Inspector:	*Harold Kleywegt, P.Eng.*
Assistant:	*Kyle Davis, Eng Student*

Comments:

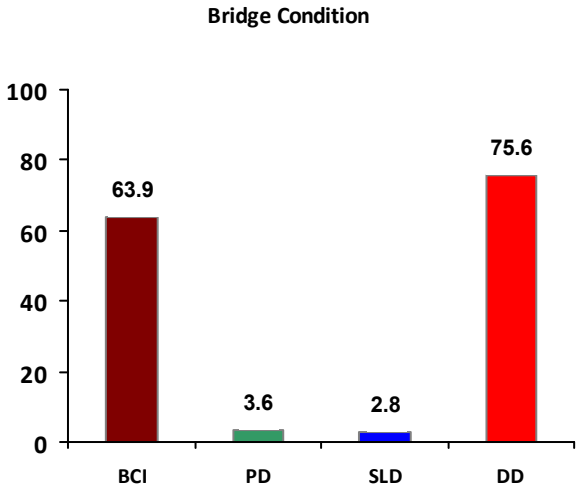
This bridge has a 5 tonne load limit. It has a very high local value. A historical plaque was added by local residents in 2017. The bridge has outlived its normal service life. Biggest concern is the stability of the dry stone walls on the approaches. The approach railings are mangled. Need a plan to deal with partial collapse of dry stone wall. Approach barriers and bridge railings deficient to current standards. Bridge now closed seasonally from Dec 1 to March 31. Refer to 2021 wading inspection notes for additional information.

Recommended Investigations:

No Special Investigations Recommended

Recommended Capital Works:

Decommission



BCI = Bridge Condition Index MTO Calculation

PD = Parabolic Depreciation
% retained value

SLD = Straight Line Depreciation
% retained value

DD = Defects and Damage
% loss of retained value

Estimated Replacement Value: *$5,513,000*

Estimated replacement value is based on replacement in kind

Estimated Remaining Service Life: *5 Years*

Rehabilitation Year and Estimated Cost: *2026 $36,000*

Component Inspection Information

Timber-Laminated (1)	Defects **0.0%**
Approach Deck Surface	Damage **0.0%**
Length: ***9.2 m***	Maintenance **None**
Width: ***5.5 m***	Capital Rec. **None**
Height: ***0.15 m***	***Good condition.***

Timber-Laminated (1)	Defects **0.0%**
Truss Deck Surface	Damage **1.0%** **Moderate Wear**
Length: ***38.6 m***	Maintenance **None**
Width: ***4.22 m***	Capital Rec. **None**
Height: ***0.15 m***	***Good condition. Some running boards are split and should be considered for replacement.***

Timber-Sawn (2)	Defects 20.0% **Moderate UV Weathering, Moderate Checking**
Running boards	Damage 5.0% **Moderate Breakage**
Length: ***47.7 m***	Maintenance **Local repair**
Width: ***1 m***	Capital Rec. **None**
Height:	***Some spot replacement should be considered.***

Timber Curb (2)	Defects **0.0%**
Curbs	Damage **0.0%**
Length: ***47.7 m***	Maintenance **Local repair**
Width: ***0.13 m***	Capital Rec. **None**
Height: ***0.13 m***	***Replaced in 2018. Bolts should be tightened to compensate for timber shrinkage.***

Steel Pipe Ped Barrier (2)	Defects **0.0%**
Approach Barrier	Damage 20.0% **Major Deformation, Moderate Impact**
Length: ***100 m***	Maintenance **Repair Minor Damage**
Width:	Capital Rec. **None** **Perf Def: Weakened**
Height:	***Significant damage and settlement on north approach, east side. Settlement and tilting on south side.***

Steel-Fabricated (2)	Defects 50.0% **Moderate Corrosion**
I-type - Approach Girders	Damage 5.0% **Minor Section Loss**
Length: ***9.2 m***	Maintenance **None** **Partial Inspection**
Width: ***0.2 m***	Capital Rec. **None**
Height: ***0.46 m***	***Much of coating is lost, with rust blisters on the lower flanges. NE corner web stiffened in 2018.***

Component Inspection Information

Top Chord (2)
Top chords
Length: *38.5 m*
Width: *0.33 m*
Height:

Defects 30.0% **Minor Corrosion**
Damage **0.0%**
Maintenance **None**
Capital Rec. **None**
Relatively benign environment means minimal section loss despite loss of coating.

Bottom Chord (2)
Bottom Chords
Length: *38.5 m*
Width: *0.33 m*
Height:

Defects 50.0% **Minor Corrosion**
Damage 5.0% **Minor Section Loss**
Maintenance **None**
Capital Rec. **None**
Significant coating failure. Bottom chord in NW corner strengthened in 2013. Wading inspection in 2016, 2018 and 2021.

Diagonal/Post/Hangar (30)
Verticals/diagonals
Length: *4 m*
Width: *0.15 m*
Height: *0.15 m*

Defects 40.0% **Minor Corrosion**
Damage **0.0%**
Maintenance **None**
Capital Rec. **None**
Tie plates added to compression diagonals in 2013.

Steel Floor Beam (6)
I-type - Floor Beams
Length: *5 m*
Width: *0.2 m*
Height: *0.5 m*

Defects 60.0% **Minor Corrosion, Moderate Corrosion**
Damage 5.0% **Minor Section Loss**
Maintenance **None** **Partial Inspection**
Capital Rec. **None**
See wading inspection report of 2021. Some paint still intact.

Stringers (5)
I-type - Stringers
Length: *47.7 m*
Width: *0.2 m*
Height: *0.3 m*

Defects 60.0% **Major Corrosion, Moderate Corrosion**
Damage 20.0% **Major Perforation, Moderate Section Loss**
Maintenance **None** **Partial Inspection**
Capital Rec. **Repair in 2 years**
Some stringer ends have been repaired with bolted extensions. Stringers at the west abutment replaced in 2016. Stringers on east approach span replaced in 2018. Two perforations detected on main truss stringers in 2021.

RC Abutment Wall (1)
Abutment Stem
Length:
Width: *7 m*
Height: *2.2 m*

Defects 30.0% **Moderate Leaching/Seepage, Moderate Scaling, Moderate AAR Cracking**
Damage 15.0% **Major Disintegration**
Maintenance **None**
Capital Rec. **None**
AAR related disintegration with leach staining and scaling.

Component Inspection Information

RC Ballast Wall (1)
Ballast Walls
Length:
Width: *7 m*
Height: *0.6 m*

Defects **0.0%**
Damage **0.0%**
Maintenance **None**
Capital Rec. **None**
Partial Inspection
No concerns noted.

RC Wing Walls (2)
RC wingwall
Length: *2.5 m*
Width:
Height: *1.25 m*

Defects 50.0% **Moderate Leaching Cracks, Moderate AAR Cracking**
Damage 5.0% **Minor Disintegration**
Maintenance **None**
Capital Rec. **None**
Partial Inspection
Serviceable.

Entire Pier (1)
River Pier
Length: *2 m*
Width: *8 m*
Height: *2.2 m*

Defects 40.0% **Major AAR Cracking, Moderate Efflorescence, Moderate Scaling**
Damage 20.0% **Major Disintegration**
Maintenance **None**
Capital Rec. **None**
Top is experiencing severe disintegration especially at nosing. SE truss bearing may lose support in a few years.

Steel Sliding Plate (2)
Bearings
Length:
Width:
Height:

Defects **0.0%**
Damage 20.0% **Moderate Section Loss**
Maintenance **None**
Capital Rec. **None**
Partial Inspection
Historically corroded.

Rocker or Roller Bearing (4)
Roller bearing
Length:
Width:
Height:

Defects 80.0% **Moderate Corrosion, Checking**
Damage 20.0% **Moderate Seizing**
Maintenance **Power Wash**
Capital Rec. **Replace in 1 year**
Perf Def: Seizing
Bearings are covered in debris at pier and should be power washed. Nested roller bearings at west abutment are heavily rusted.

Headwall (3)
Dry Stone Walls
Length: *40 m*
Width:
Height: *2.5 m*

Defects **0.0%**
Damage 20.0%
Maintenance **None**
Capital Rec. **Repair in 5 years**
Perf Def: Bulging
See embankment comments.

Component Inspection Information

Water Channel (1)	Defects **0.0%**
Streams and Waterways	Damage **0.0%**
Length:	Maintenance **None**
Width:	Capital Rec. **None**
Height:	***Rapid current under bridge during spring conditions, Otherwise moderate current. Dam upstream. Bouldery bottom that has some localized scour. Significant scour adjacent west abutment.***

Embankment (1)	Defects **0.0%**
Embankments	Damage 15.0% **Critical Local Instability**
	Maintenance **Slope revetment**
	Capital Rec. **Repair in 1 year** **Perf Def: Unstable**
	There is significant flow penetrating through the causeway on the south approach. The dry stone walls on the sides of the embankment have bulged on the east side. Frost action has loosened and disintegrated some of the stonework to a depth of 0.3 m. There is a strong possibility of partial collapse of in particular the east side of the causeway. This collapse could occur with little or no warning. Severe bulging of dry stone wall at NE quadrant, and is in serious condition. Water has partly undercut portions of wall on south approach. Sink hole developing in SW corner adjacent retaining wall noted in 2021. This could be due to scour effects.

Load Posting (4)	Defects **0.0%**
Signs	Damage **0.0%**
Length:	Maintenance **None**
Width:	Capital Rec. **None**
Height:	***Posting signs of 5 tonnes on both approaches. In 2013 clearance portals were installed at both approaches to restrict vehicles with a height more than 2.4 m from driving onto the bridge. The portal at the west end has already been struck several times. Most recent strike in June 2021 resulted in removal of west portal.***

Capital Needs Cost Estimate Break-Down

Item	Req'd	Units	Quantity	Unit Price $	Estimated Cost
Misc Concrete Repairs	✘	m²	0.0	$960	$0
Deck Concrete Overlay	✘	m²	243.3	$480	$0
Deck Replacement	✘	m²	243.3	$3,000	$0
Barrier Wall Replacement	✘	m	71.7	$3,600	$0
Expansion Joint	✘	m	10.2	$6,600	$0
Waterproof & Pave	✘	m²	243.3	$264	$0
Bearing Replacement	✘	Count	4.0	$6,000	$0
Approach Guide Rail	✘	m	80.0	$300	$0

Other Work

Decommission $10,000

Structural Items Subtotal	**$10,000**
Mobilization General Sitework	**$10,000**
Estimated Traffic Management & Civil Items	**$10,000**
Contract Admin & Contingencies 20%	**$6,000**
Total Rehabilitation Cost Estimate	***$36,000***

Recommended Capital Work Summary **Recommended Capital Year** **2026**

Decommission

Inspection Comments

This bridge has a 5 tonne load limit. It has a very high local value. A historical plaque was added by local residents in 2017. The bridge has outlived its normal service life. Biggest concern is the stability of the dry stone walls on the approaches. The approach railings are mangled. Need a plan to deal with partial collapse of dry stone wall. Approach barriers and bridge railings deficient to current standards. Bridge now closed seasonally from Dec 1 to March 31. Refer to 2021 wading inspection notes for additional information.

Image 56

South elevation

Image 0

Railing over south retaining wall

Image 1

East abutment

Image 2

East span from south

Image 3

Pier north side

Image 4

North pier bearing

Image 8

Sinkhole in SW

Image 9

SW portal footing

Image 10

Pier

Image 11

Stringer 3 perforation in bay 5

Image 12

Looking west between stringers 2 and 3

Image 13

West abutment

Image 28

Stringer 2 perforation in bay 8

Image 29

Bay 8 overview

Image 30

Bay 7 overview

Image 31

Bay 6 overview

Image 32

Bay 5 overview

Image 33

Bay 4 overview

Image 34

Bay 3 overview

Image 35

Bay 2 overview

Image 36

Deck boards detail

Image 37

South stringer condition in bay 6

Image 40

West approach

Image 41

NW bearing

Image 42

NW bottom chord end

Image 44

South retaining wall

Image 45

South retaining wall bulging

Image 46

East span deck surface

Image 47

East approach

Image 48

East abutment

Image 49

East span east soffit

Image 50

East span west soffit

Image 51

East abutment and causeway from south

Image 52

Pier east face

Image 53

NE girder end stiffening

Image 54

NE bearing

Image 973

NW approach railing

Image 974

NW portal base

Image 976

North truss

Image 977

Truss bracing

Image 978

Truss portal bracing

Image 979

New curbs (typical)

Image 980

South truss

Image 981

Deck surface on truss looking west

Image 982

Running boards damage

Image 984

South railing (typical)

Image 987

Typical bottom chord connection

Image 988

Pier top south side from west

Image 989

Pier top south side from east

Image 990

East deck end with gap

Image 991

Grade change and grade separation over pier

Image 992

Patching at east end

Image 993

North retaining wall

Image 994

Railing bottom undercutting in north retaining wall

Image 995

Culvert through causeway

Image 996

North retaining wall

Image 998

North retaining wall bulging

Image 999

Railing over north retaining wall