

# Memorandum to Council

Planning and Development Department



---

**To:** Mayor Mitchell and Members of Council

**CC:** Matthew Gaskell, CAO  
Roger Saunders, Commissioner, Planning  
and Development

**Acknowledged by M. Gaskell,  
Chief Administrative Officer**

**From:** Peter Angelo, Director of Engineering

**Date:** February 25, 2022

**File #:** N/A

**Subject:** Report PDE 07-22 Stormwater  
Management Review - Dryden Culvert

---

As requested by the Committee of the Whole on February 14, 2022, the following memo provides additional information regarding the Anderson Street culvert.

The Anderson culvert is part of the Pringle Creek conveyance system and is located on Anderson Street, north of Darren Avenue. The precise age of the culvert remains undetermined, however based on municipal records it is believed to have been constructed circa 1985.

The 2021 Bridge and Culvert Master Study assessed the hydraulic capacity of the culvert and determined that the culvert is not able to convey its intended 50 year design flow (**control flow**). The study rated this culvert as the **highest risk** culvert and recommended upsizing within the next five to ten years. (See Attachment #1 -table 9-5 and ES-1-1) Accordingly, the improvement work is reflected in the Town's capital planning forecast in year 2024.

There was also a question regarding the number of structures in the Town (i.e. culverts and bridges). Based on Town's Asset Management inventory, there are 24 bridges, 32 structural culverts and 154 cross culverts owned by the Town.

Table 9-5. Design Alternative Evaluation for Regulated Crossings.

Asset Number	Existing Crossing	Alter-native	Description	Technical			Archaeological and Cultural Heritage	Socio - Economic		Natural Environment		Cost	
				Meets Design Standards	Constructability	Approvals and Compliance		Flood Risk	Property Impacts / Acquisition	Terrestrial	Aquatic		Capital Costs
CU360001 Anderson Street Pringle Creek	3300 mm x 2000 mm diameter CSP arch culvert.	Ait. A	Triple 1800mm diameter circular CSP culverts.	Flood Depth: No Freeboard; No Check Flow: No	Significantly widens cross-section. Channel works required.	Approvals required from: CLOCA and DFO.	Archaeological potential. Stage 1 AA required. No built heritage sites present.	Small improvement in flood risk compared to existing.	Widening cross-section should not impact private property	Tree clearing required within road ROW and floodplain.	Instream channel works required. Reduction in culvert span may impede fish passage	Moderate	
		Ait. B	Twin 5100mm x 1800mm concrete box culverts.	Flood Depth: No Freeboard; No Check Flow: No	Similar constructability as Ait. A.	Same approvals as Ait. A.	Similar impacts to Ait. A.	Conveys the design and check flow safely over the roadway. Reduces flood risk.	Similar property impacts as Ait. A.	Similar impacts as Ait. A.	Larger span structure provides opportunity to improve fish passage and habitat.	High	Preferred
		Ait. C	Raise Road 0.5 m and install twin 4000 mm x 1800 mm concrete box culverts.	Flood Depth: Yes Freeboard; No Check Flow: No	Similar constructability as Ait. A plus raising the road will impact side roads and driveways.	Same approvals as Ait. A.	Similar impacts to Ait. A.	Reduces flood risk to road users during design flow but increases flood risk to upstream properties during the design, check and regulatory flows.	Potential property impacts due to raising the road.	Additional tree clearing required to raise road.	Raising the road increases flow through the culverts leading to higher flow velocity. May impede fish passage. Will require mitigation measures.	Highest	
CU480017 / AC20 / AC21 Conlin Road Pringle Creek	3 x Twin 1050 mm Diameter Circular CSP (6 barrels total)	Ait. A	Add 1050 mm diameter circular CSP culvert (7 barrels total).	Flood Depth: No Freeboard; No Check Flow: No	Installation of a third barrel will require road works.	Approvals required from: CLOCA and DFO.	Archaeological potential. Stage 1 AA required. No built heritage sites present.	Limited reduction in flood risk.	No anticipated property impacts	Limited tree clearing.	Existing culvert is likely a barrier to fish passage. No change from existing conditions.	Moderate	
		Ait. B	Replace CU480017 with Twin 3500 mm x 1000 mm concrete box culverts and maintain AC20 and AC21.	Flood Depth: Yes Freeboard; Yes Check Flow: Yes	Total crossing width = 7 m. Significant widening of cross-section. Channel works required.	Same approvals as Ait. A.	Similar impacts to Ait. A.	Reduces flood risk to road users and meets design standards.	Channel works on private property may be required to accommodate structure.	Downstream tree clearing required to construct culvert.	Opportunity to improve fish passage at the crossing.	Highest	Preferred
CU_A07_01 Ashburn Road Ashburn Creek	5550 mm x 3500 mm CSP arch culvert.	Ait. A	Single 6000 mm span x 3600 mm rise concrete box culvert.	Flood Depth: No Freeboard; No Check Flow: No	Road reconstruction required.	Approvals required from: CLOCA, MNRF (SAR) and DFO.	Archaeological potential. Stage 1 AA required. No built heritage sites present.	Does not reduce flood risk.	Upstream construction extends into private property.	Tree removal required.	Redside Dace have been identified in Ashburn Creek. Opportunity to improve fish passage and habitat.	High	
		Ait. B	Twin 3600 mm span x 3600 mm rise concrete box culverts.	Flood Depth: Yes Freeboard; Yes Check Flow: No	Similar constructability as Ait. A plus widening cross-section.	Same approvals as Ait. A.	Similar impacts to Ait. A.	Reduces flood risk for design flow but not check flow.	Similar property impacts as Ait. A.	Similar impacts as Ait. A.	Similar opportunity as Ait. A.	High	
		Ait. C	Twin 4800 mm span x 3600 mm rise concrete box culverts.	Flood Depth: Yes Freeboard; Yes Check Flow: Yes	Similar constructability as Ait. B with larger widening.	Same approvals as Ait. A.	Similar impacts to Ait. A.	Significantly reduces flood risk and meets design standards.	Similar property impacts as Ait. A.	Similar impacts as Ait. A.	Similar opportunity as Ait. A.	High	
		Ait. D	Replace with a 10 m span bridge.	Flood Depth: Yes Freeboard; Yes Check Flow: Yes	Additional design requirements for bridge.	Same approvals as Ait. A.	Similar impacts to Ait. A.	Similar flood risk reduction as Ait. C.	Similar property impacts as Ait. A.	Similar impacts as Ait. A.	Single span bridge provides greatest opportunity for Redside Dace passage and habitat.	Highest	Preferred

Table ES-1-1. Preferred Alternatives for the Highest Risk Crossings.

Priority	Facility ID	Road Name	Existing Culvert / Bridge	Preferred Alternative	Capital Cost	EA Schedule
Within 2 years	CU610022	Columbus Road West	800 mm diameter circular CSP culvert	Twin 900 mm diameter circular CSP culverts.	\$190,000	Schedule B
	CU720007	Columbus Road West	1050 mm diameter circular CSP culvert	Twin 1100 mm diameter circular CSP culverts	\$220,000	Schedule B
2 to 5 years	CU_A07_01	Ashburn Road	5550 mm span x 3500 mm rise arch CSP culvert	Replace with a 10 m span bridge.	\$1,740,000	Schedule B
	CU640016	Columbus Road West	500 mm diameter Circular CSP culvert	Triple 1200 mm diameter circular CSP culverts	\$220,000	Schedule B
5 to 10 years	CU360001	Anderson Street	3300 mm span x 2000 mm rise CSP culvert	Twin 5100mm x 1800mm concrete box culverts.	\$1,940,000	Schedule B
10 to 20 years	CU480010	Garrard Road	600 mm diameter circular CSP culvert	Raise intersection 300 mm and install twin 1200 mm diameter circular CSP culverts	\$210,000	Schedule B
	CU480013	Garrard Road	400 mm diameter circular CSP culvert	Raise intersection 300 mm and install triple 1030 mm span x 740 mm rise CSP arch culverts	\$200,000	Schedule B
	CU480017, AC20 & AC21	Conlin Road	CU480017: Twin 1050 mm diameter circular CSP culverts	Replace CU480017 with twin 3500 mm x 1000 mm concrete box culverts.	\$980,000	Schedule B
			AC20: Twin 1050 mm diameter circular CSP culverts	Maintain existing AC20 relief culverts.		No proposed works at AC20.
AC21: Twin 1050 mm diameter circular CSP culvert	Maintain existing AC21 relief culverts.	No proposed works at AC20.				
To be Determined	CU_B04_04	Anderson Street	3080 mm span x 1510 mm rise concrete box culvert	The downstream Rossland Road East crossing is undersized and back floods the Anderson Street culvert. The Town should consult with the Region of Durham to determine opportunities to upsize the Rossland Road East crossing before developing design alternatives for the Anderson Street culvert.		Separate Schedule B EA required following further consultation with Region.
	CU_D01_03	Watson Street West	Twin 1800 mm span x 1200 mm rise concrete box culvert	Adding two 1800 mm span x 1200 mm rise concrete box culverts (total of four box culverts) prevents the road overtopping for the design flow. The Rowe Channel will need to be widened to accommodate the culverts which requires property acquisition and relocation of two storm sewer outfalls. The Town needs to complete detailed investigations to determine the feasibility of widening the Rowe Channel considering the existing site constraints.		Separate Schedule B EA required following completion of additional site specific investigations.