

Table D.1: Bridge Condition & Function

Criteria	Measures	Retain Keep the existing bridge (conduct maintenance repairs)	Rehabilitate Repair or strengthen the existing bridge (widening not feasible) (adding a sidewalk not feasible)	Replace Construct a new bridge at the same location (remove existing bridge)
Bridge Condition	Deterioration, structural risk	The existing bridge is in good to fair condition, and would be repaired to address significant deficiencies.	The existing bridge is in good to fair condition, and would be repaired to address significant deficiencies. Limited feasibility to rehabilitate bridge.	The construction of a new bridge would meet current standards and include the permanent removal (demolition) of the existing concrete bridge.
		Neutral	Least Preferred	Most Preferred
Bridge Life & Maintenance	Years to next assessment, frequency, reliability, disruption	The existing bridge appears to have additional service life remaining. Following repairs, above-average maintenance is anticipated until the next assessment is conducted in up to 20 years.	The existing bridge appears to have additional service life remaining. Following repairs, above-average maintenance is anticipated until the next assessment is conducted in up to 20 years.	The design life for a replacement bridge is 75 years. The structure will likely require minimal maintenance for the first 20 years.
		Neutral	Neutral	Most Preferred
Vehicle Types	Fire trucks (30 t) Ambulance (9 t) Service vehicles, Snow Removal, Buses (if required)	The current load posting of the bridge is 3 tonnes, which is an extremely low value. Trucks and emergency vehicles would continue to not be permitted.	Rehabilitation of the bridge may involve strengthening to improve the load posting, but may not be sufficient to allow trucks or emergency vehicles to use the bridge.	The construction of a replacement bridge would meet current standards and would allow trucks and emergency vehicles to use the bridge. No posted load limit signage required.
		Least Preferred	Least Preferred	Most Preferred
Bridge Safety & Function	Width, collision risk, on-road cyclists and pedestrians, deck surface	The bridge would remain two lanes wide. Cyclists continue to share lanes, single-file. The asphalt deck surface would remain. Negligible protection from vehicle collision with bridge structure.	The bridge remains two lanes wide. Cyclists share lanes, at sides. Concrete deck with asphalt. Negligible protection from vehicle collision with bridge structure above deck.	Two lanes of traffic and shoulders. Cyclists in separate lanes (at shoulders). Concrete deck with asphalt. Bridge barrier system included. A sidewalk is optional, depending on bridge length and potential usage.
		Least Preferred	Least Preferred	Most Preferred
Bridge Condition & Function Evaluation Summary		Neutral	Least Preferred	Most Preferred

Table D.2: Transportation

Criteria	Measures	Retain Keep the existing bridge (conduct maintenance repairs)	Rehabilitate Repair or strengthen the existing bridge (widening not feasible) (adding a sidewalk not feasible)	Replace Construct a new bridge at the same location (remove existing bridge)
Roadway Design	Design criteria, geometry, speed reduction, cross-section, approach sight lines	Two-way traffic with no shoulders. Posted speed reduction at bridge. Roadway profile unchanged. Roadway horizontal alignment curved to north; substandard sight lines for traffic.	Two-way traffic with no shoulders. Posted speed reduction at bridge. Roadway profile unchanged. Roadway horizontal alignment curved to north; substandard sight lines for traffic.	Two-way traffic with shoulders (wider). No posted speed reduction required. Potential to reduce roadway sag curve. Roadway horizontal alignment curved to north; substandard sight lines for traffic could be re-used to maintain historic setting and remain on right-of-way.
		Neutral	Neutral	Most Preferred
Traffic Operations	Travel delays due to bridge configuration	The bridge would remain two lanes wide, with no shoulders. The narrow width may tend to slow traffic marginally.	The bridge would remain two lanes wide, with no shoulders. The narrow width may tend to slow traffic marginally.	The bridge would be two-lanes wide, with shoulders to current standards, generally wider, with no traffic impact.
		Neutral	Neutral	Most Preferred
Network Connectivity & Access	Alternative routes, Fire & Emergency access Twyn Rivers Drive evacuation route (Stotts’ & Maxwell bridges to be considered together.)	Trucks and emergency vehicles would continue to use an alternative route. Twyn Rivers Drive evacuation route would continue “no trucks” restriction.	Trucks and emergency vehicles would continue to use an alternative route. Twyn Rivers Drive evacuation route would continue “no trucks” restriction.	Trucks and emergency vehicles could cross the bridge, improving emergency access to the area between the Rouge River and the Little Rouge River on Twyn Rivers Drive, from the east, regardless of changes at the Stotts’ Bridge. (This area is currently not accessible to trucks from either direction.) Twyn Rivers Drive evacuation route would allow trucks if both bridges are improved.
		Neutral	Neutral	Most Preferred
Active transportation	On-road cyclists & On-road pedestrians (Off-road recreational trail usage not included.)	Twyn Rivers Drive is not a designated cycling route. Cyclists would continue to share the lanes with vehicles, due to narrow/soft shoulders, and share the lanes on the bridge, single file. Currently, there are no sidewalks along the roadway. Pedestrians would continue to walk along the shoulder of the road and on the edge of the driving lanes on the bridge. The local trails network and parking lot tends to generate a significant number of pedestrians in the area. A separate pedestrian bridge could be constructed if needed.	Twyn Rivers Drive is not a designated cycling route. Cyclists would continue to share the lanes with vehicles, due to narrow/soft shoulders, and share the lanes on the bridge, single file. Currently, there are no sidewalks along the roadway. Pedestrians would continue to walk along the shoulder of the road and on the edge of the driving lanes on the bridge. The local trails network and parking lot tends to generate a significant number of pedestrians in the area. A separate pedestrian bridge could be constructed if needed.	Twyn Rivers Drive is not a designated cycling route. A replacement bridge would be wider and could accommodate cyclists, would provide accommodation if the designation is changed in the future. Currently, there are no sidewalks along the roadway. However, the local trails network and parking lot tends to generate a significant number of pedestrians in the area. A sidewalk is considered optional but recommended for consideration under this alternative.
		Neutral	Neutral	Most Preferred

Criteria	Measures	Retain Keep the existing bridge (conduct maintenance repairs)	Rehabilitate Repair or strengthen the existing bridge (widening not feasible) (adding a sidewalk not feasible)	Replace Construct a new bridge at the same location (remove existing bridge)
Recreational Access	Maintains or improves recreational access to RNUP and Zoo	Maintains existing recreational access.	Maintains existing recreational access.	Maintains existing recreational access.
		Neutral	Neutral	Neutral
Transportation Evaluation Summary		Neutral	Neutral	Most Preferred

Table D.3: Heritage & Archaeology

Criteria	Measures	Retain Keep the existing bridge (conduct maintenance repairs)	Rehabilitate Repair or strengthen the existing bridge (widening not feasible) (adding a sidewalk not feasible)	Replace Construct a new bridge at the same location (remove existing bridge)
Cultural Heritage	Role in community, namesake and history	The bridge was originally constructed to allow access to saw and grist mills and was named after the owner of the property on which it was located.	Rehabilitation has the potential to impact the cultural heritage.	A replacement bridge would not have a pre-existing role in the community. Consideration could be given to designing a bridge of a similar configuration, or erection of a memorial monument to recognize and document the history of the original bridge.
		Most Preferred	Neutral	Least Preferred
Built Heritage	Uniqueness of bridge	The bridge is currently designated under Part IV of Ontario Heritage Act, By-law No. 25152 as being of historical and architectural value or interest. It is one of the last of its type built in Ontario.	The work to rehabilitate the bridge may detract from some of the heritage characteristics.	The new bridge may conserve little or no heritage characteristics.
		Most Preferred	Neutral	Least Preferred
Archaeological Potential	Area of disturbance	The work to retain the bridge are anticipated to remain within previously disturbed lands or areas of no potential within the existing right-of-way.	The work to rehabilitate the bridge is anticipated to remain in previously disturbed lands and areas of no potential within the existing right-of-way. A detour bridge is not anticipated. There is limited potential to impact areas of archaeological potential.	A replacement bridge is anticipated to remain on the existing alignment and within the existing right-of-way. A detour bridge is not anticipated. There is potential to impact areas of archaeological potential with temporary works outside of the existing right-of-way.
		Most Preferred	Neutral	Least Preferred
Heritage & Archaeology Evaluation Summary		Most Preferred	Neutral	Least Preferred

Table D.4: Natural Environment & Hydraulics

Criteria	Measures	Retain Keep the existing bridge (conduct maintenance repairs)	Rehabilitate Repair or strengthen the existing bridge (widening not feasible) (adding a sidewalk not feasible)	Replace Construct a new bridge at the same location (remove existing bridge)
Terrestrial Habitat	Potential for impacts to Species at Risk (SAR) and Significant Wildlife Habitat (SWH) (temporary and permanent)	No impacts to SAR if no construction is proposed.	Potential temporary impacts related anthropogenic disturbances (i.e. noise, lights) to adjacent potential SAR bird and SAR bat habitat (i.e. forests and swamps) during construction. Minimal permanent impacts to potential SAR bird and SAR bat habitat if construction limits remain within ROW.	Potential temporary impacts related anthropogenic disturbances (i.e. noise, lights) to adjacent potential SAR bird and SAR bat habitat (i.e. forests and swamps) during construction. Minimal permanent impacts to potential SAR bird and SAR bat habitat if construction limits remain within ROW.
		No impacts to SWH if no construction is proposed.	Potential temporary impacts related anthropogenic disturbances (i.e. noise, lights) to adjacent potential SWH habitat for birds and bats (i.e. forests) during construction. Minimal permanent impacts to potential SWH for birds and bats if construction limits remain within ROW. Removal of potential snake hibernacula habitat if bridge abutments are proposed to be disturbed.	Potential temporary impacts related anthropogenic disturbances (i.e. noise, lights) to adjacent potential SWH habitat for birds and bats (i.e. forests) during construction. Minimal permanent impacts to potential SWH for birds and bats if construction limits remain within ROW. Removal of potential snake hibernacula habitat if bridge abutments are proposed to be replaced.
		Most Preferred	Neutral	Neutral
Aquatic Habitat	Potential for impacts to Species at Risk and aquatic habitat (temporary and permanent)	No anticipated impacts to aquatic SAR since none have been identified within the vicinity of the crossing.	No anticipated impacts to aquatic SAR since none have been identified within the vicinity of the crossing.	No anticipated impacts to aquatic SAR since none have been identified within the vicinity of the crossing.
		No impacts to aquatic habitat if no in-water work is proposed.	Permanent loss of aquatic habitat if proposed widening work extends below the high water mark. Temporary loss of aquatic habitat to accommodate construction footprint if in-water work is proposed.	Permanent loss of aquatic habitat if proposed widening work extends below the high water mark. Temporary loss of aquatic habitat to accommodate construction footprint if in-water work is proposed.
		Most Preferred	Least Preferred	Least Preferred
River Conveyance	Clearance, span, bank scour, climate change resilience (potential damage to structure)	No improvement to river conveyance, continued risk of substandard clearances.	No improvement to river conveyance, continued risk.	A replacement bridge would be designed to meet current standards, involving raising the roadway profile and bridge soffit, potentially combined with lengthening the span to provide adequate clearance, In addition, fluvial geomorphology over the life of the bridge and protection of adjacent river banks against scour would be considered.
		Neutral	Neutral	Most Preferred
Natural Environment & Hydraulics Evaluation Summary		Most Preferred	Neutral	Neutral

Table D.5: Public Uses in RNUP

Criteria	Measures	Retain Keep the existing bridge (conduct maintenance repairs)	Rehabilitate Repair or strengthen the existing bridge (widening not feasible) (adding a sidewalk not feasible)	Replace Construct a new bridge at the same location (remove existing bridge)
Rouge National Urban Park (RNUP)	Public and worker access to amenities (visitor centre, trailheads, etc.)	Maintains existing public and worker access.	Maintains existing public and worker access.	Maintains existing public and worker access.
		Neutral	Neutral	Neutral
Toronto Zoo	Public and worker access to zoo	Maintains existing public and worker access.	Maintains existing public and worker access.	Maintains existing public and worker access.
		Neutral	Neutral	Neutral
Public Uses in RNUP Evaluation Summary		Neutral	Neutral	Neutral

Table D.6: Implementation

Criteria	Measures	Retain Keep the existing bridge (conduct maintenance repairs)	Rehabilitate Repair or strengthen the existing bridge (widening not feasible) (adding a sidewalk not feasible)	Replace Construct a new bridge at the same location (remove existing bridge)
Complexity & Constructability	Construction access, staging, methods, duration, and other factors	Complexity is low due to limited scope of work. Risk of unknowns is significant because drawings are not very descriptive of reinforcing details.	Complexity is moderate, though risk of unknowns is significant because drawings are not very descriptive of reinforcing details. Strengthening could be accomplished using carbon-fiber reinforcing polymers, or external post-tensioning systems.	Replacement options could include low complexity slab-on-girder type of bridge, or higher complexity concrete arch bridge. Slab on girder type of bridge would be significantly lower maintenance cost than a concrete arch bridge
		Neutral	Least Preferred	Most Preferred
Cost Considerations	Design & Construction, Lifecycle, Maintenance and Future replacement	Lowest cost.	High cost, and high cost uncertainty.	Highest initial cost, lower maintenance cost.
		Most Preferred	Least Preferred	Least Preferred
Implementation Evaluation Summary		Most Preferred	Least Preferred	Most Preferred

Table D.7: Overall Preferred Alternative

Retain Keep the existing bridge (conduct maintenance repairs) (optionally realign south approach road)	Rehabilitate Strengthen the existing bridge (widening not feasible) (adding a sidewalk not feasible)	Replace Construct a new bridge at the same location (remove existing bridge)
Most Preferred	Least Preferred	Neutral