Mud Creek Bridge Access Study

Public Information Center
October 10, 2025
Township of Billings

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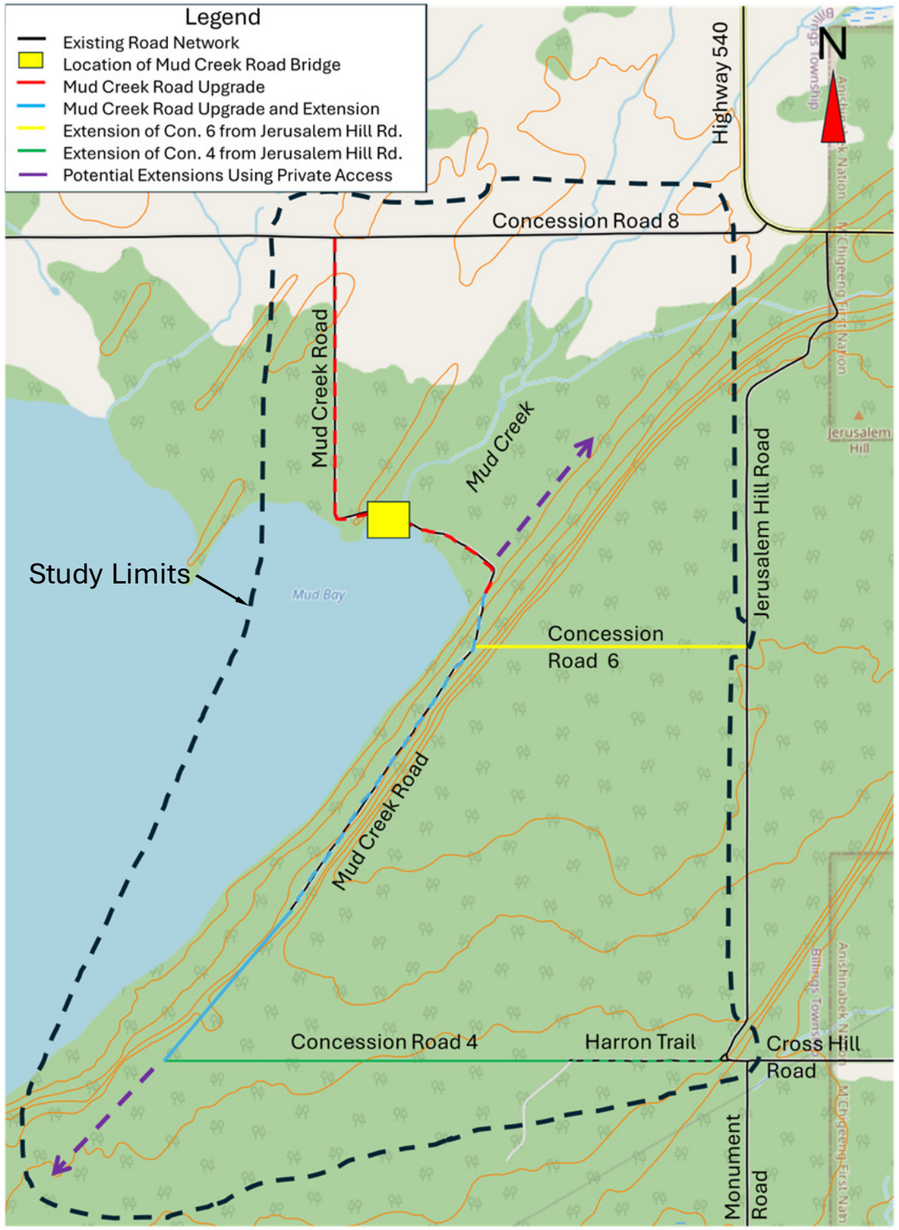
Agenda

- Study Purpose & Objectives
- Study Area Overview
- Existing Conditions
- Public Engagement Process
- Evaluation Criteria Framework
- Description of Alternatives
- Evaluation of Options
- Recommended Option
- Potential Enhancement
- Next Steps
- Feedback & Questions

Study Purpose & Objectives

The purpose of this study is to determine the preferred option to replace the failing vehicle bridge on Mud Creek Road.

Study Area Overview



The area under review includes the entirety of Mud Creek Road, plus the unopened road allowances along the 4th and 6th Concessions between Jerusalem Hill Road and Mud Creek Road.

Options reviewed include:

- Replace the existing bridge
- Open a new road allowance to bypass the bridge requirement

Existing Conditions

- The existing bridge is End-of-Life and will not be able to sustain vehicle loads within the next 5 years.
- Mud Creek Road is not compliant with any Township road standards
- Mud Creek Road is not winter accessible

Public Engagement Process

- PIC Meeting #1 – October 10
  - Drop-in Centre
  - Comments accepted by email
- All comments will be collected and reviewed. The comments will be used to influence the final recommendation.
- Final Report to Township Council is scheduled for mid- November. Comment will be included as part of the report.
- Council will be free to act upon the results of the study.

Evaluation Criteria Framework

The options are reviewed in four specific categories:

Environmental category assesses the ecological impact of the proposed bridge replacement.

Technical evaluates the engineering and logistical feasibility of the project.

Social focuses on community impact and user experience.

Cost examines financial aspects of the project.

Environmental Criteria

This category assesses the ecological impact of each option.

- Impact to waterway: Evaluates effects on aquatic ecosystems, water flow, and water quality.
- Impact to woodlands: Considers disruption or loss of forested areas and wildlife habitats.

Technical Criteria

This category evaluates the engineering and logistical feasibility of the project.

- Constructability: Measures ease and efficiency of construction.
- Effectiveness of solution: Assesses how well the design meets functional and performance goals.
- Opportunity to phase project: Evaluates potential for staged implementation.
- Transportation network connectivity: Considers integration with existing roads and traffic flow.

Social Criteria

This category focuses on community impact and user experience.

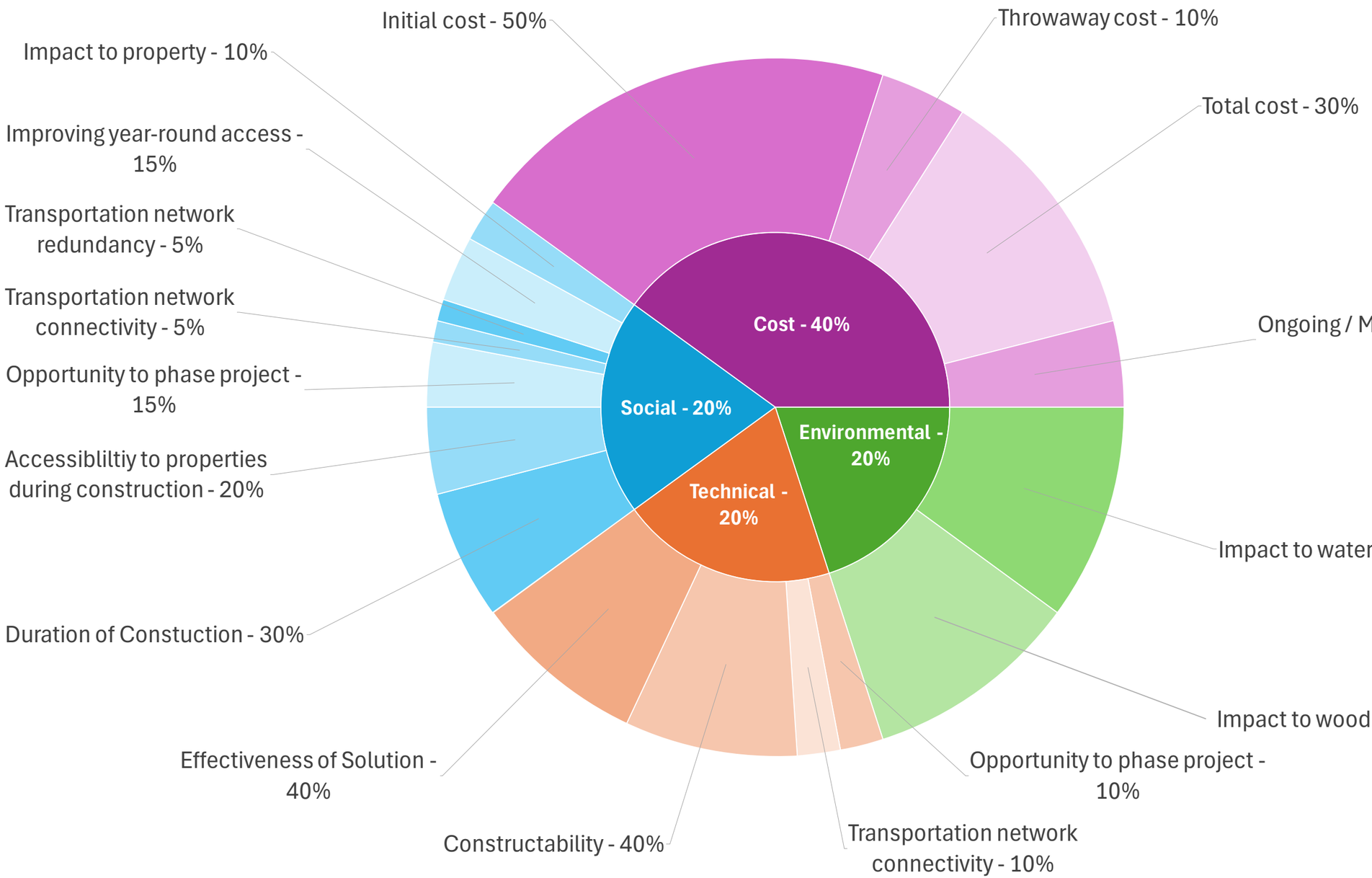
- Duration of construction: Evaluates construction timeline and its effects.
- Accessibility to properties during construction: Assesses access for residents and businesses.
- Opportunity to phase project: Reflects social implications of phased work.
- Transportation network connectivity
- Transportation network redundancy
- Improving year-round access
- Impact to property

Cost Criteria

This category examines financial aspects of the project.

- Initial cost: Upfront capital required.
- Throwaway cost: Costs for temporary or non-final components.
- Total cost: Overall financial burden.
- Ongoing / maintenance cost: Future upkeep expenses.

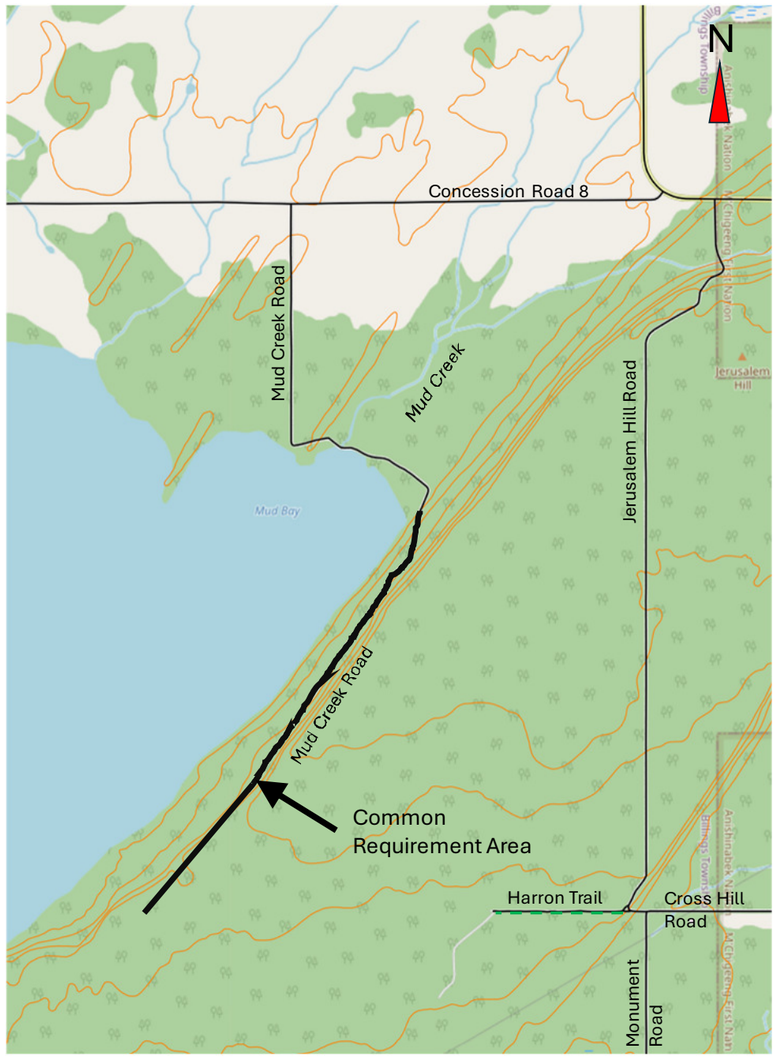
Criteria Weighting



Summary of Criteria Weighting

Category	Category Weighting	Individual Weighting	Rating				
			○	◔	◒	◕	●
Environmental		**100%**					
Impact to waterway	20%	50%	Significant negative impact to waterway	Some negative impact to waterway	No impact to waterway	Some improvement to waterway	Significant improvement to waterway
Impact to woodlands		50%	Significant negative impact to woodlands	Some negative impact to woodland	No impact to woodland	Some improvement to woodlands	Significant improvement to woodlands
Technical		**100%**					
Opportunity to phase project	20%	10%	No opportunity to phase project	-	Some constraints on phasing	-	Can be phased as desired
Transportation network connectivity		10%	Significantly reduces transportation network connectivity	Some reduction to transportation network connectivity	No change in transportation network connectivity	Some improvement to transportation network connectivity	Significantly improves transportation network connectivity
Constructability		40%	Very difficult to construct	Difficult to construct	Neutral to construct	Easy to construct	Very easy to construct
Effectiveness of Solution		40%	Makes the problem worse	Does not address problem	Addresses some of the problem	Suitably addresses problem	Addresses additional concerns beyond the problem
Social		**100%**					
Duration of Construction	20%	30%	Very long construction duration	Long construction duration	Medium construction duration	Short construction duration	Very short construction duration
Accessibility to properties during construction		20%	No access to properties during construction	Some reduction to access to properties	Access to properties does not change	Some improvement to access to properties	Significantly improved access to properties
Opportunity to phase project		15%	No opportunity to phase project	-	Some constraints on phasing	-	Can be phased as desired
Transportation network connectivity		5%	Significantly reduces transportation network connectivity	Some reduction to transportation network connectivity	No change in transportation network connectivity	Some improvement to transportation network connectivity	Significantly improves transportation network connectivity
Transportation network redundancy		5%	Significantly reduces transportation network redundancy	Some reduction to transportation network redundancy	No change in transportation network redundancy	Some improvement to transportation network redundancy	Significantly improves transportation network redundancy
Improving year-round access		15%	Removal of access	Some reduction to period property can be accessed	No change to current property access	Some extension to period can be accessed	All-year access
Impact to property		10%	Significant property required to be acquired	Some property required to be acquired	Minimal property required to be acquired	No property required	Less than currently owned property is required
Cost		**100%**					
Initial cost	40%	50%	Highest initial cost	Higher initial cost	Medium initial cost	Lower initial cost	Lowest initial cost
Throwaway cost		10%	Highest throwaway cost	Higher throwaway cost	Medium throwaway cost	Lower throwaway cost	Lowest throwaway cost
Total cost		30%	Highest overall cost	Higher overall cost	Medium overall cost	Lower overall cost	Lowest overall cost
Ongoing / Maintenance cost		10%	Highest ongoing/maintenance cost	Higher ongoing/maintenance cost	Medium ongoing/maintenance cost	Lower ongoing/maintenance cost	Lowest ongoing/maintenance cost

Common Requirement

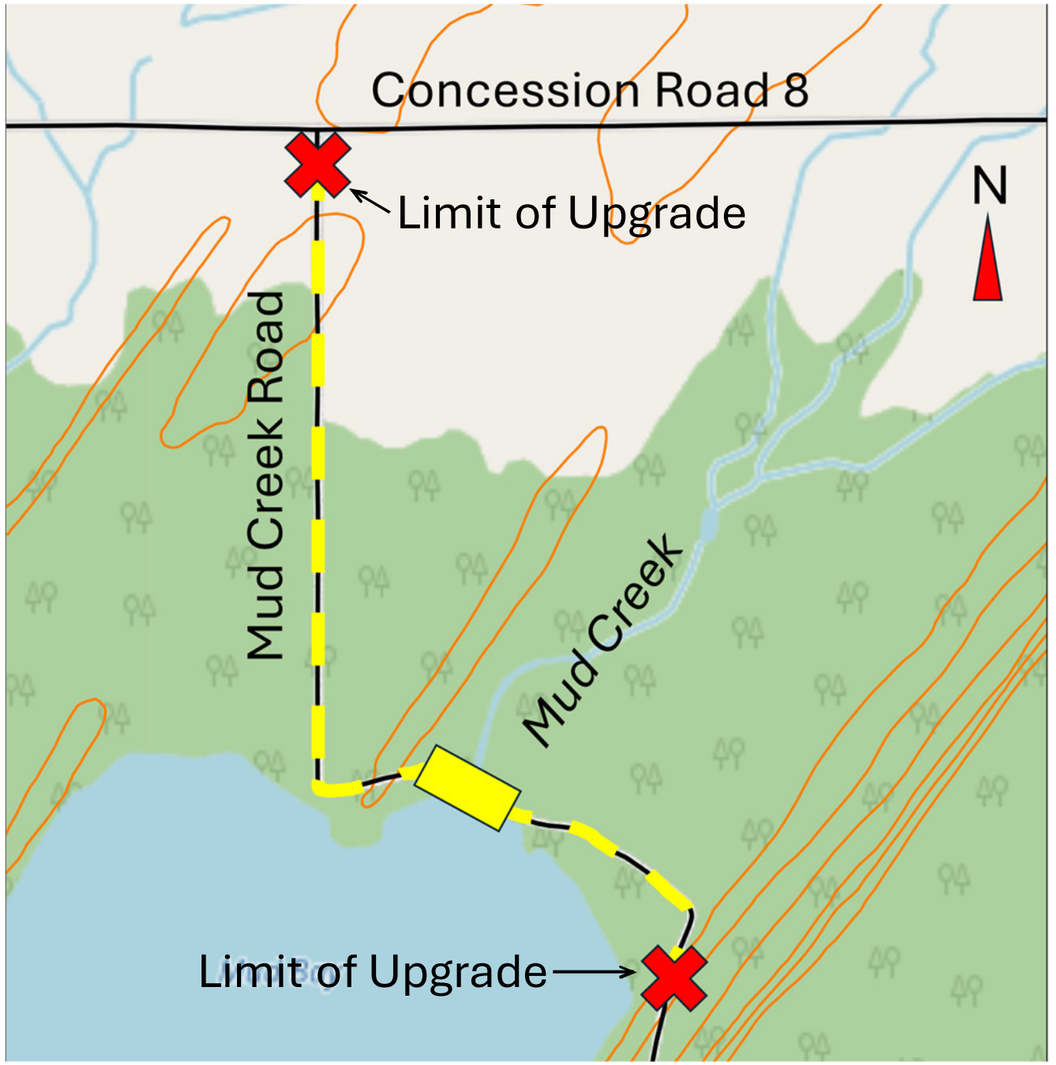


All options require the upgrade of Mud Lake Road between the driveways for 423 to 1005 Mud Lake Road.

Option 1a – Overview

Temporary Replacement Bridge

- Provide a one lane temporary “Bailey” bridge across the creek. Install permanent foundations wide enough for a future two lane structure. Make the bridge slightly higher and longer than the existing bridge so the existing abutments can remain in place and in-water work can be avoided.
- Upgrade Mud Creek Road from Conc. 8 to the first driveway. Once the road is upgraded, remove the single lane temporary bridge (sell or reuse) and install a two-lane bridge.
- Stage upgrade of Mud Creek Road over several years as funds become available.
- Mud Creek Road requires widening through wetland area (Existing Roadway is a corduroy road).



Option 1a – Temporary Replacement Bridge - Benefits

Pros	Cons
Fastest construction time: Field work is required for: -Removal of existing bridge deck, -Construction of new footings on both sides of creek, -Placement of premanufactured bridge, and -Minor roadway grading.	Some throwaway cost involved, specifically in the installation and removal of the temporary structure.
Temporary Bailey Bridge can be removed and reused and/or sold when permanent solution is implemented.	Technically difficult solution to widen Mud Creek Road through wetland Area. Will involve some impacts to the natural environment.
Mud Creek Road can be updated over time as funding becomes available.	No access to any properties past the bridge while construction is occurring.
Minimal impacts to woodlands, except through wetland area.	

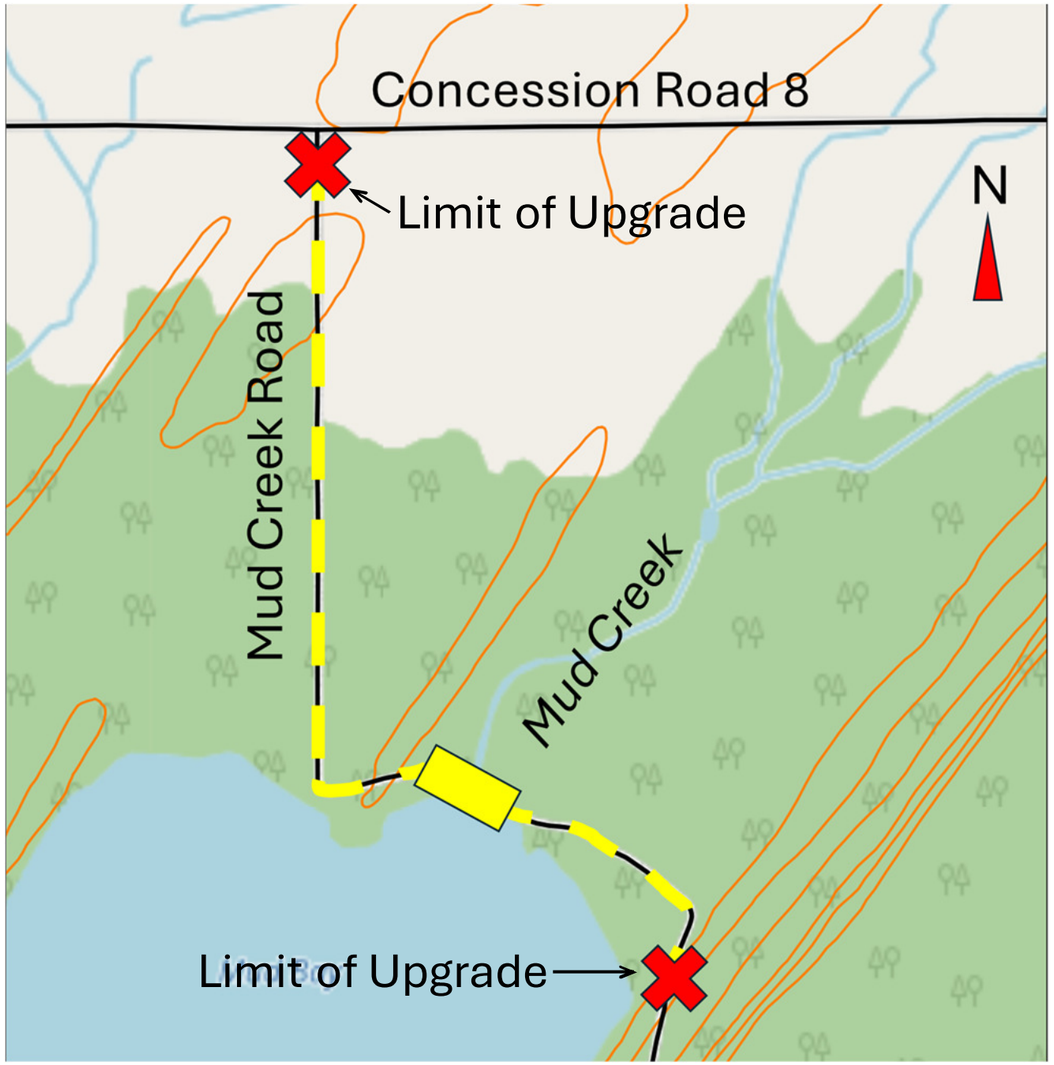
Option 1a – Temporary Replacement Bridge - Evaluation

Environmental		
Impact to waterway	◔	Some negative impact to waterway
Impact to woodlands	◔	Some negative impact to woodland
Technical		
Opportunity to phase project	●	Can be phased as desired
Transportation network connectivity	◒	No change in transportation network connectivity
Constructability	●	Very easy to construct
Effectiveness of Solution	◕	Suitably addresses problem
Social		
Duration of Construction	◕	Short construction duration
Accessibility to properties during construction	○	No access to properties during construction
Opportunity to phase project	●	Can be phased as desired
Transportation network connectivity	◒	No change in transportation network connectivity
Transportation network redundancy	◒	No change in transportation network redundancy
Improving year-round access	◒	No change to current property access
Impact to property	◕	No property required
Cost		
Initial cost	●	Lowest initial cost
Throwaway cost	○	Highest throwaway cost
Total cost	●	Lowest overall cost
Ongoing / Maintenance cost	●	Lowest ongoing/maintenance cost

Bailey Bridge Example

Option 1b – Permanent Replacement Bridge - Overview

- Similar to Option 1a, except the new bridge will be a permanent two-lane bridge.
- Provide a two-lane bridge across the creek. Make the bridge slightly higher and longer than the existing bridge so the existing abutments can remain in place and in-water work can be avoided.
- Upgrade Mud Creek Road from Conc. 8 to the first driveway. Stage upgrade of Mud Creek Road over several years as funds become available.
- Mud Creek Road requires widening through wetland area (Existing Roadway is a corduroy road).



Option 1b – Permanent Replacement Bridge - Benefits

Pros	Cons
Fastest construction time – Field work is required for: -Removal of existing bridge deck, -Construction of new footings on both sides of creek, -Placement of premanufactured bridge, and -Minor roadway grading.	Higher cost for a structure that is wider, which may not be utilized until Mud Creek Road is upgraded.
Does not require a second construction period with no access when bridge is upgraded.	Technically difficult solution to widen Mud Creek Road through wetland Area. Will involve some impacts to the natural environment.
Mud Creek Road can be updated over time as funding becomes available.	No access to any properties past the bridge while construction is occurring.
Minimal impacts to woodlands, except through wetland area.	

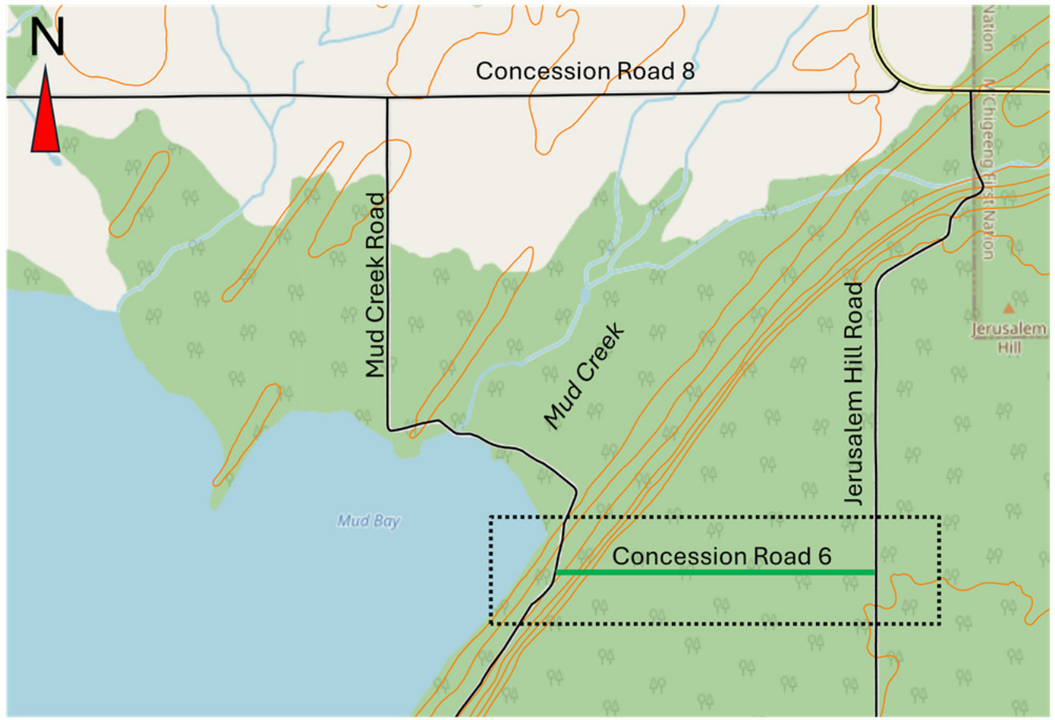
Option 1b – Permanent Replacement Bridge - Evaluation

Environmental		
Impact to waterway	◔	Some negative impact to waterway
Impact to woodlands	◔	Some negative impact to woodland
Technical		
Opportunity to phase project	◒	Some constraints on phasing
Transportation network connectivity	◒	No change in transportation network connectivity
Constructability	◕	Easy to construct
Effectiveness of Solution	◕	Suitably addresses problem
Social		
Duration of Construction	◒	Medium construction duration
Accessibility to properties during construction	○	No access to properties during construction
Opportunity to phase project	◒	Some constraints on phasing
Transportation network connectivity	◒	No change in transportation network connectivity
Transportation network redundancy	◒	No change in transportation network redundancy
Improving year-round access	◒	No change to current property access
Impact to property	◒	Minimal property required to be acquired
Cost		
Initial cost	◕	Lower initial cost
Throwaway cost	●	Lowest throwaway cost
Total cost	◒	Medium overall cost
Ongoing / Maintenance cost	◕	Lower ongoing/maintenance cost

2-Lane Bridge Example

Option 2a – Concession 6 Extension - Overview

- Abandon or Convert the Existing Mud Creek Bridge to Pedestrian Only.
- Open the Road Allowance between Jerusalem Hill Road and Mud Creek Road along Concession Road 6.
- Requires approximately 1400m of new roadway.

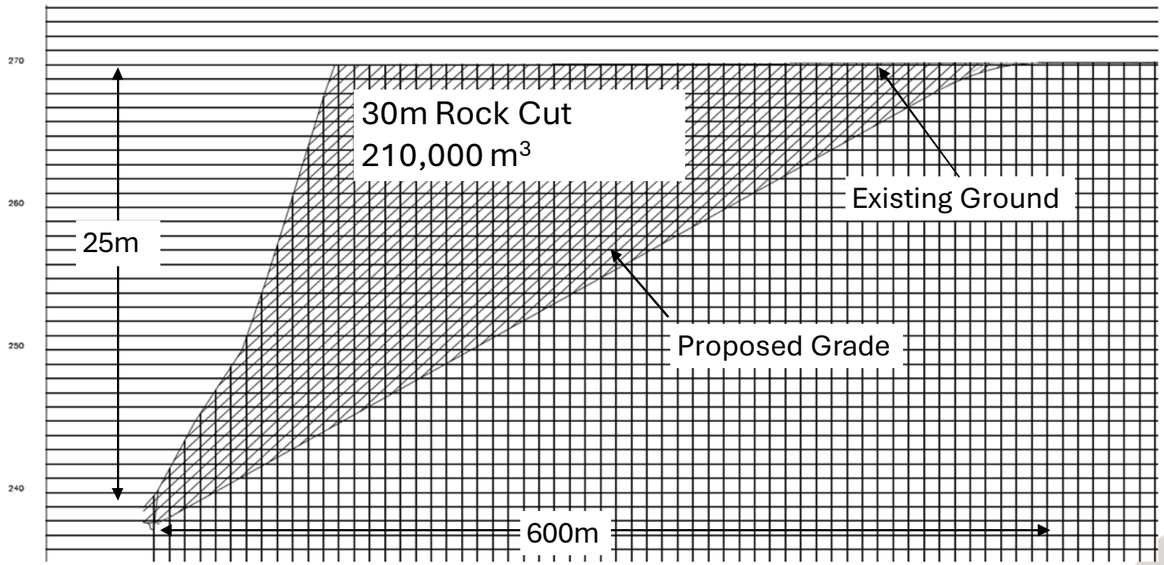


Option 2a – Concession 6 Extension - Benefits

Pros	Cons
Property access maintained during construction	Entirety of road must be completed before Mud Creek Bridge is decommissioned (replacement required within 4 years).
Pedestrian access maintained over Mud Creek	Extensive rock cut required due to ridge near Mud Creek Road. (Approx. 210,000m^3 of cut; ± 25m descent)
	Winter access not possible due to condition of Jerusalem Hill Road.
	Property impacts required at rock cut to provide safety slope.
	Extensive woodland impacts

Option 2a – Concession 6 Extension - Evaluation

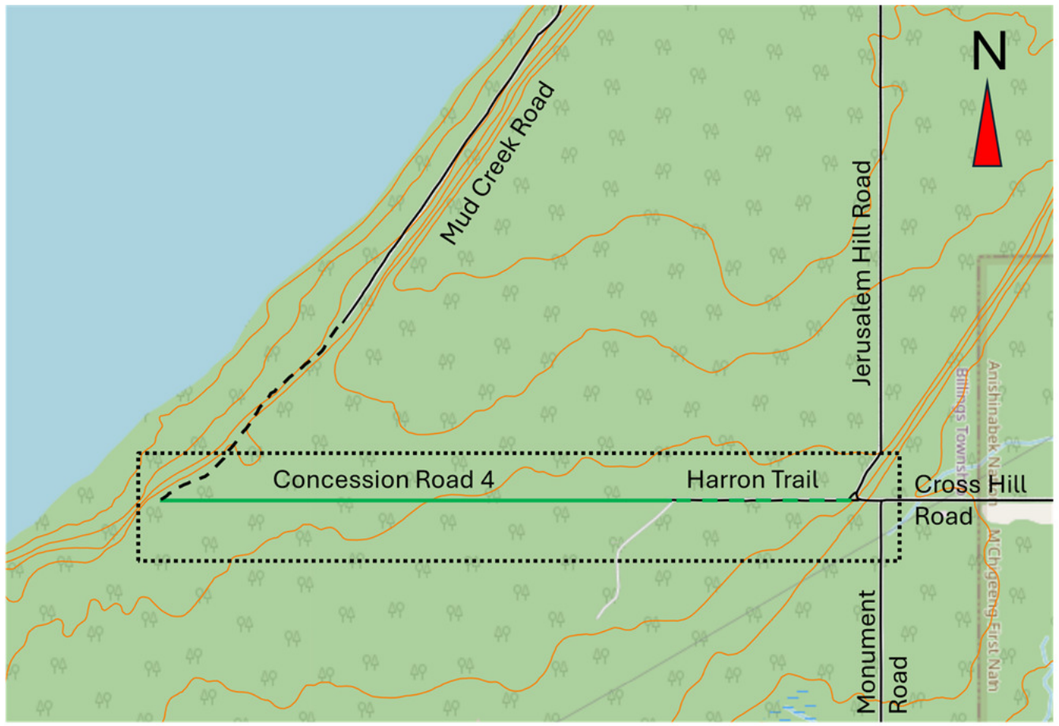
Environmental		
Impact to waterway	◒	No impact to waterway
Impact to woodlands	○	Significant negative impact to woodlands
Technical		
Opportunity to phase project	○	No opportunity to phase project
Transportation network connectivity	◒	No change in transportation network connectivity
Constructability	○	Very difficult to construct
Effectiveness of Solution	◒	Addresses some of the problem
Social		
Duration of Construction	◔	Long construction duration
Accessibility to properties during construction	◒	Access to properties does not change
Opportunity to phase project	○	No opportunity to phase project
Transportation network connectivity	◒	No change in transportation network connectivity
Transportation network redundancy	◒	No change in transportation network redundancy
Improving year-round access	◒	No change to current property access
Impact to property	◔	Some property required to be acquired
Cost		
Initial cost	◔	Higher initial cost
Throwaway cost	●	Lowest throwaway cost
Total cost	◔	Higher overall cost
Ongoing / Maintenance cost	◒	Medium ongoing/maintenance cost



Cut Requirement on Concession 6 Extension

Option 2b – Concession 4 Extension - Overview

- Abandon or Convert the Existing Mud Creek Bridge to Pedestrian Only.
- Open the Road Allowance between Jerusalem Hill Road and Mud Creek Road along Concession Road 4.
- Requires approximately 3200m of new roadway.
- Can connect to Cross Hill Road/Monument Road

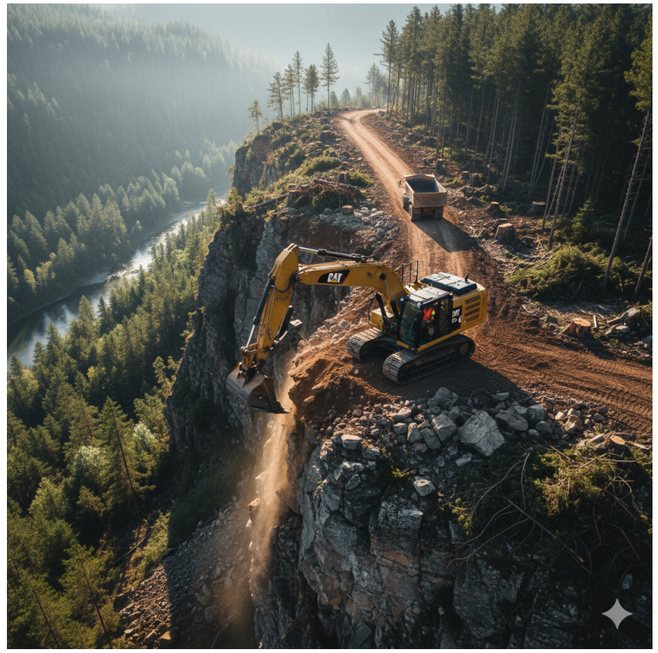


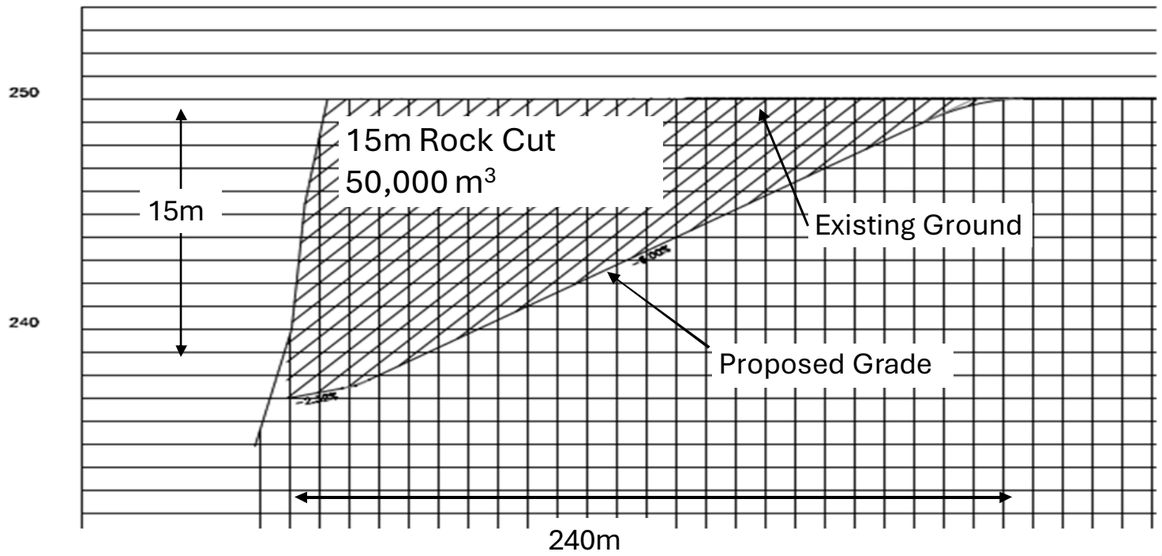
Option 2b – Concession 4 Extension - Benefits

Pros	Cons
Property access maintained during construction	Entirety of road must be completed before Mud Creek Bridge is decommissioned (replacement required within 4 years).
Pedestrian access maintained over Mud Creek	Rock cut required due to ridge near Mud Creek Road and for connection to Cross Creek Road (Approx. 50,000m3 of cut; ±15m descent)
All season access can be maintained if Concession Road 4 is connected to Cross Hill Road.	Property impacts required at rock cut to provide safety slope.
	Extensive woodland impacts

Option 2b – Concession 4 Extension - Evaluation

Environmental		
Impact to waterway	◒	No impact to waterway
Impact to woodlands	○	Significant negative impact to woodlands
Technical		
Opportunity to phase project	○	No opportunity to phase project
Transportation network connectivity	◕	Some improvement to transportation network connectivity
Constructability	◔	Difficult to construct
Effectiveness of Solution	◕	Suitably addresses problem
Social		
Duration of Construction	◔	Long construction duration
Accessibility to properties during construction	◒	Access to properties does not change
Opportunity to phase project	○	No opportunity to phase project
Transportation network connectivity	◕	Some improvement to transportation network connectivity
Transportation network redundancy	◒	No change in transportation network redundancy
Improving year-round access	●	All-year access
Impact to property	◔	Some property required to be acquired
Cost		
Initial cost	◔	Higher initial cost
Throwaway cost	●	Lowest throwaway cost
Total cost	◔	Higher overall cost
Ongoing / Maintenance cost	◒	Medium ongoing/maintenance cost

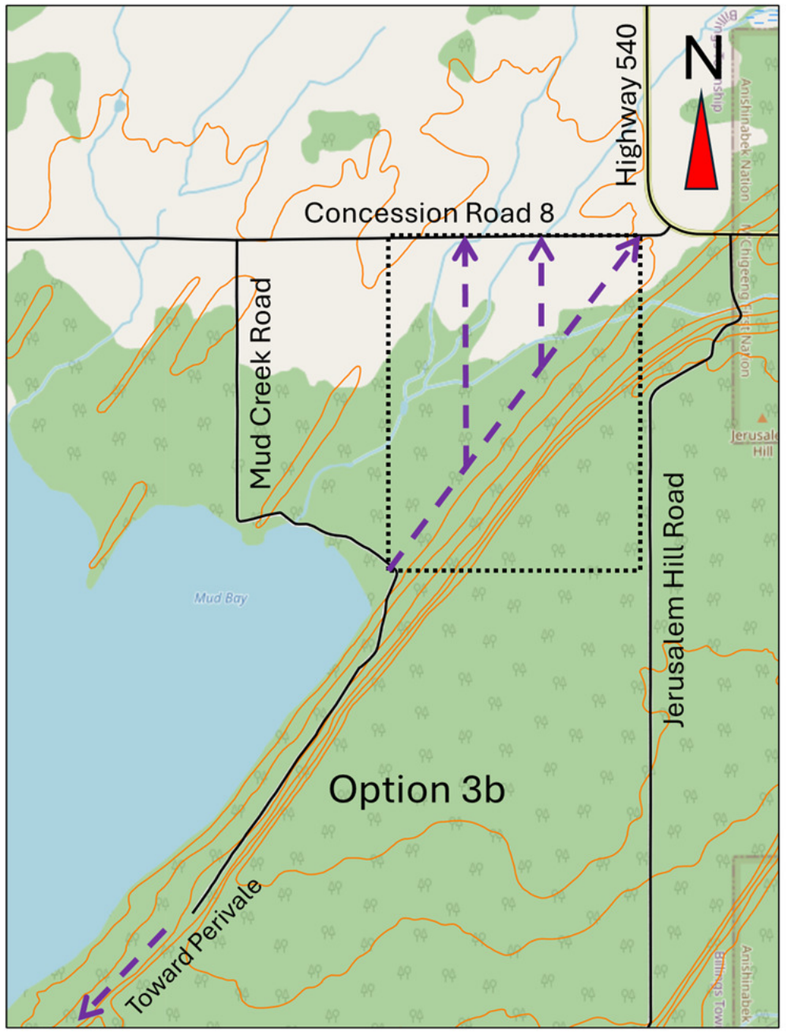




Cut Requirement on Concession 4 Extension

Option 3 – Private Property Acquisition - Overview

- Abandon or Convert the Existing Mud Creek Bridge to Pedestrian Only.
- Negotiate with local landowners about selling land for a new Right-of-Way
- **No Discussions** have been had with any landowners at this point.



Option 3 – Private Property Acquisition - Benefits

Pros	Cons
Property access maintained during construction	Entirety of road must be completed before Mud Creek Bridge is decommissioned (replacement required within 4 years).
Pedestrian access maintained over Mud Creek	Negotiations required with impacted landowners.
All season access is possible	Extensive woodland impacts
Extensive rock cut is avoided.	Connection to south would cut access to Township of Billings

Option 3 – Private Property Acquisition - Evaluation

Environmental		
Impact to waterway	◒	No impact to waterway
Impact to woodlands	◔	Some negative impact to woodland
Technical		
Opportunity to phase project	○	No opportunity to phase project
Transportation network connectivity	◕	Some improvement to transportation network connectivity
Constructability	◒	Neutral to construct
Effectiveness of Solution	◕	Suitably addresses problem
Social		
Duration of Construction	◒	Medium construction duration
Accessibility to properties during construction	◒	Access to properties does not change
Opportunity to phase project	○	No opportunity to phase project
Transportation network connectivity	◕	Some improvement to transportation network connectivity
Transportation network redundancy	◒	No change in transportation network redundancy
Improving year-round access	●	All-year access
Impact to property	○	Significant property required to be acquired
Cost		
Initial cost	◒	Medium initial cost
Throwaway cost	●	Lowest throwaway cost
Total cost	◔	Higher overall cost
Ongoing / Maintenance cost	◒	Medium ongoing/maintenance cost

Evaluation of Options

Category	Category Weighting	Individual Weighting	Option														
			1a			1b			2a			2b			3		
			Temporary Replacement Bridge			Permanent Replacement Bridge			Extend Concession 6			Extend Concession 4			Private Property Acquisition		
Environmental		100%	Rating	Score	Weighted Score	Rating	Score	Weighted Score	Rating	Score	Weighted Score	Rating	Score	Weighted Score	Rating	Score	Weighted Score
Impact to waterway	20%	50%	◔	0.25	0.025	◔	0.25	0.025	◒	0.5	0.05	◒	0.5	0.05	◒	0.5	0.05
Impact to woodlands		50%	◔	0.25	0.025	◔	0.25	0.025	○	0	0	○	0	0	◔	0.25	0.025
Technical		100%															
Opportunity to phase project	20%	10%	●	1	0.02	◒	0.5	0.01	○	0	0	○	0	0	○	0	0
Transportation network connectivity		10%	◒	0.5	0.01	◒	0.5	0.01	◒	0.5	0.01	◕	0.75	0.015	◕	0.75	0.015
Constructability		40%	●	1	0.08	◕	0.75	0.06	○	0	0	◔	0.25	0.02	◒	0.5	0.04
Effectiveness of Solution		40%	◕	0.75	0.06	◕	0.75	0.06	◒	0.5	0.04	◕	0.75	0.06	◕	0.75	0.06
Social		100%															
Duration of Construction	20%	30%	◕	0.75	0.045	◒	0.5	0.03	◔	0.25	0.015	◔	0.25	0.015	◒	0.5	0.03
Accessibility to properties during construction		20%	○	0	0	○	0	0	◒	0.5	0.02	◒	0.5	0.02	◒	0.5	0.02
Opportunity to phase project		15%	●	1	0.03	◒	0.5	0.015	○	0	0	○	0	0	○	0	0
Transportation network connectivity		5%	◒	0.5	0.005	◒	0.5	0.005	◒	0.5	0.005	◕	0.75	0.0075	◕	0.75	0.0075
Transportation network redundancy		5%	◒	0.5	0.005	◒	0.5	0.005	◒	0.5	0.005	◒	0.5	0.005	◒	0.5	0.005
Improving year-round access		15%	◒	0.5	0.015	◒	0.5	0.015	◒	0.5	0.015	●	1	0.03	●	1	0.03
Impact to property		10%	◕	0.75	0.015	◒	0.5	0.01	◔	0.25	0.005	◔	0.25	0.005	○	0	0
Cost		100%															
Initial cost	40%	50%	●	1	0.2	◕	0.75	0.15	◔	0.25	0.05	◔	0.25	0.05	◒	0.5	0.1
Throwaway cost		10%	○	0	0	●	1	0.04	●	1	0.04	●	1	0.04	●	1	0.04
Total cost		30%	●	1	0.12	◒	0.5	0.06	◔	0.25	0.03	◔	0.25	0.03	◔	0.25	0.03
Ongoing / Maintenance cost		10%	●	1	0.04	◕	0.75	0.03	◒	0.5	0.02	◒	0.5	0.02	◒	0.5	0.02
Overall				**0.695**			0.550			0.305			0.368			0.473	

Recommended Option

The **Temporary Replacement Bridge** option is the highest ranked of all the alternatives. This solution provides for:

- Lowest Cost
- Fastest Construction
- Best Longterm Phasing of Mud Creek Road Upgrades to minimize Township's financial burden
- Minimal Woodland Impacts
- Minor Wetland Impacts

Potential Enhancement

Each of the options presented do not increase connectivity to the Mud Creek area (i.e. there is only one way in and out).

If the Township decided that additional road access was required, then Option 2 or 3 could be pursued later.

Next Steps

- Results of this PIC, including any comment sheets, will be compiled into a final report. Target date for completion is the middle of November 2025.
- The final report will be presented to Township of Billings Council.
- Council will be free to act upon the report.
- The Mud Creek Bridge is anticipated to be condemned with the next 4 years.

Feedback & Questions

- Please fill out a comment sheet and provide your opinion on the options presented.
- Please ask questions of the staff available.
- Emailed comments are accepted as well.
  - Todd Gordon – Township of Billings - Municipal Project Manager (tgordon@billingstwp.ca)
  - Steven Kohler – Shellex Consulting Group – Regional Director (skohler@shellex.ca)
  - Townships website (https://www.billingstwp.ca/)