Safe Roads
ENGINEERING

MOSSINGTON BRIDGE

FINAL REPORT

J221032

TECHNICAL REVIEW

Town of Georgina

Prepared For:

GEORGINA

September 29, 2023

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1. INTRODUCTION

The Corporation of the Town of Georgina (the "Town") has identified the need to assess options to mitigate the risk of pedestrians climbing the cross-member sections of the Mossington Bridge (Bridge). Safe Roads Engineering (SRE) was retained by the Town to investigate and evaluate, through a Multi-Criteria Assessment (MCA), several measures to discourage or stop pedestrians from climbing and jumping from the Bridge into the Black River.

The bridge is located at the mouth of the Black River to Lake Simcoe and connects Hedge Road and Lake Drive East. The location of the bridge is illustrated in **Figure 1**.

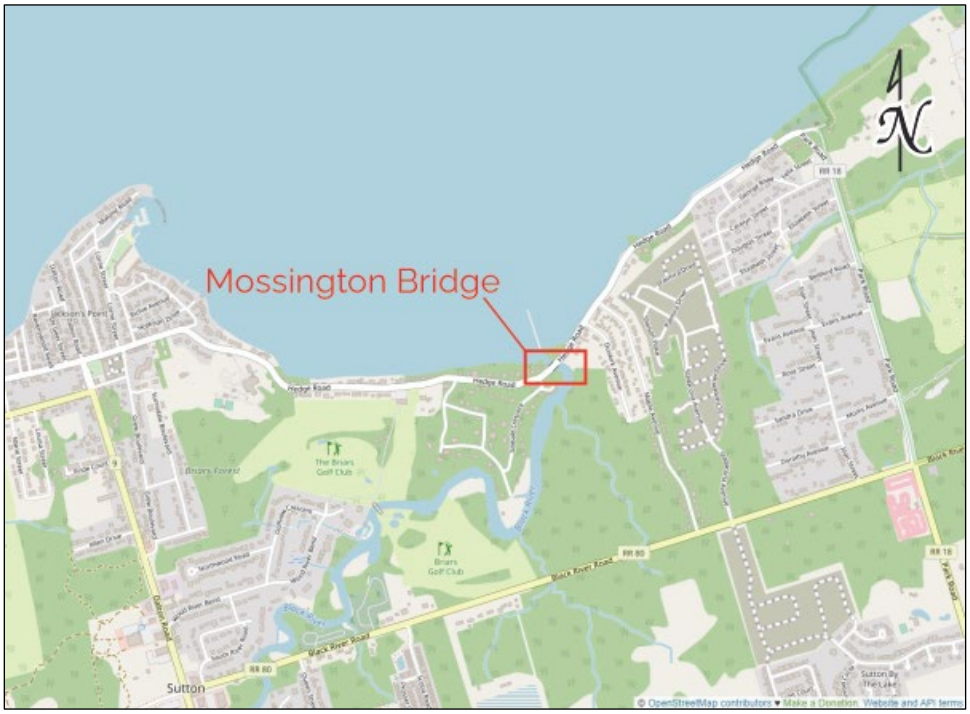


Figure 1: Location of Mossington Bridge

2. HISTORY

The Mossington Bridge has been under the responsibility of the Town for more than 150 years and was declared a heritage structure in 2002. Prior to the construction of the current bridge in 1912, the structure was made of timber. It was removed before construction of the current single-lane, steel through-truss bridge. The steel bridge was erected by Georgina Township Council using the design of County of York staff engineer, Frank Barber, with the National Bridge Company as contractors.

The bridge is a single-span through-truss bridge, with vertical and diagonal trusses. The bridge is 28.6 meters in length and has a 150-millimetre concrete deck and is 3.8 meters in width. There are also 1-metre latticed handrails along each side of the bridge. At present, there is no load restriction.

The Mossington Bridge is shown in **Figure 2**.

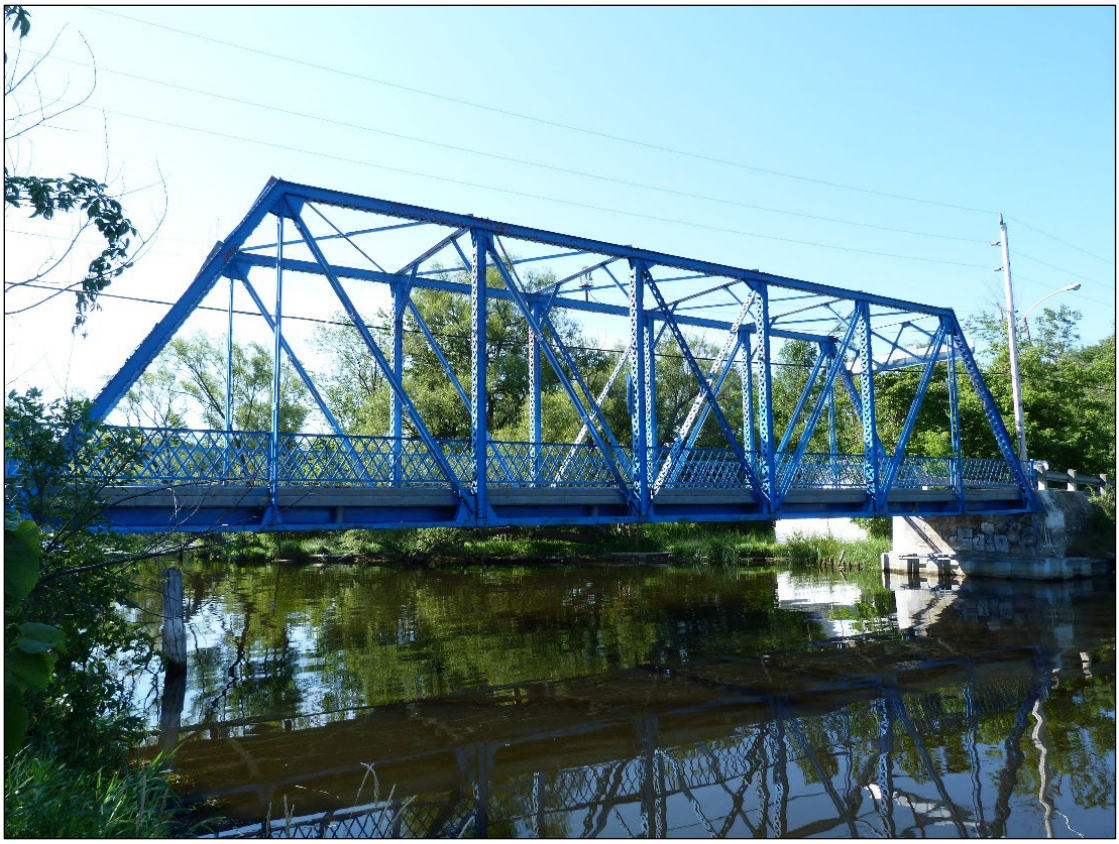
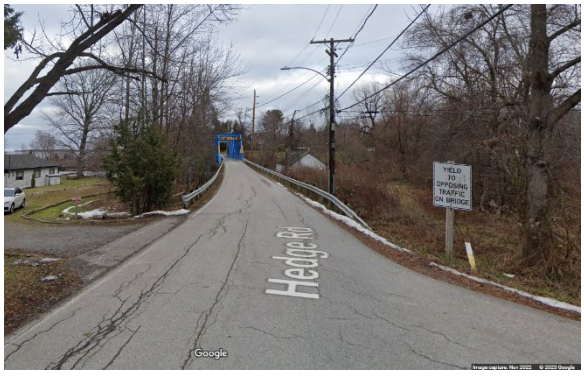


Figure 2: Mossington Bridge

The east approach generally curves to the left but maintains sufficient sight distance to see a vehicle approaching from the west for a posted speed limit of 30 km/h. The west approach is generally straight and has sufficient sight distance to see approaching vehicles. Both sides also have "Yield to Opposing Traffic on Bridge" signage, as shown in **Figure 3**.



Source: Google Maps

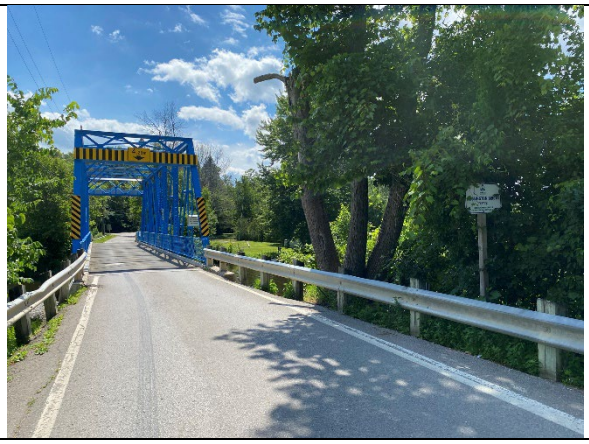


Figure 3: Approaches to Mossington Bridge

2.1 Heritage Act

Given that the Bridge is a heritage structure, the structure falls under the *Ontario Heritage Act* (the "Act"). The Act is used for the *conservation, protection, and preservation of the heritage of Ontario*. With respect to the Mossington Bridge, its mandate is to *preserve, maintain, reconstruct, restore, and manage property of historical, architectural, archaeological, recreational, aesthetic, natural and scenic interest.*

Based on the Heritage Act, any change to the attributes specified in the by-law that designates property as a heritage structure must be reviewed by Council and its Municipal Heritage Committee and a decision on the change must be made within a reasonable time frame (60 or 90 days).

The heritage attributes associated with the Bridge in By-Law 2002-0015 are described as follows:

The existing bridge, which was built about 1912, consists of 28.1 +/- m single span structural steel-through trusses with a 150 +/- mm concrete deck with asphalt patches. The concrete deck is supported by four (4) lines of longitudinal structural steel stringers at 1.45+/- m centres and provide a 3.83+/- m wide deck between curbs, which accommodate a single lane of vehicular traffic. Structural steel latticed handrails are located inside the trusses. The bridge is posted with a 10-ton load limit.

3. Condition

The most recent Ontario Structure Inspection Manual (OSIM) inspection of the bridge was conducted by Gannett Fleming in 2022, which assessed the Bridge Condition Index (BCI) to be 58.5 and the structure to be in Poor condition.

The bridge was rehabilitated in 2016 when concrete patch repairs were undertaken on the deck and a rapid-curing, skid-resistant, epoxy-based polymer concrete overlay was applied to the deck. However, the OSIM identified cracks found on the east abutment and wingwall, which also had spalling. The embankment was eroding and there was also a cracked deck end. Additionally, the bridge coating was observed to be peeling and completely gone in certain areas of the structure.

The OSIM also recommended that a structural evaluation be conducted within the next five years to confirm its suitability with current design vehicles and recommended replacement of the structure within six to 10 years. The recommended maintenance for the Mossington Bridge is summarized in **Table 1**.

Table 1: Mossington Bridge Repair Cost Summary

Maintenance Need	Priority	Estimated Cost
Bridge cleaning	Within 1 year	$10,000.00
Structural evaluation, monitoring	Within 1 year	$ 5,000.00
Structural Evaluation	1 – 5 years	$ 25,000.00
Maintenance Needs Cost Total		**$40,000.00**

*Information obtained from *2022 Bridge and Structural Culvert Condition Assessment Report* prepared by Gannett Flemming

4. Field Visit

A field visit was conducted by SRE and Town Staff on July 7, 2022, to observe the site area and determine potential areas of concern that could be addressed throughout this project. The latticed handrails run along the entire length of the bridge at a height of 1-metre. The height of the rails is at a level that is easy to jump over, and the lattice within the handrails provides footholds to climb the railing. A section of the handrails is shown in Figure 4.

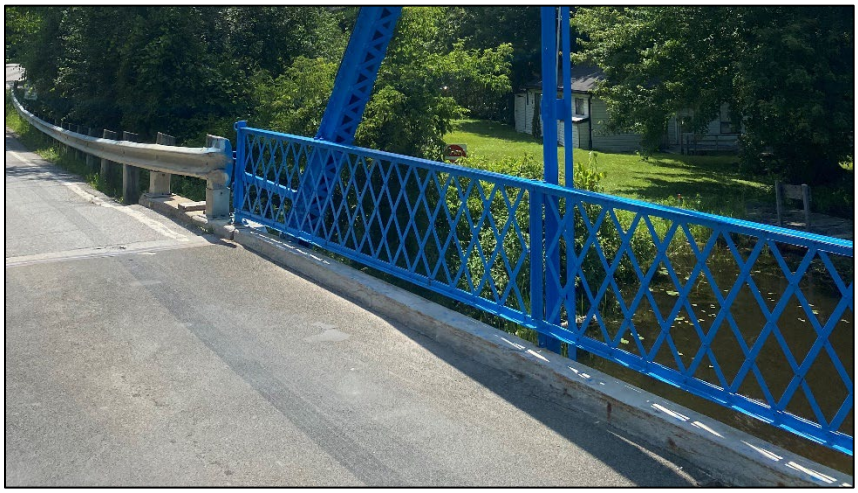


Figure 4: Latticed Handrail

The Town has already implemented several measures to discourage people from jumping into the river, which include:

- Signage to deter people form approaching or jumping from the bridge, as seen in Figure 5

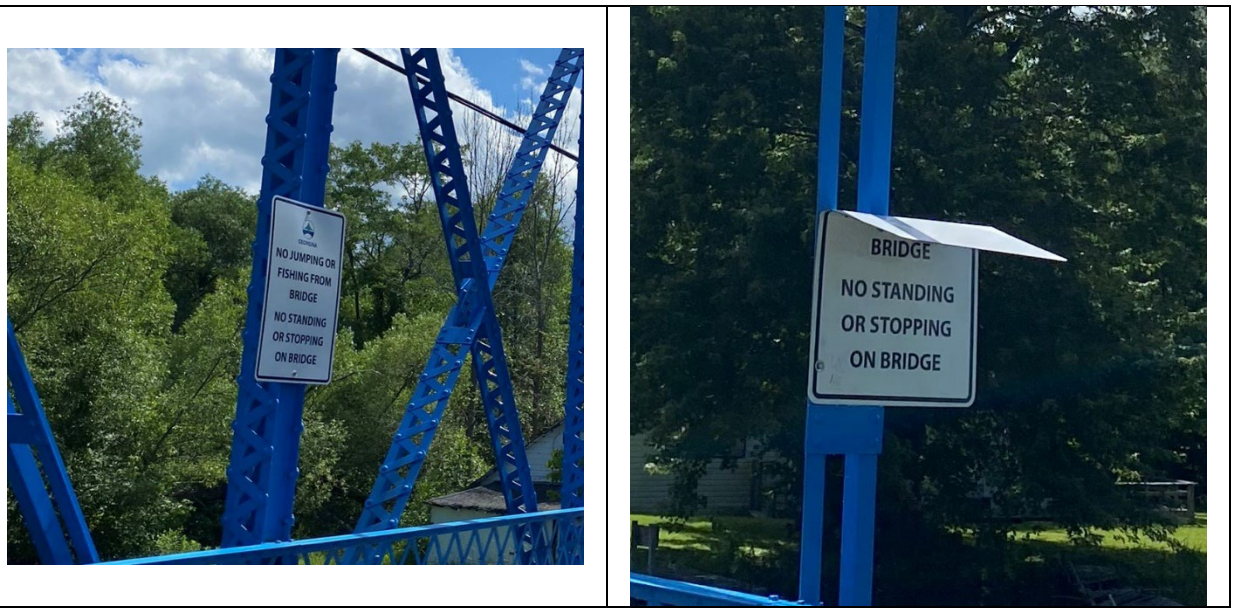
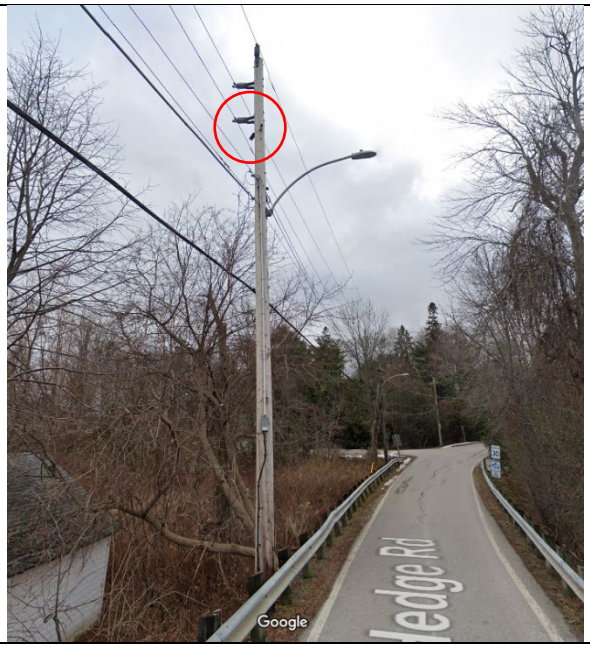
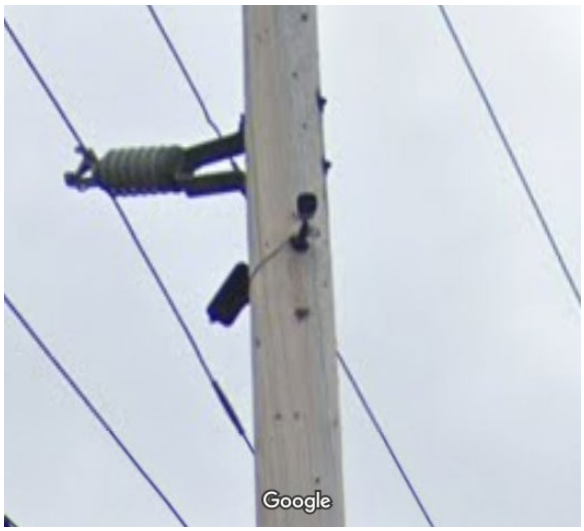


Figure 5: Posted Signage on Mossington Bridge

- Camera mounted surveillance of the bridge to deter undesirable actors, as shown in **Figure 6**





Source: Google Maps

Figure 6: Mounted Camera for Mossington Bridge Surveillance

5. Mitigation Strategies

Other bridges and municipalities were reviewed to identify mitigation strategies that could be used to discourage jumping off the at the Mossington Bridge given the potential dangers associated with the action. This review included canvassing information from:

- Recreational / cottage areas such as Cape Breton and Ann Arbor;
- Lower bridge structures over waterways including the Port Credit Rail Bridge;
- Other agencies including the York Regional Police; and
- Other bridges not limited to the Golden Gate Bridge and the Bloor Viaduct.

From this canvassing, six broad strategies were identified from other locations with similar issues and considered for potential implementation at the Mossington Bridge. The strategies are described in **Table 2**.

Table 2: Possible Mitigation Strategies to be Considered

Mitigation Strategy	Explanation	Implementation Strategy	Strategy Results
Community Awareness	Educating the public about the dangers associated with jumping off the Bridge.	• Involve local schools, faith communities, clubs • Host information sessions, awareness, and charity events • Post bulletins, information pamphlets • Door-to-door canvassing of neighborhoods during busy season	• Helps connect the community • Educate children at school regarding potential perils • Raises social awareness • Establishes contacts and networks • Spreads knowledge
Enhanced Signage	Posting signage above and beyond what is currently posted to discourage people from jumping off the Bridge.	• Update / Upgrade existing signage, such as bigger signs or attention-grabbing colours • Include signage for potential fines and penalties • Include signage for potential risk of injury	• Warns against dangerous or prohibited behaviour • Ensures knowledge of potential hazards • Establishes tone and association with the hazard • Assists the receiver in correct decision-making
Enhanced Surveillance	Bringing attention to the installed camera or installing more conspicuous cameras to discourage people from jumping off the Bridge.	• Place away from areas where likely to incur accidental damage or vandalism • Place in areas with high visibility of the subject area • Place in areas where potential offenders have clear line of sight	• Deters dangerous or hazardous behaviour • Allows the monitoring of behaviour in the environment • Acts as evidence in the occurrence of an offence • Keeps records of occurrences for future reference
Fines & Enforcements	Implementing a by-law and punitive fine prohibiting jumping from the Bridge.	• Develop policy and protocol for institution • Establish a method or process to serve offenders • Preventative / Routine patrols • Routine incidence / emergency response	• Deters those who might otherwise do so • Establishes a path from offence to punishment • Punishes those who violate the law • Provides knowledge and defines the law
New Pedestrian Bridge	A specifically designed pedestrian bridge near the Mossington Bridge to divert pedestrian traffic. Anti-jumping	• Consult Town Hall as capital budget dollars would be required • Community consultation required	• Diverts pedestrian crossings to a new location • Designed to hinder climbing and jumping

Mitigation Strategy	Explanation	Implementation Strategy	Strategy Results
	measures can be incorporated into the design of the new pedestrian bridge.	• Draft preliminary documents for design, location, and construction	• Limits the existing bridge to vehicles only (cars and cyclists) • With additional measures, can disincentivize jumpers from the existing bridge
Horizontal & Vertical Barriers	Addition of barriers to physically deter or prevent people from climbing and / or jumping from the Bridge.	• Consult Town Hall as capital budget dollars would be required • Community consultation required • Ensure structure will protect heritage aspect • Draft preliminary documents for design and construction	• Can be installed to prevent a fall after a jump or prevent jumpers from positioning for a jump • Deters jumpers from performing the act • Visually sets an intimidating tone

The mitigation strategies identified in **Table 2** were expanded upon and high-level implementation plans developed for consideration of the MCA. The strategies are explained further in **Table 3** and may be considered in isolation or in conjunction with the other measures identified.

Table 3: Implementation of Strategies

Measure	Mitigation Strategy	Implementation
Safety Campaign	Community Awareness	Use media (radio, local papers, social media, school) to educate people that jumping from bridges is dangerous and should not be done. Inform students at school of the dangers of jumping off the Bridge.
Enhanced Signage	Community Awareness & Enhanced Signage	Currently, there is no signage informing pedestrians not to jump off the structure. Change existing signage on Mossington Bridge informing pedestrians to not jump off the bridge. Used attention-grabbing colours to draw attention to signage.
Visual Enforcement	Fines & Enforcement	Have by-law officers and / or police periodically patrol (in increasing amounts until deterrence is achieved) the Mossington Bridge. Patrols can be targeted in the following priority: • Long weekends during the summer • Weekends during the summer • Weekdays during the summer months Additional officers may be required to have desired effect on public. No fines are issued.

Measure	Mitigation Strategy	Implementation
By-Law Enforcement	Fines & Enforcement	Creation of a by-law prohibiting jumping from bridge. Have by-law officers and / or police periodically patrol (in increasing amounts until deterrence is achieved) the Mossington Bridge and issue warnings and fines. Patrols can be targeted in the following priority: • Long weekends during the summer • Weekends during the summer • Weekdays during the summer months Additional officers may be required to have desired effect on public but may generate revenue for Town.
Extend existing bridge rail	Barrier System	Extend the existing bridge rails vertically to make it more difficult to climb
Acrylic and Polycarbonate Safety Barrier	Barrier System	Install acrylic and polycarbonate safety barrier to prevent climbing.
Vertical Cable / Fence Barrier System	Barrier System	Installation of barrier system to stop individuals from climbing.
New Pedestrian Bridge	New Bridge	Construct new hard-to-climb pedestrian bridge to direct people away from Mossington Bridge. Additional lands and pedestrian facilities required.

6. Multi-Criteria Assessment

A Multi-Criteria Assessment (MCA) was used to compare different options by assessing their environmental, social, technical, and financial factors. An MCA provides a systematic approach for supporting complex decisions according to pre-determined criteria and objectives. The MCA allows identification of a single preferred alternative, or to rank or short-list possible alternatives, and provides a framework to explore trade-offs between different options.

6.1 MCA Criteria

Based on workshops with the Town, several criteria were developed to undertake the MCA. These fell into four categories, provided in Table 4.

Table 4: MCA Review Criteria

Category	Criteria	Criteria Description	Rating				
			1	2	3	4	5
Environmental	Contstructability	Difficulty in acquiring permits.	Aquatic environmental permits may be required.	-	Terrestrial permits may be required.	-	No environmental permits required.
	Construction impact to natural environment	Short term impacts to environment.	Major negative construction impact to natural environment	Minor negative construction impact to natural environment	No construction impact to natural environment	Minor positive construction impact to natural environment	Major positive construction impact to natural environment
	Long-term impact of solution to natural environment	Long term impacts to environment.	Solution significantly impacts natural environment	Solution provides some impact to natural enviroment	Solution provides no impact to natural environment	Solution provides some improvement to natural environment	Solution significantly improves natural environment
Technical	Constructability	Difficulty in constructing measure.	Very difficult to implement (requires significant resources/very long duration)	-	Moderately difficult to construct.	-	Very easy to implement (requires minimal resources/very short duration)
	Impact to structure	Changes in structure resulting from implementation of measure.	Major structural changes to bridge	-	Minor structural changes to bridge	-	No structural changes to bridge
	Operational impact to staff	Additional work required by Staff for operation, enforcement, or maintenance	Dedicated Staff required for effectiveness.	-	Less than full-time requirement by Staff.	-	No change in staff duties / No additional work for Staff
	Effectiveness of solution	Ability to deter/stop people from jumping	Ineffective at stopping pedestrians from jumping from bridge	Somewhat effective at stopping pedestrians from jumping from bridge	Moderately effective at stopping pedestrians from jumping from bridge	Very effective at stopping pedestrians from jumping from bridge	Not possible to jump from bridge without significant effort
Social	Construction Impact to vehicular traffic	Impact to vehicles during construction period	Major negative impact to stakeholders resulting from construction activities (long delays, loud noise, restricted access)	Minor negative impact to stakeholders resulting from construction activities (some delay, noise and limited access	No impact to stakeholders from construction activities	Minor positive impact to stakeholders resulting from construction activities	Major positive impact to stakeholders resulting from construction activities
	Construction Impact to pedestrians / cyclists	Impact to pedestrians / cyclists during construction period	Major negative impact to stakeholders resulting from construction activities (long delays, loud noise, restricted access)	Minor negative impact to stakeholders resulting from construction activities (some delay, noise and limited access	No impact to stakeholders from construction activities	Minor positive impact to stakeholders resulting from construction activities	Major positive impact to stakeholders resulting from construction activities
	Impact of solution on vehicular traffic	Impact of solution to vehicles to vehicular traffic after construction	Solution results in major negative experience for all stakeholders	Solution results in some negative experience for some stakeholders	No impact to stakeholders	Solution results in some positive experience for some stakeholders	Solution results in major positive experience for stakeholders
	Impact of solution on pedestrians / cyclists	Impact of solution to pedestrians / cyclists after construction	Solution results in major negative experience for all stakeholders	Solution results in some negative experience for some stakeholders	No impact to stakeholders	Solution results in some positive experience for some stakeholders	Solution results in major positive experience for stakeholders
	Change to historical significance / value	Impact of measure to historical features. Steel through truss bridge with vertical and diagonal members and riveting. Latticed hand rail and blue in colour.	Major changes to heritage aspect, requires significant modification to existing architecture (based on Heritage Act)	-	Minor change in heritage value, requires little change to architecture (based on Heritage Act)	-	No change in heritage value, maintain all heratige aspects (based on Heritage Act)
Cost	Construction / Implementation cost	Initial capital cost for implmentation.	>$1,000,000	<$1,000,000	<$100,000	<$10,000	<1,000
	Ongoing Operational / Maintenance cost	Recurring annual cost for operation / maintenance.	Very high costs relative to other mitigation.	High costs relative to other mitigation.	Medium costs relative to other mitigation.	Low costs relative to other mitigation.	Lowest costs relative to other mitigation.

6.2 MCA Weighting

Once the criteria were established, each criterion was given a weighting used to evaluate the mitigation strategies. This is provided in **Table 5**.

Table 5: Multi-Criteria Assessment Evaluation Weighting

Category	Weighting	Criteria	Weighting	Total
Environmental	10%	Constructability	25%	100%
		Construction impact to natural environment	25%	
		Long-term impact of solution to natural environment	50%	
Technical	30%	Constructability	15%	100%
		Impact to structure	35%	
		Operational impact to staff	20%	
		Effectiveness of solution	30%	
Social	30%	Construction Impact to vehicular traffic	5%	100%
		Construction Impact to pedestrians / cyclists	5%	
		Impact of solution on vehicular traffic	25%	
		Impact of solution on pedestrians / cyclists	25%	
		Change to historical significance / value	40%	
Cost	30%	Construction / Implementation cost	50%	100%
		Ongoing Operational / Maintenance cost	50%	
Total	100%	--	--	--

7. EVALUATION

7.1 EVALUATION RESULTS SUMMARY

The MCA was evaluated, and the full assessment including the scoring is provided in **Appendix A** for reference. The results of the evaluation are summarized in **Table 6**.

Table 6: Summary of Evaluation Results

Rank	Mitigation Strategy	Score
1	Safety Campaign	3.95
1	Enhanced Signage	3.95
3	Enhanced Signage and Community Awareness	3.8
4	Enhanced Security Cameras & Enhanced Signage	3.65
4	Enhanced Security Cameras, Enhanced Signage & Community Awareness	3.65
6	Visual Enforcement	3.47
6	By-Law Enforcement	3.47
6	By-Law Enforcement & Community Awareness	3.47
9	Acrylic and Polycarbonate Safety Barrier	3.415
10	Extend existing bridge rail	3.085
11	New Pedestrian Bridge & By-Law Enforcement	2.75
12	Vertical Cable / Fence Barrier System	2.71
13	New Pedestrian Bridge	2.66

In completing the MCA, the strategies that are quick to implement, lower cost, and generally more passive, scored well. Additionally, these measures do not impact the surrounding environment. These strategies include:

- Safety Campaign – can be broadly implemented and quickly executed with generally minimal effort
- Enhanced Signage – signage can be created and installed quickly
- Enhanced Security Cameras – making the security camera more conspicuous with notification that actors are being watched can be used to deter people; currently in-use Infrastructure for the existing camera can be utilized

Should these measures be ineffective, additional measures should be considered:

- By-Law Enforcement – Passing and enforcing the by-law will act as a deterrent through official warnings and fines. This method does not impact the bridge structure and may generate some revenue for the Town.
- Acrylic and Polycarbonate Safety Barrier – The addition of a clear acrylic safety barrier will have minimal visual impact on the structure and will prevent people from jumping off the Bridge. This will require approval from Town Council and the Heritage Committee.

7.2 Preliminary Cost Estimate

The anticipated capital costs of implementing the mitigation strategies are as follows:

1. Enhanced Signage & Safety Campaign / Community Awareness – $25,000
2. Enhanced Security Cameras – $30,000
3. By-Law Enforcement & Community Awareness – $50,000 + Staffing + fines, and,
4. Installation of Acrylic and Polycarbonate Safety Barrier – $80,000 + annual maintenance (approximately $5,000 per year).

8. Conclusions

The Town has identified the need to assess options to mitigate the risk of pedestrians climbing the cross-member sections of the Mossington Bridge. Several mitigation strategies were developed and evaluated through an MCA, which identified likely strategies for implementation. These strategies fall into four categories for comparison: Environmental, Technical, Social, and Cost.

There was a total of 13 strategies, or combination of strategies, evaluated in the MCA. Based on the MCA evaluation, there were four specific (combination) strategies recommended to deter people from jumping from the Bridge. These were:

8.1 Enhanced Signage & Safety Campaign / Community Awareness

A public education campaign regarding he safety implications and hazards of jumping off the Mossington Bridge can be communicated to the public via a number of mediums including radio, local papers, social media and/or school.

At present, there is no signage specifically indicating the dangers of jumping off the bridge. Highlighting this information, in attention grabbing colours, at the bridge location would educate people at the bridge itself.

This mitigation strategy can be implemented quickly and is expected to cost approximately $25,000.00.

8.2 Enhanced Security Cameras

At present, there are inconspicuous cameras monitoring the Mossington Bridge. Bringing attention to security cameras, by enlarging the cameras and providing signage highlighting that cameras are monitoring the bridge will discourage people from jumping off the bridge. The infrastructure is generally in place as there are cameras currently at the Mossington Bridge.

The cost for implementing enhanced security cameras is approximately $30,000.00.

8.3 By-Law Enforcement & Community Awareness

There is no by-law prohibiting people from jumping off the Mossington Bridge. Implementing a by-law will provide the Township the ability to fine individuals that are jumping off the bridge, thereby providing a financial deterrent.

A by-law would be required to be created, which would then need to be communicated to the public, and the enforced by Township Staff. It is expected that the creation and implementation of the by-law and accompanying education campaign will cost approximately $50,000.00 plus the cost of a Staff member; however, the Township may be able to collect some fines.

8.4 Installation of Acrylic and Polycarbonate Safety Barrier

The installation of a clear acrylic and polycarbonate safety barrier along the inside of the bridge will prevent individuals from using the latticed handrails as footholds. The clear nature of the acrylic and polycarbonate panels will not bring attention to this mitigation strategy. A sample of this treatment is provided in **Figure 7**.

Figure 7: Sample Acrylic and Polycarbonate Barriers Installed on Handrails

The cost to install the acrylic and polycarbonate barrier is estimated to be approximately $80,000.00. Maintenance will also be required whereby panels may need to be replace, particularly as the system gets older, we estimate the cost to be in the order of $5,000.00 per year.

These strategies are fast to implement and require limited effort from the Town. Additionally, these strategies only require Council (or Heritage Committee) approval, particularly when implementing recommendation 8.4., the installation of acrylic and polycarbonate safety barrier, as the cultural integrity and authenticity of the property is maintained.

These strategies also all serve to discourage or stop pedestrians from climbing and jumping from the Bridge into the Black River to varying degrees while maintaining the historical significance of the Mossington Bridge.

Appendix A – MCA Evaluation

Mossington Bridge MCA Scoring Assessment

Category	Category Weighting	Criteria	Criteria Description	Sub-Weighting	Evaluation				
					Safety Campaign	Enhanced Signage	Enhanced Signage and Community Awareness	Enhanced Security Cameras & Enhanced Signage	Enhanced Security Cameras, Enhanced Signage & Community Awareness
Environmental	10%	Contstructability	Difficulty in acquiring permits.	25%	5	5	5	5	5
		Construction impact to natural environment	Short term impacts to environment.	25%	3	3	3	3	3
		Long-term impact of solution to natural environment	Long term impacts to environment.	50%	3	3	3	3	3
		Total		100%	3.5	3.5	3.5	3.5	3.5
Technical	30%	Constructability	Difficulty in constructing measure.	15%	5	5	5	5	5
		Impact to structure	Changes in structure resulting from implementation of measure.	35%	5	5	5	5	5
		Operational impact to staff	Additional work required by Staff for operation, enforcement, or maintenance	20%	3	3	3	3	3
		Effectiveness of solution	Ability to deter/stop people from jumping	30%	2	2	2	2	2
		Total		100%	3.7	3.7	3.7	3.7	3.7
Social	30%	Construction Impact to vehicular traffic	Impact to vehicles during construction period	5%	3	3	3	3	3
		Construction Impact to pedestrians / cyclists	Impact to pedestrians / cyclists during construction period	5%	3	3	3	3	3
		Impact of solution on vehicular traffic	Impact of solution to vehicles to vehicular traffic after construction	25%	3	3	3	3	3
		Impact of solution on pedestrians / cyclists	Impact of solution to pedestrians / cyclists after construction	25%	3	3	3	3	3
		Change to historical significance / value	Impact of measure to historical features. Steel through truss bridge with vertical and diagonal members and riveting. Latticed hand rail and blue in colour.	40%	5	5	5	5	5
		Total		100%	3.8	3.8	3.8	3.8	3.8
Cost	30%	Construction / Implementation cost	Initial capital cost for implmentation.	50%	4	4	4	3	3
		Ongoing Operational / Maintenance cost	Recurring annual cost for operation / maintenance.	50%	5	5	4	4	4
		Total		100%	4.5	4.5	4	3.5	3.5
Total					3.95	3.95	3.8	3.65	3.65
Ranking					1	1	3	4	4

Mossington Bridge MCA Scoring Assessment

Category	Category Weighting	Criteria	Criteria Description	Sub-Weighting	Evaluation			
					Visual Enforcement	By-Law Enforcement	By-Law Enforcement & Community Awareness	Extend existing bridge rail
Environmental	10%	Contstructability	Difficulty in acquiring permits.	25%	5	5	5	5
		Construction impact to natural environment	Short term impacts to environment.	25%	3	3	3	2
		Long-term impact of solution to natural environment	Long term impacts to environment.	50%	3	3	3	3
		Total		100%	3.5	3.5	3.5	3.25
Technical	30%	Constructability	Difficulty in constructing measure.	15%	5	5	5	3
		Impact to structure	Changes in structure resulting from implementation of measure.	35%	5	5	5	3
		Operational impact to staff	Additional work required by Staff for operation, enforcement, or maintenance	20%	1	1	1	3
		Effectiveness of solution	Ability to deter/stop people from jumping	30%	3	3	3	4
		Total		100%	3.6	3.6	3.6	3.3
Social	30%	Construction Impact to vehicular traffic	Impact to vehicles during construction period	5%	3	3	3	2
		Construction Impact to pedestrians / cyclists	Impact to pedestrians / cyclists during construction period	5%	3	3	3	2
		Impact of solution on vehicular traffic	Impact of solution to vehicles to vehicular traffic after construction	25%	3	3	3	3
		Impact of solution on pedestrians / cyclists	Impact of solution to pedestrians / cyclists after construction	25%	3	3	3	3
		Change to historical significance / value	Impact of measure to historical features. Steel through truss bridge with vertical and diagonal members and riveting. Latticed hand rail and blue in colour.	40%	5	5	5	3
		Total		100%	3.8	3.8	3.8	2.9
Cost	30%	Construction / Implementation cost	Initial capital cost for implmentation.	50%	3	3	3	3
		Ongoing Operational / Maintenance cost	Recurring annual cost for operation / maintenance.	50%	3	3	3	3
		Total		100%	3	3	3	3
Total					3.47	3.47	3.47	3.085
Ranking					6	6	6	10

Mossington Bridge MCA Scoring Assessment

Category	Category Weighting	Criteria	Criteria Description	Sub-Weighting	Evaluation			
					Acrylic and Polycarbonate Safety Barrier	Vertical Cable / Fence Barrier System	New Pedestrian Bridge	New Pedestrian Bridge & By-Law Enforcement
Environmental	10%	Contstructability	Difficulty in acquiring permits.	25%	5	5	1	1
		Construction impact to natural environment	Short term impacts to environment.	25%	2	2	1	1
		Long-term impact of solution to natural environment	Long term impacts to environment.	50%	3	3	3	3
		Total		100%	3.25	3.25	2	2
Technical	30%	Constructability	Difficulty in constructing measure.	15%	3	3	1	1
		Impact to structure	Changes in structure resulting from implementation of measure.	35%	5	3	5	5
		Operational impact to staff	Additional work required by Staff for operation, enforcement, or maintenance	20%	2	2	2	2
		Effectiveness of solution	Ability to deter/stop people from jumping	30%	5	5	2	3
		Total		100%	4.1	3.4	2.9	3.2
Social	30%	Construction Impact to vehicular traffic	Impact to vehicles during construction period	5%	2	2	3	3
		Construction Impact to pedestrians / cyclists	Impact to pedestrians / cyclists during construction period	5%	2	1	3	3
		Impact of solution on vehicular traffic	Impact of solution to vehicles to vehicular traffic after construction	25%	3	3	3	3
		Impact of solution on pedestrians / cyclists	Impact of solution to pedestrians / cyclists after construction	25%	3	3	3	3
		Change to historical significance / value	Impact of measure to historical features. Steel through truss bridge with vertical and diagonal members and riveting. Latticed hand rail and blue in colour.	40%	5	1	5	5
		Total		100%	3.7	2.05	3.8	3.8
Cost	30%	Construction / Implementation cost	Initial capital cost for implmentation.	50%	3	3	2	2
		Ongoing Operational / Maintenance cost	Recurring annual cost for operation / maintenance.	50%	2	2	1	1
		Total		100%	2.5	2.5	1.5	1.5
Total					3.415	2.71	2.66	2.75
Ranking					9	12	13	11