



# **Blacks Bridge Class Environmental Assessment**

Virtual Public Information Centre | May 19, 2021

# Welcome

- Thank you for your interest in this study
- The purpose of the study is to evaluate long-term solutions for Blacks Bridge
- The bridge has been closed since September 2019 due to structural deficiencies.

## Public Information Centre (PIC) Objectives

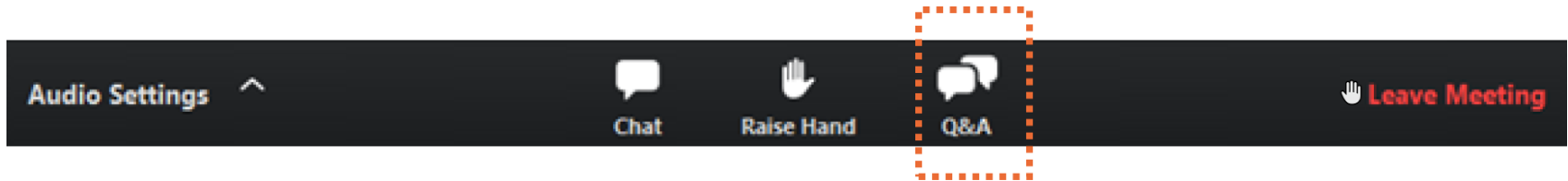
- Provide an overview on the study and existing conditions
- Present the alternatives developed and the preferred solution identified
- Collect feedback on the preferred solution
- Summarize next steps in the study.



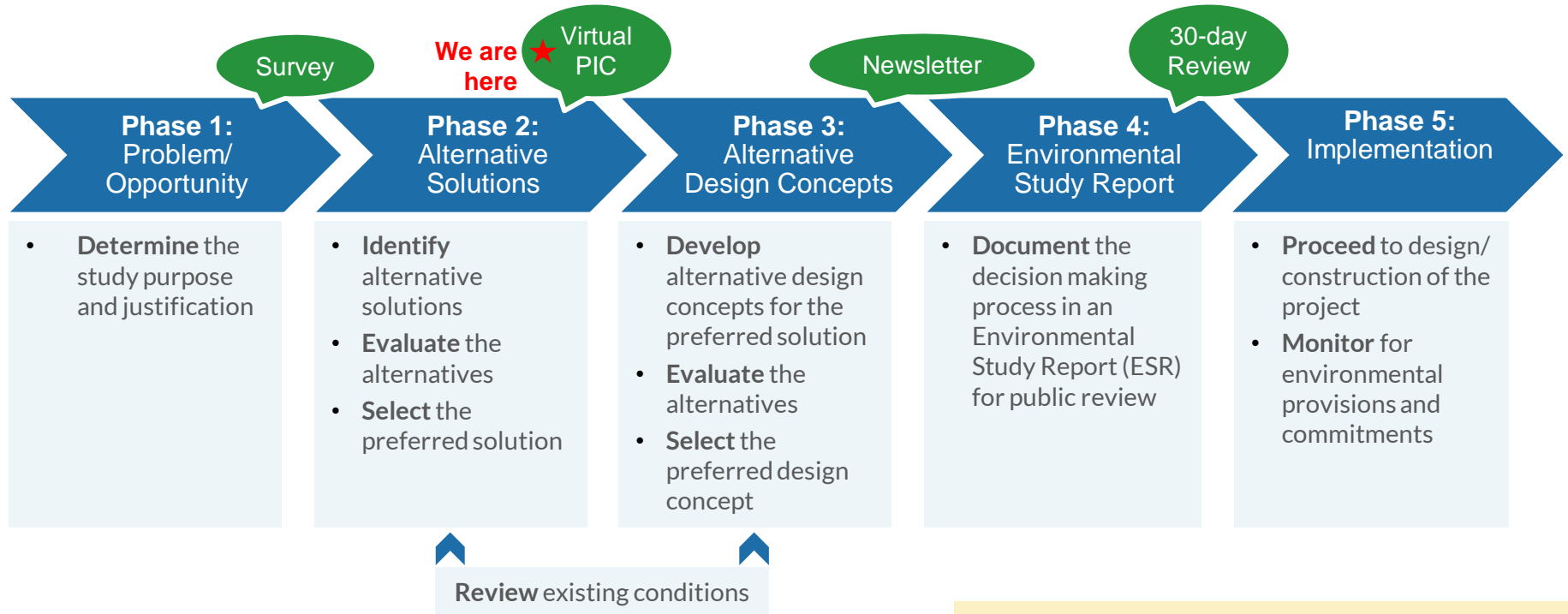


## How to ask a question:

Please use the Q+A  
button to send in your  
questions.



# Study Process



# Existing Conditions

- Existing conditions were reviewed, including:
  - **Structural** conditions
  - **Hydrological** conditions
  - **Cultural heritage** potential
  - **Natural environment** features
  - **Land use** (existing and planned).

Blacks Bridge



Further detailed review and analysis will be completed in subsequent phases.

# Existing Conditions – Structural

- Constructed in 1912
- Single span through truss bridge
- Span length of approximately 35 meters
- Key findings of structural inspections:
  - Light to very severe deterioration, corrosion, and rust jacking
  - Bent diagonal member on the north truss.



Corrosion on Blacks Bridge

Following a visual inspection of the bridge on September 5, 2019, **the County closed the bridge to vehicular traffic and pedestrians due to structural deficiencies.**



# Existing Conditions – Hydrological

- Modelling results for the *design storm*:
  - Blacks Bridge meets the minimum flood clearance requirement of 0.3 m (clearance of approximately 0.39 m identified)
  - West Corner Drive is flooded approximately 60 m west of the bridge.

*Design storm*: rainfall event used as a basis for infrastructure design requirements.

Based on the road classification and bridge span, the design storm for Blacks Bridge is a 1-in-25-year storm.

Southeastward view of the bridge's north elevation (TMHC, 2020)



Local residents identified flooding in the area during heavy storms.

# Existing Conditions – Cultural Heritage

- Blacks Bridge meets the criteria for identification as a heritage property
  - Additional heritage studies may be required (e.g., for alterations to the bridge).

## Design/Physical Value

- Riveted, seven-panel through-truss bridge
- Intact original structural features

## Historical/Associative Value

- Ongoing need to cross Ausable River
- Built by the Sarnia Bridge Company



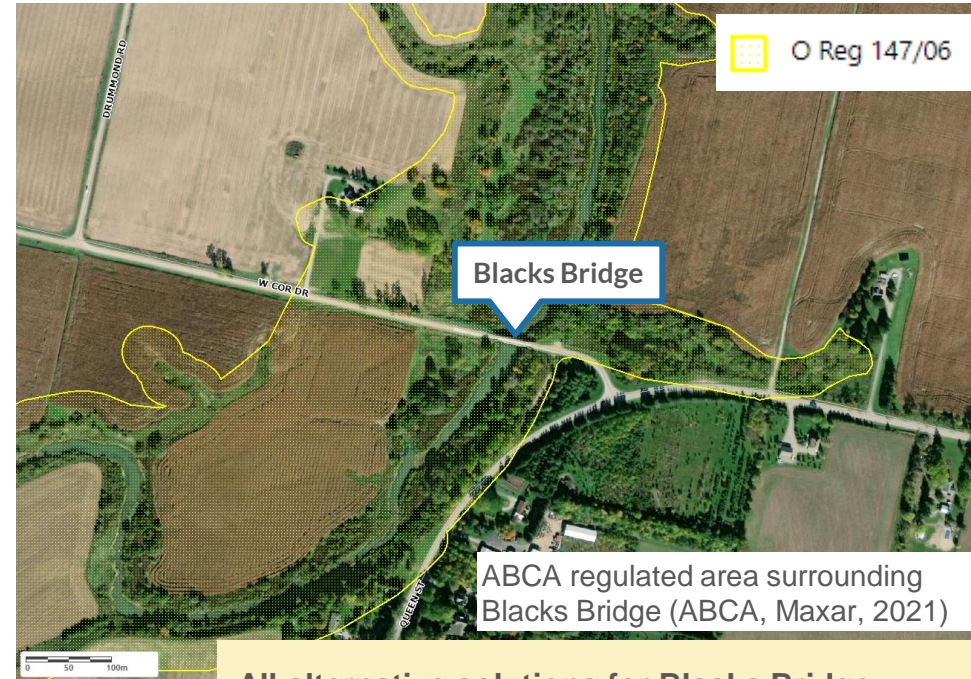
Construction of Blacks Bridge, courtesy of Alisa Craig Museum (TMHC, 2020)

Blacks Bridge “has direct associations with the themes of **transportation improvement related to local development** in this area, and the **evolving approach to bridge replacement**, reflecting engineering trends over time” (THMC, 2020).



# Existing Conditions – Natural Environment

- Findings indicate potential for 8 Species at Risk (SAR) to be found at/ surrounding Blacks Bridge:
  - Mussels: 4 species
  - Fish: 2 species
  - Birds: 1 species
  - Vegetation: 1 species.
- The area is regulated by the Ausable Bayfield Conservation Authority (ABCA)
  - O.Reg 147/06 requires a permit for development in the area.

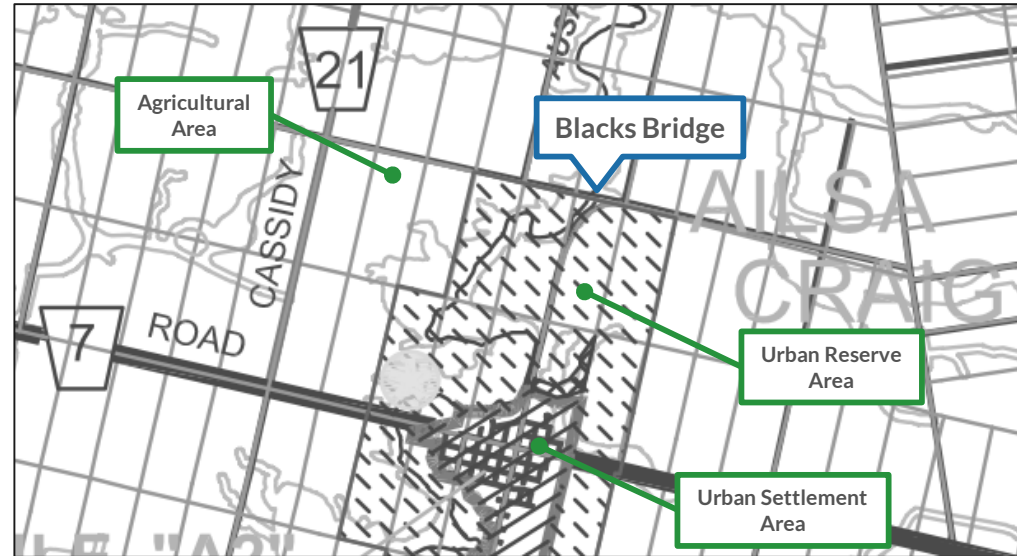


ABCA regulated area surrounding Blacks Bridge (ABCA, Maxar, 2021)

**All alternative solutions for Blacks Bridge, apart from the 'do nothing' alternative, have potential to impact SAR.**




# Existing Conditions – Land Use

- Primarily agricultural
- Limited rural residential
- Urban expansion is directed to the southern limits of Ailsa Craig
- Lands south of Blacks Bridge are protected for future urban expansion
  - The bridge would connect these potential future urban areas
- West Corner Drive is designated a Local Road.



North Middlesex Official Plan  
Schedule "A" Land Use (Rural Area)

## LAND USE DESIGNATIONS:

	URBAN RESERVE AREA
	AGRICULTURAL AREA
	URBAN SETTLEMENT AREA



# Community Survey

- A total of 263 survey responses were received
- In general, respondents were locals who use Blacks Bridge for:
  - Agricultural operations
  - General day-to-day use
  - Recreation.

## What We Heard – Key Themes

- Importance of Blacks Bridge for agricultural operations, as well as general connectivity and mobility
- Concern about potential commercial impacts to Ailsa Craig from closing the bridge
- Flooding issues identified in the area
- Perceived cultural/heritage significance of the bridge
- Blacks Bridge and Ausable River are used for recreational activities (cycling, walking, canoeing/kayaking)
- Concerns about delays to emergency service vehicles due to closure of the bridge
- Technical comments related to Blacks Bridge's condition and potential solutions.

In response to a survey question that asked, **“What options do you feel should be considered for the study,”** approximately 91% of respondents selected replacement with a new 2-lane vehicular bridge, and less than 1% selected removal.



# Project Need and Alternatives

## Problem/ Opportunity

Blacks Bridge is currently closed to vehicular and pedestrian traffic due to structural deficiencies. An opportunity exists to evaluate long-term solutions for the water crossing, including opportunities to repair, replace, or remove the structure. **The long-term solution should balance the needs and values of the local community with technical considerations and protection of the existing environment.**

- The Class EA requires alternative solutions to address the problem/opportunity
- Five alternative solutions were identified, and were evaluated based on:
  - Potential impacts to the natural environment
  - Cultural and socio-economic considerations
  - Engineering performance and feasibility
  - Relative capital costs.

# “Do Nothing” Alternative



- Leave Blacks Bridge in place “as is”
- ❌ Screened out because it does not address the problem/opportunity
  - The bridge is closed due to structural deficiencies
  - Leaving it in place without rehabilitation would not be an appropriate long-term solution.







# Alternative 1A: Rehabilitate for Single-Lane Vehicular Use

- Rehabilitate Blacks Bridge to its previous functionality:
  - Two-way single lane vehicular traffic
  - Load restriction of 8 tonnes
  - Clearance restrictions.

Advantages 	Disadvantages 
<ul style="list-style-type: none"><li>• <b>Retains heritage value</b> (form and functionality)</li><li>• Provides connectivity</li><li>• Lowest potential for impacts to:<ul style="list-style-type: none"><li>• Archaeological resources</li><li>• Groundwater and surface water</li></ul></li></ul>	<ul style="list-style-type: none"><li>• <b>Does not accommodate all vehicles</b> (excludes agricultural and large emergency vehicles)</li><li>• Highest potential for impacts to fish and fish habitat</li><li>• Complex construction methods</li><li>• Frequent maintenance and repairs required</li><li>• Anticipated service life: 30 years</li></ul>

## Alternative 1B: Rehabilitate for Active Transportation Only

- Rehabilitate Blacks Bridge for use by pedestrians and cyclists
  - Bollards or other barricades would likely be used to block vehicular traffic from entering the bridge.

Advantages 	Disadvantages 
<ul style="list-style-type: none"><li>• <b>Enhances road safety for active transportation</b></li><li>• Retains heritage value (form only)</li><li>• Lowest potential for impacts to:<ul style="list-style-type: none"><li>• Archaeological resources</li><li>• Groundwater and surface water</li></ul></li></ul>	<ul style="list-style-type: none"><li>• <b>Does not accommodate vehicular traffic of any kind</b></li><li>• Highest potential for impacts to fish and fish habitat</li><li>• Complex construction methods</li><li>• Frequent maintenance and repairs required</li><li>• Anticipated service life: 30 years</li></ul>



## Alternative 2: Replace with a New Bridge













- Replace Blacks Bridge with a new single lane or two lane bridge in the same location
  - Existing abutments may be replaced behind their current locations, expanding the opening under the bridge
  - Height of bridge and approach roadway may be increased, addressing road overtopping issues.

Advantages 	Disadvantages 
<ul style="list-style-type: none"><li>• <b>Accommodates all vehicular traffic</b></li><li>• <b>Well aligned with public input received to date</b></li><li>• Potential opportunity to mitigate flooding issues</li><li>• Lowest potential for impacts to fish and fish habitat</li><li>• Anticipated service life: 75 years</li></ul>	<ul style="list-style-type: none"><li>• <b>Highest anticipated capital cost</b></li><li>• <b>Removes bridge and associated heritage value</b></li><li>• Largest area of impact</li><li>• Highest potential for impacts to:<ul style="list-style-type: none"><li>• Archaeological resources</li><li>• Groundwater and surface water</li></ul></li></ul>

## Alternative 3: Remove the Bridge






- Remove Blacks Bridge completely without replacement
  - Existing abutments may be replaced behind their current locations, expanding the opening under the bridge
  - Property acquisition may be required to create cul-de-sacs at the new ends of West Corner Drive.

Advantages 	Disadvantages 
<ul style="list-style-type: none"><li>• <b>Minimizes engineering effort and risk</b></li><li>• <b>Lowest anticipated capital cost</b></li><li>• No future maintenance/removal/replacement requirement</li><li>• Opportunity for positive impact to natural environment through naturalization of riparian area</li></ul>	<ul style="list-style-type: none"><li>• <b>Does not provide connectivity across Ausable River</b></li><li>• <b>Not well aligned with public input received to date</b></li><li>• <b>Removes bridge and associated heritage value</b></li><li>• Property acquisition may be required</li></ul>

Factor Area	Evaluation Criteria	Summary of Evaluation
<b>Natural Environment</b> 	<ul style="list-style-type: none"> <li>Fish and Fish Habitat</li> <li>Terrestrial Ecosystems</li> <li>Species at Risk</li> <li>Groundwater and Surface Water</li> <li>Source Water Protection</li> <li>Natural Hazard Lands</li> </ul>	<ul style="list-style-type: none"> <li> <b>Removal (Alt. 3) is preferred</b>, with opportunities for enhancement</li> <li> <b>Rehabilitation (Alts. 1A and 1B) and replacement (Alt. 2) are least preferred</b>, with similar potential for impacts <ul style="list-style-type: none"> <li>It is anticipated impacts of all alternatives on the natural environment can generally be avoided or mitigated.</li> </ul> </li> </ul>
<b>Socio-Economic Environment</b> 	<ul style="list-style-type: none"> <li>Agricultural Operations</li> <li>Land Use/Official Plan</li> <li>Local Road Connectivity</li> <li>Emergency Services</li> <li>Recreational Use of Ausable River</li> <li>Alignment with Public Input</li> <li>Cultural Heritage Resources</li> <li>Archaeological Resources</li> </ul>	<ul style="list-style-type: none"> <li> <b>Replacement (Alt. 2) is preferred</b> due to the bridge's usability and associated benefits to agricultural operations, existing and future land uses, and emergency service response times</li> <li> <b>Removal (Alt. 3) is least preferred</b>, primarily because it does not accommodate vehicular or active transportation connectivity <ul style="list-style-type: none"> <li>Connectivity was identified as a key community need/value, and was considered critical in this evaluation.</li> </ul> </li> </ul>
<b>Engineering</b> 	<ul style="list-style-type: none"> <li>Bridge/Road Safety</li> <li>Maintenance/Rehabilitation Requirements</li> <li>Anticipated Service Life</li> <li>Construction Complexity</li> <li>Abutment Stability</li> <li>Hydraulic Performance</li> <li>Impact to Upstream Flood Potential</li> <li>Climate Change (risk from increased flow)</li> </ul>	<ul style="list-style-type: none"> <li> <b>Removal (Alt. 3) is preferred</b> across all criteria</li> <li> <b>Rehabilitation (Alts. 1A and 1B) is least preferred</b>, largely due to structural and geotechnical deficiencies of the existing bridge, and construction complexity for rehabilitation. <ul style="list-style-type: none"> <li>No major engineering risks or challenges anticipated for replacement (Alt. 2).</li> </ul> </li> </ul>
<b>Cost</b> 	<ul style="list-style-type: none"> <li>Capital Cost (high-level estimates for comparison purposes)</li> </ul>	<ul style="list-style-type: none"> <li> <b>Removal (Alt. 3) has the lowest</b> anticipated capital cost</li> <li> <b>Replacement (Alt. 2) has the highest</b> anticipated capital cost <ul style="list-style-type: none"> <li>Rankings are not anticipated to change with more detailed cost estimates including lifecycle costs.</li> </ul> </li> </ul>



# Preferred Solution: Replace with a New Bridge

- Replacement (Alt. 2) has been identified as the preferred solution
  -  Ideal in terms of usability for agricultural, emergency services, and other vehicles
  -  Key community need/value – high volume of public comments in opposition to removal of the bridge
- Removal (Alt. 3) is ideal in terms of natural environment, engineering, and cost; however, the utility of the crossing offsets these benefits
  -  It is anticipated impacts of all alternatives on the natural environment can generally be avoided or mitigated
  -  No major engineering risks or challenges anticipated for replacement (Alt. 2)
  -  The County is willing to incur the cost of replacing the bridge due to its benefits for local agricultural operations and the surrounding community in general
- Rehabilitation (Alternatives 1A and 1B) has been identified as least preferred, primarily because it does not support agricultural operations and involves engineering challenges.

# Next Steps

	Spring 2021	Summer 2021	Fall 2021	2022 & beyond
Review feedback from this PIC		Respond to comments		
Develop and evaluate alternative design concepts		Incorporate public input into evaluation		
Publish newsletter				
Complete impact assessment for preferred design concept				
Publish ESR for 30-day public review				
Detailed Design and construction				Timing TBD; subject to funding and approvals.



# Thank you for attending.

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Your input is important to this study. Please provide any comments/questions to either of the project team members listed below by **June 2, 2021**.

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