COUNTY OF LAMBTON

MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT FOR THE BEAR CREEK BRIDGE

ENVIRONMENTAL SCREENING REPORT

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COUNTY OF LAMBTON

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ENVIRONMENTAL SCREENING REPORT

November 28, 2018

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File No. BR1279

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COUNTY OF LAMBTON

MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT FOR BEAR CREEK BRIDGE

1.0 INTRODUCTION

1.1 Purpose of the Report

The County of Lambton has initiated a Class Environmental Assessment (Class EA) process in January 2018 to evaluate the potential impacts associated with modifications to the Bear Creek Bridge, which is located on County Road 22 (Egremont Road) at the east limits of the Village of Warwick. The study process followed the procedures set out in the Municipal Class Environmental Assessment document, dated October 2000, as amended in 2007, 2011 & 2015 (Ref. 1). B. M. Ross and Associates Limited (BMROSS) was engaged to conduct the Class EA investigation on behalf of the County of Lambton.

The purpose of this report is to document the Class EA planning and design process followed for this project. The report includes the following major components:

- An overview of the general project area.
- A summary of the structural deficiencies associated with the crossing.
- A description of the alternative solutions considered to resolve the identified problems.
- A synopsis of the decision-making process conducted to select a preferred alternative.
- A detailed description of the preferred alternative.

1.2 Environmental Assessment Process

Municipalities must adhere to the *Environmental Assessment Act of Ontario* (EA Act) when completing road, sewer or waterworks activities. The Act allows the use of Class Environmental Assessments for most municipal projects. A Class EA is an approved planning document which describes the process that proponents must follow in order to meet the requirements of the EA Act. The Class EA approach allows for the evaluation of alternatives to a project, alternative methods of carrying out a project, and identifies potential environmental impacts. The process involves mandatory requirements for public input.

Class EA studies are a method of dealing with projects which have the following important characteristics in common:

- They are recurring.
- They are usually similar in nature.
- They are usually limited in scale.
- They have a predictable range of environmental effects.
- They are responsive to mitigating measures.

If the Class EA planning process is followed, a proponent does not have to apply for formal approval under the EA Act. The development of this investigation has followed procedures set out in the Class EA. Figure 1.1 presents a graphical outline of the procedures.

The Class EA planning process is divided into the following phases:

- Phase 1 – Problem identification.
- Phase 2 – Evaluation of alternative solutions to the defined problems and selection of a preferred solution.
- Phase 3 – Identification and evaluation of alternative design concepts in the selection of a preferred design concept.
- Phase 4 – Preparation and submission of an Environmental Screening Report (ESR) for public and government agency review.
- Phase 5 – Implementation of the preferred alternative and monitoring of any impacts.

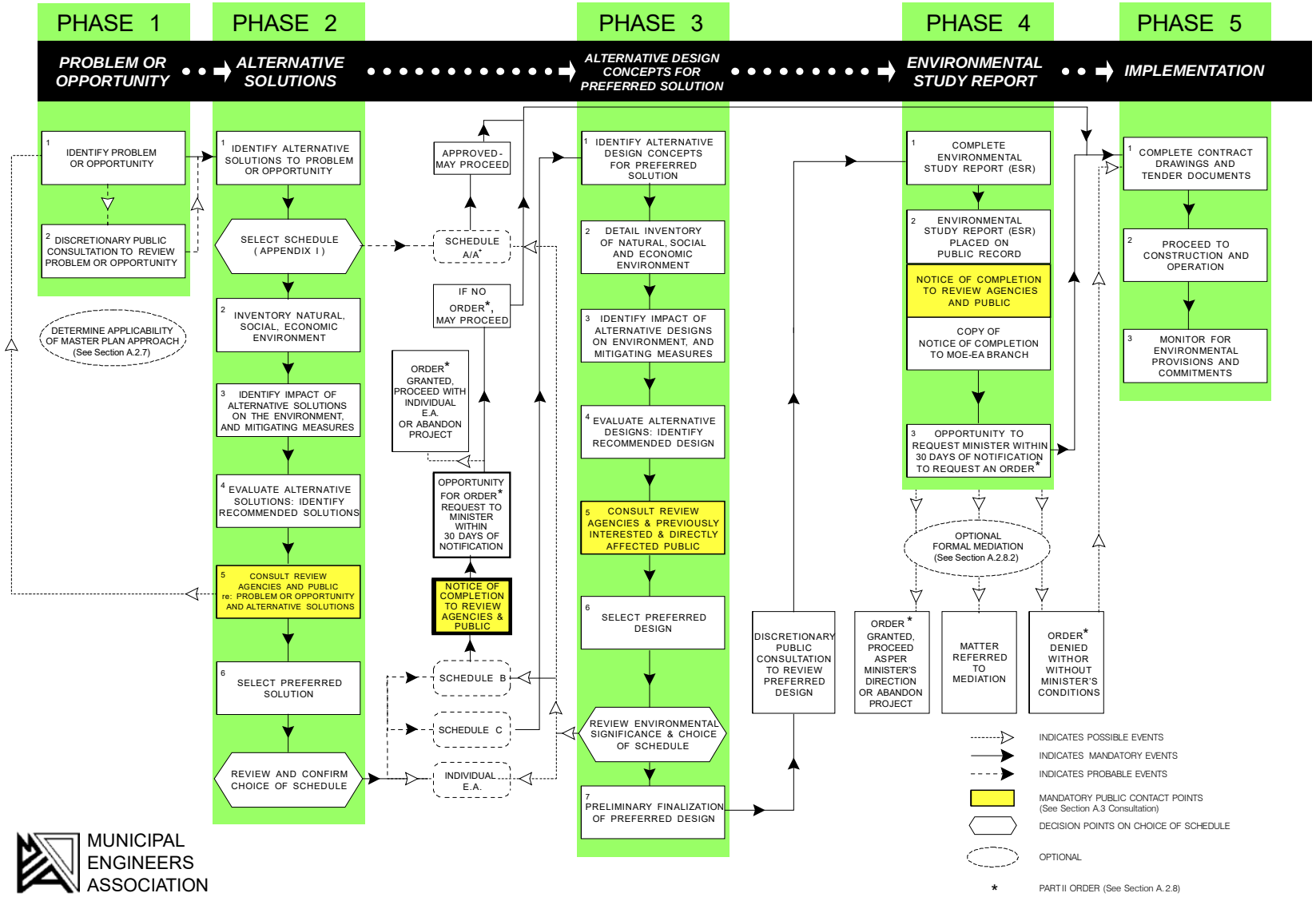
Throughout the Class EA process, proponents are responsible for the following key principles of environmental planning:

- Consultation with affected parties throughout the process.
- Examination of a reasonable range of alternatives.
- Consideration of effects on all aspects of the environment.
- Application of a systematic methodology for evaluation alternatives.
- Clear documentation of the process to permit traceability of decision-making.

1.3 Project Management

The County of Lambton is considered the project proponent under the terms of the Class EA document. The County engaged BMROSS to carry out the Class EA study process on their behalf.

NOTE: *This flow chart is to be read in conjunction with Part A of the Municipal Class EA*



MUNICIPAL ENGINEERS ASSOCIATION

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COUNTY OF LAMBTON

CLASS ENVIRONMENTAL ASSESSMENT FOR THE WARWICK BRIDGE

CLASS EA PROCESS

DATE	PROJECT No.
SEPT. 14 2018	BR1279
SCALE	FIGURE No.
None	1.1

1.4 Classification of Project Schedules

Projects are classified to different project schedules according to the potential complexity and the degree of environmental impacts that could be associated with each. There are four schedules:

- Schedule A – Projects that are approved with no need to follow the Class EA process.
- Schedule A+ – Projects that are pre-approved but require some form of public notification.
- Schedule B – Projects that are approved following the completion of a screening process that incorporates, as a minimum, Phases 1 and 2 of the Class EA process.
- Schedule C – Projects that are approved following the completion of the full Class EA process.

The Class EA process is self-regulatory and municipalities are expected to identify the appropriate level of environmental assessment based upon the project they are considering. A proponent may also choose to elevate a project to a higher schedule.

1.5 Environmental Screening Report

An Environmental Screening Report provides documentation of the decision-making process followed by the proponent of a project. Included in the report is a description of the problem or opportunity; pertinent background information; the rationale for the selection of the preferred solution; descriptions of the environmental considerations and impacts; any mitigating measures that will be undertaken to minimize environmental effects, a description of the consultation process; and a description of any monitoring programs to be carried out during the construction phase. Upon completion, the report is made available to the public and review agencies for a period of 30 calendar days.

1.6 Mechanism to Request a Higher Level of Environmental Assessment

Under the terms of the Class EA, the requirement to prepare an individual environmental assessment for approval is waived. However, if it is found that a project going through the Class EA process results in significant environmental impacts, a person/party may request that the County of Lambton voluntarily elevate the project to a higher level of environmental assessment.

If the County declines, or if it is believed that the concerns are not properly dealt with, any individual or organization has the right to request that the Minister of the Ministry of the Environment, Conservation and Parks the Environment, Conservation and Parks (MECP) make an order for the project to comply with Part II of the Environmental Assessment Act which addresses individual environmental assessments. The request form, which can be found on the MECP website, must be submitted to the Minister within 30 days of the publication of the Notice of Completion of the Class EA process.

2.0 BACKGROUND REVIEW

2.1 Class EA Approach

The County initiated a formal Class EA process in January 2018 to define and evaluate impacts associated with the repair, rehabilitation or replacement of the Bear Creek Bridge, located on the east limits of the Village of Warwick, Ontario. The associated investigations followed the environmental screening process prescribed for Schedule B projects under the Class EA document. In general, the screening process required to conduct a Class EA incorporates these primary components:

i. Background Review and Problem Definition
ii. Identification of Practical Solutions
iii. Evaluation of Alternatives
iv. Project Recommendations and Implementation

The following sections of this report document the findings for each stage of the Class EA. Figure 2.1 illustrates the general tasks associated with the Schedule B screening process.

2.2 Background Review

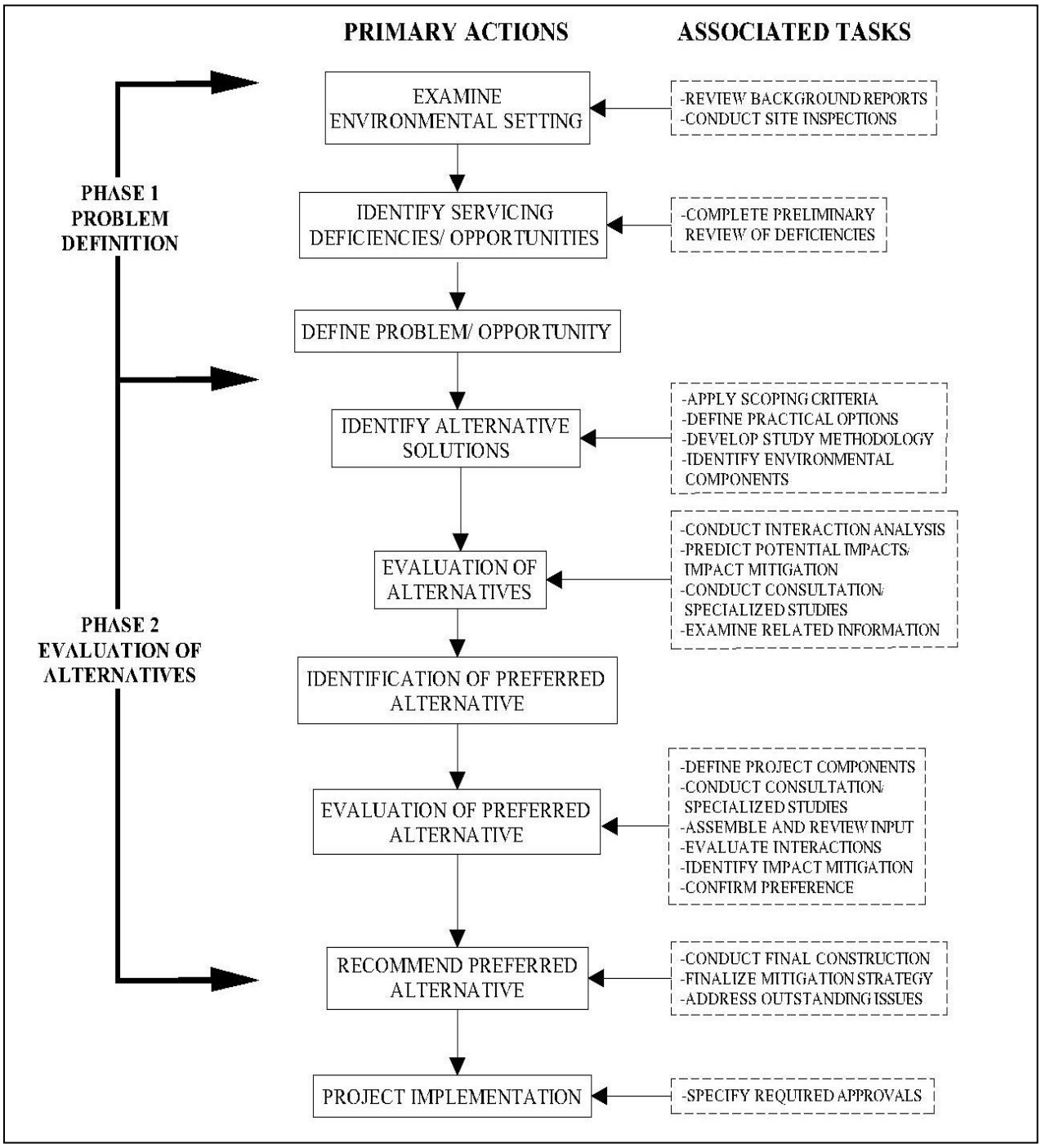
A background review was carried out to characterize the project study area and to identify those factors that could influence the selection of alternative solutions to the defined problems. The background review for this Class EA process incorporated these activities:

- A general description of the study area and the County of Lambton.
- Assembly of information on the environmental setting and the existing infrastructure.
- Review of previous studies and reports pertaining to the project study area.

A desktop analysis of the project setting was completed as part of the background review. The following represent the key sources of information for this analysis:

- Ministry of Natural Resources and Forestry (MNRF), Natural Heritage Information Centre (website).
- County of Lambton. Files and discussions with staff.
- Environment Canada. Species at Risk Public Registry.
- St. Clair Region Conservation Authority. Website and Watershed Report Card.
- Ontario Structural Inspection Manual (OSIM) Report.

Figure 2.1
Class EA Schedule B Screening Process and Related Tasks



2.3 Description of Study Area

a) County of Lambton

The County of Lambton forms part of the west portion of Southern Ontario and is bounded on the north and west by Lake Huron, by Middlesex County to the East, Municipality of Chatham-Kent to the south, and a small corner of Huron County to the northeast. The project study area is located in the east central portion of the County at the east limits of the Village of Warwick. The study area is situated in the Township of Warwick, which is one of eleven lower tier Municipalities found in Lambton County. The project study area is illustrated on Figure 2.2 (attached), and generally comprises the former Village of Warwick, the Bear Creek watercourse both north and south of the crossing, and adjacent lands to the east. Lambton County Road 22 (Egremont Road) crosses the bridge in an east to west orientation.

b) Description of the Project Area

The Bear Creek Bridge is located in a predominately rural area along the route of County Road 22, (Egremont Road), at the east limits of the community of Warwick. County Road No. 22 extends in an east-west orientation from the City of London in the east to the City of Sarnia in the west, passing through several small communities along the route. As shown on aerial photography, the County Road curves slightly to the south before swinging back north over the watercourse crossing, in the vicinity of the bridge site. The existing structure is located within the Township of Warwick, but is owned and maintained by the County of Lambton (See Figure 2.3 attached). On average, the road experiences traffic levels of approximately 1600 vehicles per day in the vicinity of the bridge.

The Egremont Road was one of the first major roadways constructed in the southwest part of the province. Initially developed in the early 1800's to provide access to the area for early settlers, the road eventually became part of the provincial highway system, managed by the Department of Highways, as Highway 7, for a number of years before being downloaded to the County of Lambton in 1997-1998. The importance of the roadway has decreased gradually over the years as Provincial Highway 402 located south of the highway along a route parallel to the County Road, was constructed in stages from the Bluewater Bridge in Sarnia, to the south end of London where it merges with Provincial Highway 401.

The landscape located adjacent to the bridge site is a mix of actively farmed agricultural lands, natural features associated with the river valley, and residential developments. The village of Warwick is located immediately east of the bridge. A general store and the Warwick Fire Department and Community Centre can be found on the north side of Egremont Road in the village. Several homes and the Warwick Gas & Variety are located adjacent to the south road extent. Bear Creek flows in a southerly direction beneath the bridge and enters a large mill pond approximately 0.5 km downstream. The mill pond is associated with the Warwick Conservation Area and Campground, which is a 73 ha (180 Acres) property owned and managed by the St. Clair Region Conservation Authority. The site has 181 serviced campsites and several nature trails. Photos of the bridge and road are included below.

▲Photo of the Egremont Road over the bridge facing west towards the Village of Warwick

▲Photo of the Bear Creek Bridge south elevation

KEY PLAN
NOT TO SCALE

EGREMONT ROAD
FACING WEST

SPALL ON NORTH ARCH

SOUTH ELEVATION

NORTH ELEVATION

SITE PHOTOS TAKEN ON OCTOBER 11, 2016
CREDIT TO: R. Dobbin Engineering Inc.

AERIAL PHOTOGRAPHY OF PROJECT AREA
SCALE 1 : 10,000

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COUNTY OF LAMBTON

CLASS EA FOR THE BEAR CREEK BRIDGE

GENERAL LOCATION PLAN

DATE	PROJECT No.
SEPT. 14, 2018	BR1279
SCALE	FIGURE No.
AS SHOWN	2.2

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COUNTY OF LAMBTON

CLASS ENVIRONMENTAL ASSESSMENT FOR WARWICK BRIDGE

PROJECT STUDY AREA

DATE	PROJECT No.
SEPT. 14, 2018	BR1279
SCALE	FIGURE No.
1 : 5,000	2.3

2.4 Heritage and Cultural Landscapes

Due to the age of the structure (constructed circa 1931), completion of a Cultural Heritage Evaluation Report (CHER) and Heritage Impact Assessment (HIA) were required to assess the cultural heritage value of the crossing and to identify potential impacts associated with the proposed project. In January 2018, AECOM was retained to complete the assessment.

The determination of cultural heritage value is defined through Ontario Regulation 9/06 of the Ontario Heritage Act. Based upon the regulation, various aspects of the structure are examined to determine if they have value within the following categories:

- Design value or physical value;
- Historic value or associative value;
- Contextual value.

The Bear Creek Bridge was examined based on the above criteria and was determined to have design or physical value and contextual value. This was due to the bowstring arch design which is a relatively rare example of this style and design in Lambton County. The contextual value was associated with the historic presence of a bridge crossing on the Egremont Road, which was one of the earliest transportation corridors in the area.

The crossing was determined not to have any historic value. The following statement of Cultural Heritage Value was established for the structure following completion of the assessment:

"The Bear Creek Bridge is a single-span concrete bowstring arch bridge that carries County Road 22/Egremont Road over Bear Creek just east of the Village of Warwick, in the County of Lambton. Designed and constructed in 1930 and 1931, the bridge design and style of construction are representative of a short-lived type of structural design in the early/mid-20th century. Although popular in other parts of Ontario, the Bear Creek Bridge is one of the only concrete bowstring arches to be built in Lambton County."

The following are the character-defining heritage attributes associated with the cultural heritage value or interest of the Bear Creek Bridge:

- Concrete bowstring arch design including:
    - Symmetrical arches on the north and south sides of the structure;
    - Concrete paneling set into the arch for aesthetic effect;
    - Vertical concrete posts under the bowstring arch;
    - Concrete guardrails with inset concrete panels;
    - Cantilevered concrete sidewalk.

Recommendations

The Class EA process is evaluating a range of alternatives associated with the bridge crossing including repair or rehabilitation of the crossing and replacement of the crossing. Should replacement or removal be selected as the preferred alternative, then any defining heritage features of the bridge would be lost.

Given that several heritage features of value were identified at the crossing, the County of Lambton is proposing to replicate the bowstring arches in the design of the new crossing. A rendering of the proposed structure is shown in the image below.

Conceptual rendering of possible arches at new bridge.

Appendix ‘A’ contains a copy of the CHER/HIA report.

2.5 Natural Features

2.5.1 General Physiography

The structure is situated within a small sandplain which includes silt and fine sand material, assumed to be sediment deposited from the last glacial retreat of Lake Warren (Chapman and Putnam, 1984). The adjacent area is surrounded by the Horseshoe Moraines region, which is associated with meltwater stream deposits. The Horseshoe Moraines are a series of moraines that parallel the eastern shore of Lake Huron to the base of the Bruce Peninsula and then run southeast along the Niagara Escarpment, finally turning southwest toward Lake Erie. In the southwestern limb of the horseshoe-shaped region, the typical landscape is that of two or three moraine ridges composed of fine textured till with a moderate degree of stoniness (Chapman and Putnam, 1984).

The soils immediately adjacent to Bear Creek that experience periodic flooding are classified as 'Bottom Land', which include layers of silt, sand and clay mixed with organic matter. The soils found surrounding the bridge and outside of the Bear Creek banks include Berrien Sandy Loam, which are described as sandy loam in texture and tending to drain imperfectly (Matthews, B.C., Richards, N.R. and Wicklund, R.E., 1957).

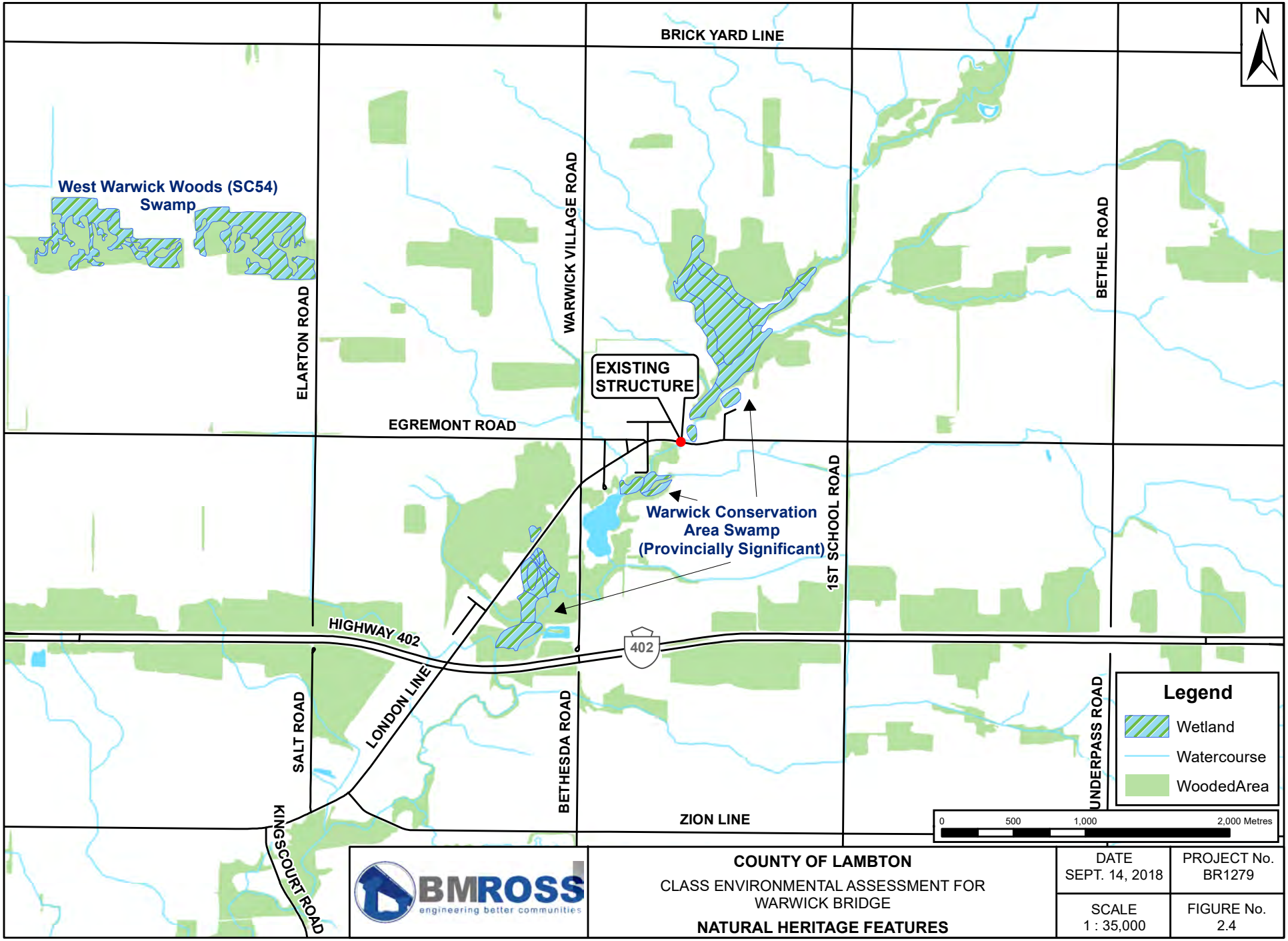
2.5.2 Significant Natural Heritage Features

The project study area is located within the Bear Creek Headwaters watershed, which is managed by the St. Clair Region Conservation Authority. The bridge is situated within a predominantly rural landscape to the east, with some residential development associated with the Village of Warwick, to the west.

A review of the Natural Heritage Area mapping provided by the Ministry of Natural Resources and Forestry indicates that there are no Areas of Natural and Scientific Interest (ANSI) within 5 km of the study area (Ministry of Natural Resources and Forestry, 2017a). One provincially significant wetland (PSW) and two locally significant wetlands, are located within 5 km of the study area and are described below.

- Warwick Conservation Area – provincially significant wetland and locally significant natural area located up and downstream of the bridge site along Bear Creek.
- West Warwick Woods (SC 54) – locally significant wetland located approximately 3 km northwest of the bridge site.
- Spicebush Swamp (SC 43) – locally significant wetland located approximately 5.5 km northwest of the bridge site.

Of these features, only the wetland associated with the Warwick Conservation Area is located in close enough proximity to the bridge site to be potentially impacted by the proposed project. The wetland feature will be evaluated further during completion on the on-site assessment to ensure that the proposed bridge work will result in no impacts to this feature. Figure 2.4 illustrates the location of natural heritage features located in the general vicinity of the bridge site.


N
BRICK YARD LINE
West Warwick Woods (SC54) Swamp
ELARTON ROAD
WARWICK VILLAGE ROAD
BETHEL ROAD
EXISTING STRUCTURE
EGREMONT ROAD
1ST SCHOOL ROAD
Warwick Conservation Area Swamp (Provincially Significant)
HIGHWAY 402
402
SALT ROAD
LONDON LINE
BETHESDA ROAD
UNDERPASS ROAD
ZION LINE
KINGSCOURT ROAD
Legend
Wetland
Watercourse
WoodedArea
0
500
1,000
2,000 Metres
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COUNTY OF LAMBTON
CLASS ENVIRONMENTAL ASSESSMENT FOR WARWICK BRIDGE
NATURAL HERITAGE FEATURES
DATE SEPT. 14, 2018
PROJECT No. BR1279
SCALE 1 : 35,000
FIGURE No. 2.4

Aquatic Habitat – Bear Creek

The Bear Creek is located within the Bear Creek Headwaters watershed, which is managed by the St. Clair Region Conservation Authority (SCRCA). The watershed includes a drainage area measuring 379 km^2 and watercourse length of 685 km. Bear Creek, along with Black Creek, forms part of the North Sydenham River system joining with the Main Sydenham River and eventually discharging into Lake St. Clair (St. Clair Region Conservation Authority, 2013). Within Bear Creek, the St. Clair Region Conservation Authority has identified 30 species of fish, including Largemouth Bass and 10 freshwater mussels to be present (St. Clair Region Conservation Authority, 2013). A copy of the Bear Creek Watershed Report Card is in Appendix 'B'. Figure 2.4 shows the location of Bear Creek in relation to local natural heritage features.

2.5.3 Species at Risk

An evaluation for the presence of significant species and their associated habitats within the study area has been incorporated into the project planning process. A review of available information on species and habitat occurrences determined that the study area may contain species and/or associated habitats that are legally protected under Provincial and Federal species at risk legislation.

The protection for species at risk and their associated habitats is directed by the following federal and provincial legislation:

- The Federal *Species at Risk Act, 2002* (SARA) provides for the recovery and legal protection of listed wildlife species and associated critical habitats that are extirpated, endangered, threatened or of special concern and secures the necessary actions for their recovery on lands not federally owned, only aquatic species, and bird species included in the Migratory Bird Convention Act (1994), are legally protected; and
- The Provincial *Endangered Species Act, 2007* (ESA) provides legal protection of endangered and threatened species and their associated habitat in Ontario. Under the legislation, measures to support their recovery are also defined.

Based on the information available for the occurrence of species at risk and their associated habitats from the following sources, a summary of federally and provincially recognized species with the potential to be present within the project study area are listed in Table 2.1:

- Ministry of Natural Resources and Forestry, *Species at Risk by Area* (MNRF, 2018b)
- Natural Heritage Information Centre, *Make a Natural Heritage Map* (MNRF, 2018a).
    - Study area located within NHIC 1km grid: 17MH2159
- Environment Canada, *Species at Risk Public Registry. SARA Schedule 1 Species List* (Environment Canada, 2018)

Table 2.1 : Potential Species at Risk within Lambton County

	Species		Status Designation		Confirmed Presence in the Study Area
	Common Name	*Scientific Name*	*SARA** Schedule 1 *(Federal)*	*ESA*** *(Provincial)*	
Birds	Acadian Flycatcher	*Empidonax virescens*	Endangered	Endangered	No
	Bank Swallow	*Riparia riparia*	Threatened	Threatened	No
	Barn Swallow	*Hirundo rustica*	-	Threatened	Yes
	Barn Owl	*Tyto alba*	Endangered	Endangered	No
	Bobolink	*Dolichonyx oryzivorus*	-	Threatened	No
	Cerulean Warbler	*Dendroica cerulea*	Special Concern	Threatened	No
	Chimney Swift	*Chaetura pelagica*	Threatened	Threatened	
	Eastern Meadowlark	*Sturnella magna*	-	Threatened	No
	Eastern Whip-poor-will	*Antrostomas vociferus*	Threatened	Threatened	No
	Henslow's Sparrow	*Ammodramus henslowii*	Endangered	Endangered	No
	King Rail	*Rallus elegans*	Endangered	Endangered	No
	Least Bittern	*Ixobrychus exilis*	Threatened	Threatened	No
	Loggerhead Shrike	*Lanius ludovicianus*	Endangered	Endangered	No
	Northern Bobwhite	*Colinus virginianus*	Endangered	Endangered	No
	Piping Plover	*Charadrius melodus*	Endangered	Endangered	No
	Prothonotary Warbler	*Protonotaria citrea*	Endangered	Endangered	No
	Red-headed Woodpecker	*Melanerpes erythrocephalus*	Threatened	Special Concern	No
	Yellow-breasted Chat	*Icteria virens*	Special Concern	Endangered	No
Fish and Mussels	**Blackstripe Topminnow**	***Fundulus notatus***	Special Concern	Special Concern	No
	Channel Darter	*Percina copelandi*	Threatened	Threatened	No
	Eastern Pondmussel	*Ligumia nasuta*	Endangered	Endangered	No
	Eastern Sand Darter	*Ammocrypta pellucida*	Threatened	Endangered	No
	Kidneyshell	*Ptychobranchus fasciolaris*	Endangered	Endangered	No
	Lake Chubsucker	*Erimyzon sucetta*	Endangered	Threatened	No
	Lake Sturgeon	*Acipenser fulvescens*	-	Threatened	No
	Northern Brook Lamprey	*Ichthyomyzon fossor*	Special Concern	Special Concern	No
	Northern Madtom	*Noturus stigmosus*	Endangered	Endangered	No
	Northern Riffleshell	*Epioblasma torulosa rangiana*	Endangered	Endangered	No
	Pugnose Minnow	*Opsopoeodus emiliae*	Special Concern	Threatened	No
	Pugnose Shiner	*Notropis anogenus*	Endangered	Endangered	No
	Rayed Bean	*Villosa fabalis*	Endangered	Endangered	No
	Round Hickorynut	*Obovaria subrotunda*	Endangered	Endangered	No
	Round Pigtoe	***Pleurobema sintaoxia***	Endangered	Endangered	No
	Salamander mussel	*Simpsonaias ambigua*	Endangered	Endangered	No
	Silver Chub	*Macrhybopsis storeriana*	Special Concern	Threatened	No

Table 2.1 : Potential Species at Risk within Lambton County

	Species		Status Designation		Confirmed Presence in the Study Area
	Common Name	*Scientific Name*	*SARA** Schedule 1 *(Federal)*	*ESA*** *(Provincial)*	
	Snuffbox	*Epioblasma triquetra*	Endangered	Endangered	No
	Spotted Sucker	*Minytrema melanops*	Special Concern	Special Concern	No
	Wavy-rayed Lampumussel	*Lampsilis fasciola*	Special Concern	Threatened	No
Insects	Aweme Borer Moth	*Papaipema aweme*	Endangered	Endangered	No
	Northern Barrens Tiger Beetle	*Cicindela patruela*	Endangered	Endangered	No
	Rusty-patched Bumble Bee	*Bombus affinis*	Endangered	Endangered	No
Mammals	American Badger	*Taxidea taxus*	Endangered	Endangered	No
	Eastern Small-footed Myosis	*Myotis leibii*	-	Endangered	No
	Little Brown Myotis	*Myotis lucifungus*	Endangered	Endangered	Possibly
	Northern Myotis	*Myotis septentrionalis*	Endangered	Endangered	Possibly
	Tri-colored Bat	*Perimyotis subflavus*	Endangered	Endangered	No
Plants	American Chestnut	*Castanea dentata*	Endangered	Endangered	No
	Amercian Ginseng	*Panax quinquefolius*	Endangered	Endangered	No
	Blue Ash	*Fraxinus quadrangulata*	Special Concern	Threatened	No
	Bluehearts	*Buchnera americana*	Endangered	Endangered	No
	Butternut	*Juglans cinerea*	Endangered	Endangered	No
	Climbing Prairie Rose	*Rosa setigera*	Special Concern	Special Concern	No
	Colicroot	*Aletris farinosa*	Threatened	Threatened	No
	Common Hoptree	*Ptelea trifoliata*	Threatened	Threatened	No
	Dense Blazing Star	*Liatris spicata*	Threatened	Threatened	No
	Dwarf Hackberry	*Celtis tenuifolia*	Threatened	Threatened	No
	Eastern Flowering Dogwood	*Cornus florida*	Endangered	Threatened	No
	Eastern prairie fringed-orchid	*Platanthera leucophaea*	Endangered	Endangered	No
	False Hop Sedge	*Carex lupuliformis*	Endangered	Endangered	No
	False rue-anemone	*Enomion biternatum*	Threatened	Threatened	No
	Gattinger's Agalinis	*Agalinis gattingeri*	Endangered	Endangered	No
	Goldenseal	*Hydrastis canadensis*	Threatened	Threatened	No
	Heart-leaved Plantain	*Plantago cordata*	Endangered	Endangered	No
	Kentucky Coffee-tree	*Gymnocladus dioicus*	Threatened	Threatened	No

Table 2.1 : Potential Species at Risk within Lambton County

	Species		Status Designation		Confirmed Presence in the Study Area
	Common Name	*Scientific Name*	*SARA*[*] Schedule 1 *(Federal)*	*ESA*[**] *(Provincial)*	
	Pink Milkwort	*Polygala incarnata*	Endangered	Endangered	No
	Riddell's Goldenrod	*Solidago riddellii*	Special Concern	Special Concern	No
	Showy Goldenrod	*Solidago speciosa*	Endangered	Endangered	No
	Skinner's Agalinis	*Agalinis skinneriana*	Endangered	Endangered	No
	Small White Lady's-slipper	*Cyppripedium candidum*	Endangered	Endangered	No
	Spoon-leaved Moss	*Bryoandersonia illecebra*	Endangered	Endangered	No
	Swamp Rose-mallow	*Hibiscus moscheutos*	Special Concern	Special Concern	No
	Tuberous Indian-plantain	*Arnoglossum plantagineum*	Special Concern	Special Concern	No
	White Prairie Gentian	*Gentiana alba*	Endangered	Special Concern	No
	Willowleaf Aster	*Symphyotrichum praealtum*	Threatened	Threatened	No
Snakes and Lizards	Blue Racer	*Coluber constrictor foxii*	Endangered	Endangered	No
	Butler's Gartersnake	*Thamnophis butleri*	Endangered	Endangered	No
	Common Five-lined Skink	*Plestiodon fasciatus*	-	Endangered	No
	Eastern Foxsnake	*Pantherophis gloydi*	Endangered	Endangered	No
	Eastern Ribbon Snake	*Thamnophis sauritus*	Special Concern	Special Concern	No
	Queensnake	*Regina Septemvittata*	Endangered	Endangered	No
Turtles	Blanding's Turtle	*Emydoidea blandingii*	Threatened	Threatened	No
	Eastern Musk Turtle	*Sternotherus odoratus*	Threatened	Threatened	No
	Northern Map Turtle	*Graptemys geographica*	Special Concern	Special Concern	No
	Snapping Turtle	***Chelydra serpentine***	Special Concern	Special Concern	No
	Spiny Softshell	*Apalone spinifera spinifera*	Threatened	Threatened	No
	Spotted Turtle	*Clemmys guttata*	Endangered	Endangered	No

Species in **bold** are those identified as potentially occurring within 1km of the study area based on historical observation records

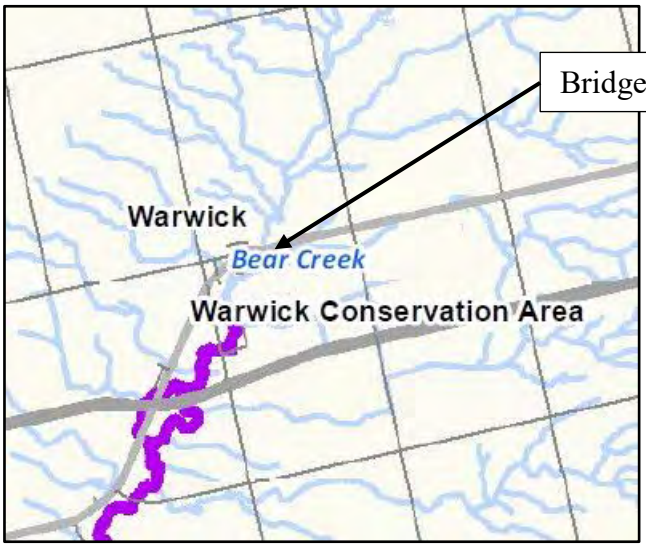
Notes:
[*] As determined by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) under the Species at Risk Act (SARA), 2002 legislation. Species listed are designated as 'Schedule 1' species and are legally protected under the act.
[**] As determined by the Committee on the Status of Species at Risk in Ontario (COSSARO) under the Endangered Species Act (ESA), 2007 legislation.

The study area is located within the County of Lambton. The species list provided by the Ontario Ministry of Natural Resources and Forestry is for the entire County, which incorporates a large area and a wide variety of terrestrial and aquatic habitats. Species listed in Table 2.1 were generated based on their occurrence within the entire county, and may not necessarily occur within the study area. The NHIC 1km grid (17MH2361) contains 2 (two) historical observation records for species at risk potentially located within the study area:

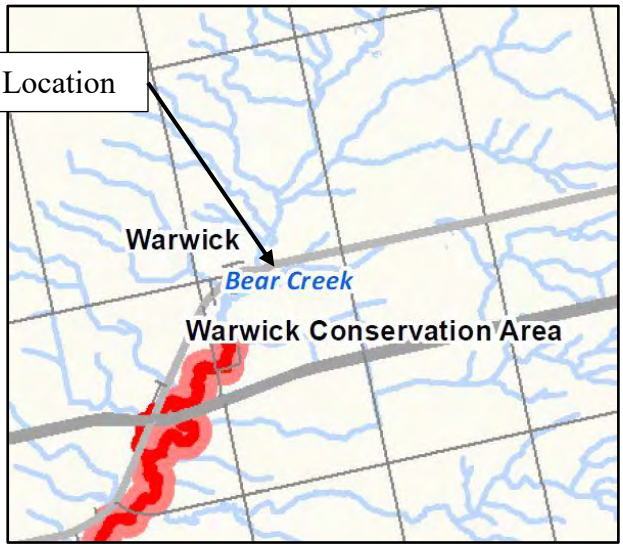
- Snapping Turtle (*Chelydra serpentina)* observation from 1988; and
- Round-leaved Hawthorn (Crataegus lumaria) observation from 1976.

2.5.4 Aquatic Species at Risk

Aquatic Species at Risk are aquatic based species that either live in, or rely on, an aquatic habitat for a significant portion of their life cycles. In conjunction with information gathering from the MNRF and Environment Canada Species at Risk Registry, a publically available aquatic species at risk mapping tool was utilized in determining the potential presence of aquatic species at risk and their associated critical habitat within the vicinity of the proposed project. The project site is shown on excerpts from the maps below.



Fish at risk screening map ▲



Mussels at risk screening map ▲

Based upon the mapping above, there are no mussel or fish species at risk present within the section of Bear Creek at the bridge site. The coloured sections seen on mapping above indicates the potential presence of species at risk within downstream sections of Bear Creek. Input will be sought from the St. Clair Region Conservation Authority, the Ministry of Natural Resources and Forestry (MNRF) and the Federal Department of Fisheries and Oceans (DFO) as part of the approval process to confirm the species potentially present at the site.

2.5.5 On-Site Species at Risk Assessment

To verify the presence or absence of a number of species at risk determined through the review undertaken above to be potentially present at the bridge site, Natural Resource Solutions Inc. (NRSI) was retained to complete an assessment. The review was completed on July 17, 2018. The species at risk assessment included a review of the habitat present at the bridge and immediately adjacent to the site. Habitat features present were then examined to determine if they met the required needs of various species at risk. The bridge was also examined to identify the types of bird nests on the structure. The following points summarize the results of the assessment.

- A total of 5 active Barn Swallow nests were documented beneath the bridge.
- No other SAR were noted within the study area.
- Monarch (special concern) were observed using nectar plants along the roadside and within the adjacent wetland, but should not be impacted by the proposed bridge work.
- Green Dragon (Special Concern) was observed well-removed from the bridge works and will therefore not be impacted by the project.
- No bat cavity trees were observed.

A copy of the SAR assessment is included within Appendix 'B'.

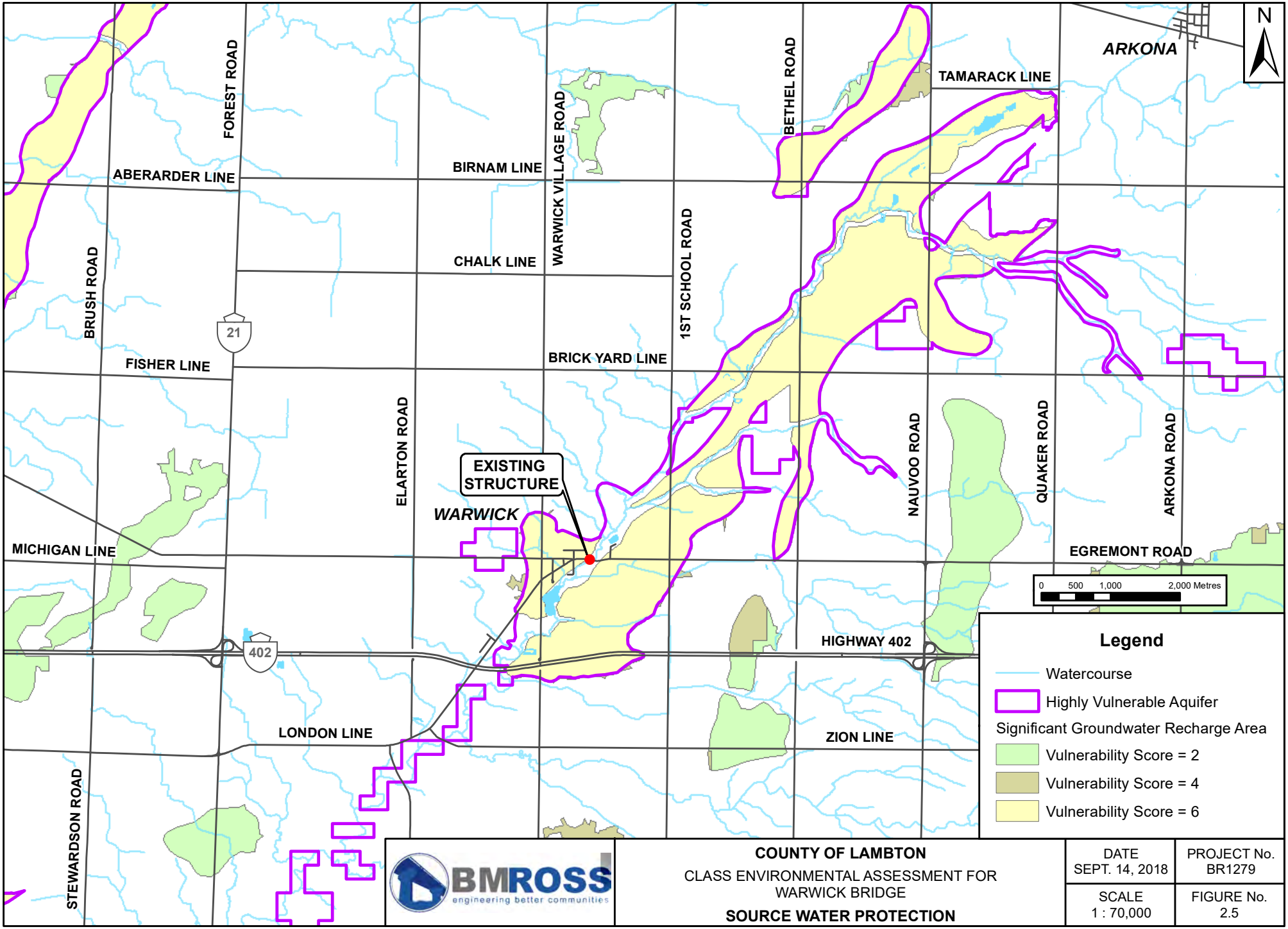
2.6 Source Water Protection

The intent of the Clean Water Act (CWA), 2006, is to "*protect existing and future drinking water*" sources in Ontario. Under the Act, source protection areas and regions were established, giving Conservation Authorities the duties and powers of a drinking water source protection authority (Government of Ontario, 2006). A focus on the development, implementation, monitoring and enforcement of documentation, information and policies related to source water protection is highlighted within this duty.

The study area is located within the Thames-Sydenham Source Protection Region. The Source Protection Region includes watersheds managed by the Lower Thames Valley Conservation Authority, St. Clair Region Conservation Authority, and the Upper Thames River Conservation Authority.

The bridge is located within the jurisdiction of the St. Clair Region Conservation Authority, which manages the watershed covering an area of approximately 4,100 km^2 (Thames-Sydenham and Region Source Protection Committee, 2015). The Village of Warwick is currently serviced by the Lambton Area Water Supply System (LAWSS) which withdraws water from the St. Clair River, approximately 40 km from the bridge location (Thames-Sydenham and Region Source Protection Committee, 2015).

The structure is located within an area defined as a Highly Vulnerable Aquifer (HVA) and is surrounded by a Significant Groundwater Recharge Area (SGRA), with a vulnerability of 6. Figure 2.5 shows the location of the SGRA and HVA in the vicinity of the structure. Policies within this area that would apply are Moderate to Low Threat Policies and are outlined in Table 2.2.



BMROSS engineering better communities

COUNTY OF LAMBTON

CLASS ENVIRONMENTAL ASSESSMENT FOR WARWICK BRIDGE

SOURCE WATER PROTECTION

DATE	PROJECT No.
SEPT. 14, 2018	BR1279
SCALE	FIGURE No.
1 : 70,000	2.5

Table 2.2: Moderate to Low Threat Policies

Policy Number	Description	Applicability
1.01	General Education and Outreach	Not applicable to site
1.06	General Land Use Planning	Not applicable to site
1.09	Implementation Timing	Not applicable to site
1.11	Definition of Existing and Future	Not applicable to site
3.01	Moderate and Low Threat Septic Systems – Discretionary Monitoring	Not applicable to site
3.02	Moderate and Low Threat Pesticide Application - Management	Not applicable (applicable prescribed drinking water threat does not apply to the project)
3.03	New Prescribed Instruments Related to Moderate and Low Threats – Management	Not applicable (applicable prescribed drinking water threats do not apply to the project)
4.12	Environmental Assessment Reviews	Policy will be met at the conclusion of the Class EA – St. Clair Region circulated on all project correspondence.

Source Protection staff from the Thames-Sydenham and Region Drinking Water Source Protection region were contacted on November 12, 2018 to confirm that implementation of the project will have no impact on the identified vulnerable areas. A copy of the correspondence is included within Appendix 'C' and summarized in Section 4.0 of the report.

2.7 Climate Change

As part of the Class Environmental Assessment process, the impacts associated with climate change need to be evaluated. Some of the phenomena associated with climate change that will need to be considered include:

- Changes in the frequency, intensity and duration of precipitation, wind and heat events.
- Changes in soil moisture.
- Changes in sea/lake levels.
- Shifts in plant growth and growing seasons.
- Changes in the geographic extent of species ranges and habitat.

There are two approaches that can be utilized to address climate change in project planning. These are as follows:

1) Reducing a project's impact on climate change (climate change mitigation).
    a. Impact of greenhouse gas emissions related to the project
    b. Are there alternative methods to completing the project that would reduce any adverse contributions to climate change?

2) Increasing the project's and local ecosystem's resilience to climate change (climate change adaptation).
    a. How vulnerable is the project to climate-related severe events.
    b. Are there alternative methods of carrying out the project that would reduce the negative impacts of climate change on the project?

Through the evaluation of alternatives phase of the Class EA, a consideration of each of these approaches will be completed and included in the final determination of the preferred approach to completing the project.

2.8 Identified Structural Deficiencies

Recent engineering inspections of the structure have identified significant deterioration occurring on the bridge abutments and other structural features of the bridge. These deficiencies are identified within the OSIM Biennial Inspection Report conducted by R. Dobbin Engineering Inc., dated October 11, 2016. A copy of the report is included within Appendix 'C'.

2.8.1 Summary of Deficiencies

The following represent the primary structural deficiencies and safety concerns associated with the existing crossing:

- Cracking on underside of south arch near mid-span
- Multiple cracks and spalling on north arch
- Cracking and spalling at base of columns throughout
- Severe spalling on floor beams at east abutment
- Medium to wide cracking on underside of floor beam at west abutment

Spalling with exposed rebar on underside of deck

Bird nests

Arches in poor condition

2.8.2 Preliminary Engineering Assessment

BMROSS, in conjunction with the County of Lambton, assessed the nature and scope of the problems associated with the structure, taking into consideration the findings of recent engineering inspections. From this assessment it was determined that, given the extent and significance of the identified deficiencies, the bridge could be subject to complete replacement.

3.0 CLASS EA PROCESS

3.1 Identification of Problem/Opportunity

The first phase of the Class EA process includes the definition of the problem or opportunities, which need to be addressed. Based upon a review of the deficiencies identified during recent engineering inspections, the following problem statement has been developed for this project:

> *Significant deficiencies have been identified with some structural components of the Bear Creek Bridge, which if not remediated, may have an adverse impact on the safety of the travelling public at the bridge site.*

The bridge remediation plan considered during the preliminary engineering review called for the possible replacement of the existing structure. This work requires additional environmental assessment under the terms of the Class EA document. The proponent initiated the required Class EA investigation in January 2018. The investigation followed the planning and design process set out for Schedule B activities. Schedule B projects are approved subject to a screening process which incorporates Phases 1 and 2 of the Class EA process (i.e. Problem Identification, Evaluation of Alternative Solutions). The purpose of the screening process is to identify potential impacts related to the proposed bridge project and to plan for appropriate mitigation of any identified impacts.

3.2 Identification of Practical Alternatives

The second phase of the Class EA process involves the identification and evaluation of alternative solutions to address the defined problems. A number of possible solutions to the defined problems were identified at the outset of this Class EA process. The alternatives, stated below, build upon the findings of a preliminary engineering assessment completed at the start of the Class EA process.

Alternative 1: Replacement of the existing concrete bowstring arch bridge with a beam bridge in the same location. This option involves the replacement of the existing structure with a new concrete bridge designed in accordance with established standards of the latest edition of the Canadian Highway Bridge Design Code. Road approaches would also be reconstructed to accommodate the new bridge and to address existing approach road deficiencies. Rock rip rap erosion protection would be placed around the abutments adjacent to the channel.

Alternative 2: Rehabilitation the Existing Structure.
This option would involve the replacement and restoration of deteriorated components of the structure with new components in accordance with the established standards of the latest edition of the Canadian Highway Bridge Design Code.

Alternative 3: Repair the Existing Structure.
This option would involve the repair of deteriorated components of the structure using construction methods designed to restore the component to a safe condition.

Alternative 4: Do Nothing. This option proposes that no improvements or changes be made to address the identified problem. The Do Nothing alternative may be implemented at any time in the design process prior to construction. This decision is typically made when the costs of all alternatives, both financial and environmental, significantly outweigh the benefits.

3.3 Evaluation of Alternatives

The second phase in the investigation involved the evaluation of the identified alternatives. The purpose of this phase was to examine the potential environmental impacts associated with the proposed works and to examine potential mitigation measures to address any identified impacts. The evaluation stage generally involved the following activities:

- Preliminary technical review of alternatives
- Preliminary selection of a preferred option
- Consultation with the general public and review agencies
- Final selection of a preferred option.

3.4 Preliminary Review of Alternatives

a) Alternative 1: Replacement of the existing bridge in the same location.

Implementation of this alternative would involve the construction of a new concrete beam bridge designed to span Bear Creek at the bridge site (the current bridge has a span of 18.64 m). The new crossing would be designed to accommodate an 80 km/hr speed limit and would support a wider road platform increasing from the current width of 9.144 m to 11.3 m. Approach roads on each side of the bridge would need to be reconstructed to match the new wider road platform. A habitat assessment was completed at the bridge site by Natural Resource Solutions Inc. (NRSI), which identified five active barn swallow nests on the structure as well as numerous cliff swallow nests. Barn swallows have been identified as a species at risk and are threatened provincially. A Notice of Activity form must be submitted to MNRF prior to removal of the inactive nests and alternative nesting habitat provided during the period that the structure is under construction. No aquatic species at risk were identified within the section of Bear Creek at the crossing location. To address impacts to cultural heritage features, character defining features of the existing bridge will be replicated on the new bridge.

b) Alternative 2: Rehabilitation of the existing bridge.

Based upon the results of the detailed engineering review conducted at the bridge site by BMROSS structural engineering staff, it was determined that rehabilitation of the structure was not feasible given the age of the crossing (87 years) and the extent of deterioration present within several key structural elements.

c) Alternative 3: Repair of the existing bridge.

Based upon the results of the engineering review, repairs previously completed at the structure had addressed common deterioration in a structure this age. However, the current condition of key structure elements cannot be repaired without threatening the long-term safety of the crossing.

d) Alternative 4: Do Nothing

The Do Nothing alternative means that nothing would be done to address the ongoing deterioration present at the bridge. Eventually, if not remediated, this could lead to the structural failure of the bridge and the eventual closure of the crossing.

3.5 Environmental Considerations

Section 3.2 of this report listed the alternative solutions that were identified to address deficiencies present with the Bear Creek Bridge. As part of the evaluation process, it is necessary to determine what effect or impact each alternative will have on the environment and what measures can be taken to mitigate the impact. The two main purposes of this exercise are:

- Minimize or avoid adverse environmental effects associated with a project
- Incorporate environmental factors into the decision making process

Under the terms of the EA Act, the environment is divided into five general elements:

- Natural environment
- Social environment
- Cultural environment
- Economic environment
- Technical environment

The identified environmental elements can be further subdivided into specific components that have the potential to be affected by the implementation of a given solution, as shown on Table 3.1. Potential impacts are noted in the following section of the report. Table 3.1 provides an overview of the specific components considered relevant to this investigation. These were identified following the initial round of public and agency input and a preliminary review of each alternative with respect to technical considerations and the environmental setting of the project area.

Table 3.1
Evaluation of Alternatives: Identification of Environmental Components

Element	Component	Sub-Component
Natural	Aquatic	• Aquatic Habitat • Aquatic Species at Risk
	Atmosphere	• Air Quality and Noise
	Surface Water	• Water Quality/ Quantity • Hydraulic Flow Characteristics
	Terrestrial	• Amphibians, Birds & Mammals • Vegetation
	Geologic	• Physiographic Features and Soils • Drainage Characteristics
Social	Neighbourhood	• Disruption • Quality of Life
	Community	• Health and Safety • Recreational Activities
Cultural	Heritage	• Historical/ Cultural Resources
Economic	Project Area	• Capital and Operational Costs
Technical	Transportation	• Traffic Volumes • Pedestrian/ Vehicular Safety
	Infrastructure	• Road Capacity/ Routes

The environmental effects of each alternative on the specific components are generally determined through an assessment of various impact predictors (i.e. impact criteria). Given the works associated with the alternative solutions, the following key impact criteria were examined during the course of this assessment:

- Magnitude – including the scale, intensity, geographic scope, frequency and duration of potential impacts
- Technical complexity
- Mitigation potential – which considers avoidance, compensation and degree of reversibility
- Public perception
- Scarcity and uniqueness of affected components
- Compliance with applicable regulations and public policy objectives

Using the above criteria, the potential impacts of each alternative solution were systematically evaluated. The significance of the potential impacts posed by each alternative were evaluated considering the anticipated severity of the following:

- Direct changes occurring at the time of project completion
- Indirect effects following project completion
- Induced changes resulting from a project

For the purposes of this Class EA, impact determination criteria developed by Natural Resources Canada have been applied to predict the magnitude of environmental effects resulting from the implementation of the project. Table 3.2 summarizes the impact criteria.

Table 3.2
Criteria for Impact Determination

Level of Significance	Level of Effect	General Criteria
Significant	High	Implementation of the project could threaten sustainability of feature and should be considered a management concern. Additional remediation, monitoring and research may be required to reduce impact potential.
	Moderate	Implementation of the project could result in a resource decline below baseline, but impact levels should stabilize following project completion and into the foreseeable future. Additional management actions may be required for mitigation purposes.
Not Significant	Low	Implementation of the project could have a limited impact upon the resource during the lifespan of the project. Research, monitoring and/or recovery initiatives may be required for mitigation purposes.
	Minimal/Nil	Implementation of the project could impact upon the resource during the construction phase of the project but would have negligible impact on the resource during the operation phase.

Given the criteria defined in Table 3.2, the significance of adverse effects is predicated on the following assumptions:

- Impacts from a proposed alternative assessed as having a Moderate or High level of effect on a given feature would be considered significant.
- Impacts from a proposed alternative assessed as having a Minimal/Nil to Low level of effect on a given feature would not be considered significant.

3.6 Environmental Effects Analysis

The potential interactions between the project alternatives and the identified environmental components were examined as part of the evaluation of alternatives. The purpose of this analysis was to determine, in relative terms, the environmental effects of the identified alternatives on each the environmental components, using the impact criteria described in Table 3.2. Table 3.3 summarizes the outcome of the environmental effects analysis.

Table 3.3
Environmental Effects Analysis

Environmental Component	Option	Level of Effect	Impact Considerations (Implementation and Operational Activities)
Natural • Aquatic	1) Replacement	Low to moderate	• Some impacts to aquatic habitat are anticipated as a result of construction-related activities. The watercourse will be isolated at the bridge site during construction so that impacts will be minimized as much as possible. • Sediment and erosion control measures will be implemented during construction to minimize impacts related to runoff and high rainfall events.
	2) Rehab	Low to moderate	• Some impacts to aquatic habitat are anticipated as a result of construction-related activities. The watercourse will be isolated at the bridge site during construction so that impacts will be minimized as much as possible. • Sediment and erosion control measures will be implemented during construction to minimize impacts related to runoff and high rainfall events.
	3) Repair	Low to moderate	• Some impacts to aquatic habitat are anticipated as a result of construction-related activities. The watercourse will be isolated at the bridge site during construction so that impacts will be minimized as much as possible. • Sediment and erosion control measures will be implemented during construction to minimize impacts related to runoff and high rainfall events.
	4) Do Nothing	Low to Moderate	• No Impacts Anticipated. • Should the structure fail and need to be removed, there may be impacts to aquatic habitat which would result during removal.
• Terrestrial	1) Replacement	Low to Moderate	• Some impacts to terrestrial habitat are anticipated as a result of the wider footprint and approach road re-grading required to accommodate the new bridge. • There were no terrestrial species at risk identified as being present at the bridge site. Disturbed areas adjacent to the bridge will be restored upon completion of construction.
	2) Rehabilitation	Low	• Limited vegetation removal would be required immediately adjacent to the abutments in order to facilitate concrete repairs and erection of scaffolding. • Any areas disturbed in conjunction with the repair work would be restored upon completion.

Environmental Component	Option	Level of Effect	Impact Considerations (Implementation and Operational Activities)
	3) Repair	Low	• Only limited vegetation removal would be required immediately adjacent to the abutments in order to facilitate the concrete repairs. • Any areas disturbed in conjunction with the repair work would be restored upon completion.
	4) Do Nothing	Low	• No Impacts anticipated.
Social • Community	1) Replacement	Moderate	• A moderate level of impact to residents is expected during construction due to the anticipated closure of the crossing for approximately 5-6 months during construction. • Impacts are relatively short term and once completed, residents will have access to a full capacity crossing.
	2) Rehab	Low to Moderate	• Some impacts to traffic movement are anticipated during construction but will be for a shorter time period than full reconstruction of the crossing. • Rehabilitation would only temporarily address the deterioration and another closure would be required at some point in the future to replace the crossing.
	3) Repair	Low to Moderate	• Some impacts to traffic movement are anticipated during construction but will be for a shorter time period than full reconstruction of the crossing. • Repairs are only a temporary measure to address the worst of the deterioration. Full replacement of the crossing would be needed in the future requiring complete closure of the crossing.
	4) Do Nothing	Moderate	• Should existing deterioration on the bridge not be remediated, the structure would become unsafe for vehicles and eventually need to be closed to vehicular traffic or be weight restricted.
Cultural • Heritage	1) Replacement	Moderate to High	• Moderate to high impacts to cultural heritage values are anticipated given that the bridge will be removed prior to construction of the new crossing. • Impacts to buried cultural artefacts may also need to be assessed through completion of a Stage 1 & 2 Archaeological Assessment prior to construction.
	2) Rehab	Low	• Low impacts to cultural heritage values are anticipated as a result of bridge rehabilitation. However, if the appearance and shape of significant cultural features are altered in order to repair the structure, impacts could become greater.
	3) Repair	Low	• Low impacts to cultural heritage values are anticipated as a result of bridge repairs. However, if the appearance and shape of significant cultural features are altered in order to repair the structure, impacts could become greater.

Environmental Component	Option	Level of Effect	Impact Considerations (Implementation and Operational Activities)
	4) Do Nothing	Low to Moderate	• No impacts are anticipated initially, however if the deterioration is not addressed, the structure could fail at some point in the future and the heritage value of the structure would be lost.
Economic • County	1) Replacement	Moderate	• Construction of a new bridge at the site would result in relatively high capital costs. However given the volume of traffic utilizing the crossing and the 80 year lifespan anticipated for the new crossing, the lifecycle costs to the County are acceptable.
	2) Rehab	Low to Moderate	• Low to moderate economic impacts are anticipated, given that rehab costs are less in relation to the construction of a new crossing. • However, rehabilitation of the crossing only temporarily addresses the long term safety of the structure, which will eventually need to be replaced to address safety issues.
	3) Repair	Low to Moderate	• Low to moderate economic impacts are anticipated, given that repair costs are relatively low in relation to the construction of a new crossing. • However, repair of the crossing only temporarily addresses the long term safety of the structure, which will eventually need to be replaced to address safety issues.
	4) Do Nothing	Low to Moderate	• No impacts anticipated initially, however should the deterioration not be remediated and the crossing fail, the County may be liable for damages to the surrounding environment and to any affected vehicles.
Technical • Transportation	1) Replacement	Low to Moderate	• Moderate impacts to the local transportation network will occur during construction of the new crossing when the road will be closed for a period of 5-6 months. Following completion of construction transportation opportunities will be significantly improved due to the wider bridge deck and longer life span of the remediated crossing.
	2) Rehab	Low to Moderate	• Minor impacts to local traffic are anticipated during rehab of the crossing. Although the road would remain open during completion of the work, lane closures would be required to facilitate construction. • Upon completion, the existing deterioration would be addressed for the short term, although complete replacement would still be required at some point.

Environmental Component	Option	Level of Effect	Impact Considerations (Implementation and Operational Activities)
	3) Repair	Low	• Limited impacts to local traffic are anticipated during repair of the crossing. Although the road would remain open during completion of the repairs, lane closures would be required to complete the work. • Upon completion, the existing deterioration would be addressed for the short term, although complete replacement would still be required at some point.
	4) Do Nothing	Moderate	• No impacts initially, however if the deterioration is not remediated and the crossing fails, this would have a negative impact on the long-term transportation routing in this part of the County.

3.7 Evaluation Summary

Four alternative solutions were initially presented for evaluation. These were:

- Alternative 1 – Replacement of the existing crossing with a beam bridge in the same location.
- Alternative 2 – Rehabilitation of the existing bridge.
- Alternative 3 - Repair of the existing bridge.
- Alternative 3 – Do Nothing

The anticipated impacts, which include impacts to the natural, social, cultural and technical environments, were evaluated for each of the above noted Alternatives.

Alternative 1, construction of a new bridge, will result in the greatest impacts to the natural environment, due to the requirement for in-water work during construction of the new, and removal of the existing structure (portions of the abutments will remain in place with the new foundations constructed behind the old abutments to minimize impacts to the channel). This option also resulted in greater impacts to the economic environment, due to higher capital costs associated with a new bridge. Most of these impacts are construction-related, and following site remediation would have no long-term impacts on the environment.

Alternative two and three, rehabilitation and repair of the crossing, would result in some impacts to the natural environment due to in-water work associated with repairs to the abutments and underside of the bridge deck. These options represented the fewest impacts to the cultural and economic environment, due to retention of the crossing and the lower capital costs associated with repair/rehabilitation. However, these options would only temporarily address the deterioration present at the crossing and may present a long-term safety issue if the work is insufficient to address the structural issues present at the crossing. To provide for the long term safety of the crossing, complete replacement of the crossing would be required in the near future.

Alternative three, the ‘do nothing’ alternative, has very few impacts initially. However, it does not address the current deterioration present at the crossing which, if not addressed, could make the bridge unsafe in the long term and lead ultimately to the structural failure of the crossing.

3.8 Identification of a Preliminary Preferred Solution

Based on the results of the assessment above and a review of the technical requirements associated with the project, the County indicated a preference for Alternative 1, replacement of the crossing. There are a number of attributes associated with this Alternative which justified its consideration as the preferred option for addressing the deterioration present at the Bear Creek Bridge crossing.

- Addresses existing deterioration present at the Bear Creek Bridge crossing;
- Was the best alternative to address the long-term structural integrity of the crossing, when the age of the structure and the extent of structural deterioration present was considered;
- Was less expensive than the repair option when life cycle costs were examined;

4.0 PUBLIC CONSULTATION PROGRAM

4.1 General

Public consultation is an integral component of the Class EA process. Public consultation allows for an exchange of information which assists the proponent in making informed decisions during the evaluation of alternative solutions. During Phases 1 and 2 of the study process, consultation was undertaken to obtain input from the general public, stakeholders, and review agencies that might have an interest in the project.

The components of the public consultation program employed during the initial Class EA study are summarized in this Section of the Screening Report and documented in Appendix 'D'. Comments received from the program and related correspondence are discussed below and also documented in Appendix D.

4.2 Initial Notice

Contents:	General study description, summary of proposed work.
Issued:	January 10 and January 17, 2018
Placed In:	Standard Guide Advocate, The Independent, Sarnia This Week
Circulated To:	12 review agencies, Aboriginal Communities, adjacent property owners.
Input Period:	Concluded February 16, 2018.

Comments received as a result of the Notice are included within Table 4.1.

Table 4.1
Public Comments: Project Initiation Phase

Stakeholder	Summary of Comments	Action Taken
Warwick Gas & Variety February 13, 2018 (via email)	- Owner of Gas Station and Variety Store located at the corner of Egremont Road and Digby Street in Warwick. - Concerned with the possible bridge closure. - Depends on through traffic for the business and closure of the road will cause great hardship. - Tourist traffic in the summer is a major source of income. - Also concerned with impacts to the response times for the Fire Department.	- Information noted and filed.

4.3 Government Review Agencies

Input into the Class EA process was solicited from government review agencies by way of direct mail correspondence. Agencies that might have an interest in the project were initially sent a letter describing the nature of the project and a copy of the Notice of Study Commencement. Appendix 'D' contains a copy of the information circulated to the review agencies and a list of the agencies requested to comment on the project. Formal written correspondence from the agencies is also provided. A summary of the comments received can be found in Table 4.2.

Table 4.2
Summary of Review Agency Comments

Stakeholder	Summary of Comments	Action Taken
Anneleis Eckert MOECC January 19, 2018 (via email)	- Received copy of project notification. - Advised that the crown has a duty to consult with First Nations and Métis communities, which has been delegated to the County for this project. - Provided a list of Aboriginal Communities for consultation purposes (we have contacted all communities identified by MOECC). - Advised that the project must have consideration for Source Water Protection policies and guidelines and must also consider impacts associated with Climate Change.	- Information noted and filed.
Laura Warner MNRF – Aylmer January 22, 2018 (via email)	- Received a copy of the information. - Advised that no screening has been completed for natural heritage features at the site, including species at risk. - Provided background information to assist with screening of the site. - Also advised that there may be petroleum wells in the vicinity of the project and to review existing databases to confirm locations. - Also referred to the Public Lands Act and Lakes and Rivers Improvement Acts, which may be affected by the project.	- Information noted and filed.
Sarah Hodgkiss SCRCA February 6, 2018 (via email)	- Received our letter regarding the Class EA - Study area indicated on the Notice contains areas that are regulated by the SCRCA under Ont. Regulation 171/06. - They are an adjacent landowner as well. - Advised that the bridge is located within adjacent lands to a significant woodland and Provincially Significant wetland. - They would appreciate being kept informed as the project moves forward.	- Information noted and filed.
Brad Goodhill Warwick Fire Chief February 9, 2018 (via Phone)	- Concerned with access issues during replacement of the bridge and impacts to their emergency response times. - Concerned with impacts to local Gas Station/Variety Store. - Volunteer fire fighter works on east side of bridge at the pallet company and won't be able to respond to calls as quickly during replacement of the bridge. - Most fire calls occur in the winter and are related to Highway accidents on 402. Having access to the 402 through former construction access at Warwick Village Rd. would help a lot.	- Information noted and filed.
Hydro One Networks April 13, 2018 (via email)	- Confirmed that there is a 3 phase line running parallel to the bridge and a single-phase line crossing the roadway 5 metres west of the concrete railings.	- Information forwarded to project engineer.

4.4 Aboriginal Consultation

(a) Aboriginal Consultation Process

The Crown has a duty to consult with First Nation and Métis communities if there is a potential to impact on Aboriginal or treaty rights. This requirement is delegated to project proponents as part of the Class EA process, therefore the project proponent has a responsibility to conduct adequate and thorough consultation with Aboriginal communities as part of the Class EA consultation process. The project study area is located in proximity to the Aamjiwnaang First Nation and also contains a number of sensitive natural features which may be of concern to First Nation and Métis communities in the area. These features include Bear Creek and the wetland feature located upstream and downstream from the crossing.

(b) Background Review

In order to identify Aboriginal Communities potentially impacted by the project the Aboriginal and Treaty Rights Information System (ATRIS) was consulted. A search was conducted for Aboriginal Communities, including their traditional territories, within a 50 km radius of the project study area. Utilizing this process, nine aboriginal communities were identified in conjunction with this project as follows: Aamjiwnaang First Nation, Chippewas of the Thames First Nation, Oneida Nation of the Thames, Munsee-Delaware Nation, Walpole Island First Nation, Chippewas of Kettle and Stony Point First Nation, Historic Saugeen Métis, Metis Nation of Ontario. Correspondence was subsequently forwarded to each community/organization detailing the proposed project and asking for input. Appendix 'D' contains a list of First Nation and Métis communities contacted as part of the consultation process.

(c) Initial Consultation Phase

Responses were received from the Aamjiwnaang First Nation and the Historic Saugeen Métis. Information packages detailing study investigations were prepared and circulated to both Aboriginal Communities for review and comment. A summary of comments received are included below in Table 4.3.

Table 4.3
Summary of Aboriginal Comments: Initial Consultation Phase

Aboriginal Community	Comments/Concerns	Actions Taken
George Govier Historic Saugeen Métis January 17, 2018 (via email)	- Project is located outside of the traditional territory of the Historic Saugeen Métis (HSM) - They do not require to be consulted further on this project.	- Information noted and filed.

Aboriginal Community	Comments/Concerns	Actions Taken
Christine James Aamjiwnaang FN March 21, 2018 (via email)	- Have reviewed the Notice for the project. - Concerns with road mortalities during construction. - Would like any natural habitat features disturbed as part of the construction to be restored, where possible. - Interested in any archaeological studies completed as part of the project. - Requested to have monitors present during completion of any SAR studies or Archaeological Assessments.	- Sent an email asking for clarification.
Christine James Aamjiwnaang FN April 3, 2018 (via email)	- Confirmed that closure of the road during construction should reduce road mortalities.	- Information noted and filed.

4.5 Project Update Letter

In advance of the public open house, an update letter was sent to review agencies and Aboriginal communities advising them of the preliminary preferred alternative selected by the County and providing notification of the upcoming public information session. The letter was forwarded to the same review agencies and Aboriginal communities initially circulated on the project. Local residents who comments during the initial phases of the EA process were also contacted and meeting notifications were posted at the Conservation Authority Campground and on the sign in front of the Warwick Community Centre. A summary of additional input received as a result of the update letter, is included in Table 4.4.

Table 4.4
Summary of Comments: Project Update Letter

Stakeholder	Summary of Comments	Action Taken
Brooke Herczeg MTCS July 18, 2018 (via email)	- Received copy of project notification. - Asked if we could provide presentation material from the upcoming Public Open House for their review.	- Information forwarded in advance of the meeting.
Rochelle Smith Chippewas of the Thames First Nation July 25, 2018 (via mail)	- Work will occur within the Big Bear Creek Additions to Reserve (ATR) land selection area, as well as their traditional territory. - Asked to receive a copy of the presentation material from the meeting and a copy of the EA report upon completion. - Requested to be involved in any archaeological reviews at the bridge site so that monitors can be present.	- Forwarded presentation material from the meeting.
Ryan Mentley Ministry of Transportation October 15, 2018 (via email)	- Responded to the County's request to re-open a temporary emergency access onto the 402 during construction of the new bridge at the end of Warwick Village Road - Approved use of the 402 as part of detour route identified for vehicular traffic during the road closure period.	- Information noted and filed.

Stakeholder	Summary of Comments	Action Taken
Jenna Allain Source Protection Coordinator UTRCA November 13, 2018 (via email)	- Responded to inquiry from BMROSS regarding Source Water Protection issues associated with the bridge replacement project. - Confirmed that there are no significant risks at the bridge site. - Acknowledge mapping included in the EA report that shows vulnerable areas in the vicinity of the bridge.	- Information noted and filed.

4.6 Public Information Meeting

A Public Open House was held on Saturday July 28, 2018 at the Warwick Community Centre from 10:00 a.m. to 12:00 p.m. The meeting was conducted in an open house format with display boards explaining the study process and other project components displayed around the perimeter of the room. Representatives from the County of Lambton and BMROSS were available to answer questions from those in attendance. Photos of the meeting set-up and advertisement are shown below. The meeting was arranged to serve several purposes:

- Provide local residents and other stakeholders with additional details on the Class EA process and a forum to express their views.
- Provide area residents with an overview of the recommendations identified in conjunction with the Class EA investigations.
- Provide residents with an opportunity to ask questions and review mapping and other display material prepared in support of the Environmental Assessment.
- Identify the preliminary preferred alternative recommended by the County.

Fifteen residents and stakeholders attended the meeting. A copy of the presentation material is included within Appendix ‘D.

4.7 Consultation Summary

The consultation program developed for this project was directed towards the general public, adjacent property owners, federal and provincial review agencies, and the local Aboriginal community. Feedback received from review agencies expressed concerns related to a number of species at risk potentially present at the bridge site and within adjacent natural areas that might be impacted by the proposed project. Numerous residents expressed concerns related to the closure of the bridge during construction and the impact that would have on local businesses and the fire department's emergency response time. Feedback was received from three Aboriginal communities; one indicated that they had no concerns with the project, while the Aamjiwnaang FN and Chippewas of the Thames FN were concerned with potential impacts to natural features and native plant species. They requested additional information on the project going forward and provided representatives during completion of the species at risk assessment at the site.

5.0 IDENTIFICATION OF POTENTIAL IMPACTS & MITIGATION MEASURES

5.1 Framework of Analysis

Following the selection of Alternative 1: replacement of the existing bridge, as the preliminary preferred alternative, a study framework was developed to further evaluate the potential impacts of implementing this alternative. The purpose of this review was to assess the environmental interactions resulting from the construction and operation of the proposed works, and to determine if the identified interactions would generate potential environmental impacts. The assessment of the preferred alternative incorporated these activities:

- Assessment of the construction and operational requirements of the proposed works.
- Additional consultation with the public, stakeholder groups and government agencies.

Review of engineering methodologies associated with the proposed bridge replacement

5.2 Construction Phase

The construction plan for the project involves the following general tasks:

- Organize and attend a pre-construction meeting.
- Mobilize to the site.
- Provide traffic signs and barricades at the limits of the construction area, as required.
- Post detour route
- Install sediment fencing adjacent to the abutments at the limits of the work area.
- Remove bird nests prior to April 1 and install netting to prevent new nests from being constructed. Provide alternative nesting habitat adjacent to the site.
- Isolate Bear Creek channel beneath the bridge with coffer dams; transfer fish.
- Complete removal of the existing bridge structure, except base of abutments.
- Excavate for, and install new bridge abutments behind old abutments.
- Install rip rap adjacent to the abutments.
- Install bridge beams, deck and barriers.

- Construct cultural heritage features at bridge.
- Remove coffer dams.
- Restore disturbed areas adjacent to the abutments with native species.
- Remove traffic barricades and signs, as appropriate.
- Complete all required documentation and reporting.

The impacts of the proposed construction activities on the identified environmental elements are summarized in Table 5.1.

Table 5.1
Construction Related Environmental Effects

Environmental Components / Key Project Works and Activities	Natural Environment	Cultural Heritage Resources	Social Environment	Economic Environment	Technical Environment
Construction Component					
Contractor Mobilization to the site	○	○	□	○	○
Utility Locates	□	○	○	○	○
Implementation of traffic control plan	○	○	□	○	○
Installation of sediment and erosion control	□	○	○	○	○
Stream isolation and coffer dam installation	●	○	○	○	○
Concrete and bridge removals	□	□	○	○	□
Abutment construction and beam placement	□	○	○	○	□
Dewatering	□	○	○	○	○
Construction Traffic	○	○	□	○	○
Rip rap installation	□	○	○	○	○
Site Restoration (seeding/topsoil)	□	○	○	○	○

Legend: ● Potential for significant adverse effect
□ Potential for limited adverse effects
○ No adverse effect expected

5.3 Impact Assessment and Mitigation

Based upon an evaluation of construction-related impacts and the findings of the environmental effects analysis (Table 3.3), the preliminary preferred option has the potential to adversely impact upon a number of specific environmental features. They are as follows:

Natural Environment

- Aquatic Habitat

Social Environment

- Construction-related impacts

The potential impacts to each identified feature are described in this section of the report and measures to mitigate the impacts are also presented. As noted above, potential impacts have been categorized as either short term or long term and reviewed accordingly. The selection of mitigation measures was based upon consideration of three broad approaches to mitigation; avoidance, minimization of adverse effects and compensation.

5.4 Impact to Natural Features

Construction activities associated with the bridge replacement could pose a risk to the ecology of the study area, given the proximity of construction activities to the Bear Creek channel and terrestrial habitat areas located adjacent to the river corridor. Accordingly, a series of protective measures will be incorporated into construction plans to help mitigate any identified impacts. As well, any lands disturbed by the construction process would be restored with native species. All remediation planned for the project will also be carried out in accordance with the mitigation and restoration requirements of the regulatory agencies. The following provides detailed descriptions of the specific measures proposed to mitigate impacts to natural features.

(a) Aquatic Habitat

For this project, the extent of in-stream work required will result in disruption to the river bed beneath the bridge (see photo below). The entire channel width beneath the bridge will need to be isolated during removal of the existing bridge and construction of the new bridge supports. To minimize impacts to the channel the existing abutments will be retained and the new abutments constructed behind the foundations. This will also provide a wider bridge span to create additional capacity during high flow events. The old abutments will be cut off just above the water line and will provide additional protection from scour for the new bridge supports. Upon completion of the work, rock rip rap erosion protection will be placed to protect the abutments from future scouring activity. To minimize the extent of impacts, construction will be timed to occur during periods of low flow, during approved timing windows established by the Ministry of Natural Resources and Forestry. Upon completion of the proposed works, the extent of disturbed river bed not protected by rip rap will be restored to pre-existing conditions.

Photo looking south toward the existing bridge and stream channel ↑

(b) Terrestrial Habitat

Both existing bridge abutments are located adjacent to the Bear Creek river bank. Some impacts to existing terrestrial features will occur during removal of the upper portion of the existing abutments and construction of the new. Based on the NRSI species at risk assessment that was completed at the site, there are no significant species present that will be impacted by the loss of habitat in these areas. The limits of the work area will be clearly defined in the field through the installation of sediment fencing, to limit encroachment into adjacent natural areas. All disturbed areas will be fully restored with appropriate native plant species, upon completion of construction.

(c) Breeding Birds

During completion of the SAR screening, a number of active barn swallow nests were identified as being present on the bridge. Barn swallows are a protected species under the Endangered Species Act (ESA). To avoid impacts to the species, all bird nests will be removed from the crossing prior to the start of the active breeding season (April 1). The bridge will then be netted to prevent the birds from reestablishing the nests and alternative nesting habitat structures will be placed in the vicinity. A Notice of Activity form must be submitted to MNRF for approval of the above-noted avoidance strategy.

5.5 Potential Impact to Residents/Adjacent Properties

To facilitate reconstruction of the crossing, the existing crossing will be removed and a new bridge constructed in the same location. This will require closure of the crossing for a period of approximately 6 months. Properties located in close proximity to the bridge site will experience relatively limited direct impacts from construction (noise/traffic disruption/restricted access). The closest residence is located approximately 50 metres northwest of the bridge so may experience some impacts related to noise. Access to adjacent properties will be maintained during the entire construction period.

As discussed, the preferred alternative will require closure of the crossing for a period of approximately 6 months. Egremont Road will be closed adjacent to the bridge site and traffic will need to be detoured around the site on adjacent County Roads or Provincial Highways. Limited road work is required to blend the new road platform into the existing road approaches. Once the new bridge is completed, no long term impacts to traffic are anticipated. Figure 5.1 illustrates the proposed detour route around the bridge site that will be identified for vehicular traffic.

5.6 Impacts to Cultural Heritage Features

Implementation of the preferred alternative has the potential to impact cultural heritage features identified during completion of the Heritage Impact Assessment (HIA) for the crossing. The County is proposing to replicate the key structural features of the former structure, in the design of the new crossing, to preserve these features of cultural value. Potential impacts to archaeological resources will also be evaluated prior to construction to ensure that historical cultural material is not impacted.

5.7 Construction Mitigation

The planned works involve construction activities that have the potential to impact upon the health and safety of the workers, the general public and existing environmental features. Construction activities associated with project implementation will therefore be carried out in accordance with industry safety standards and all applicable legislation. Mitigation measures will also be incorporated into the construction specifications to ensure that operations are conducted in a manner that limits detrimental effects to the environment.

Table 5.2 outlines a series of mitigation measures that are typically incorporated into construction specifications. For this project, contract specifications may need to be modified depending upon the nature of the construction activity and any additional requirements of the regulatory agencies.

BMROSS engineering better communities

COUNTY OF LAMBTON
CLASS EA FOR THE BEAR CREEK BRIDGE
PROPOSED DETOUR ROUTE
EGREMONT ROAD - 200m EAST OF LONDON LINE

DATE	PROJECT No.
JULY 2018	BR1279
SCALE	FIGURE No.
1 : 27 000	5.1

Table 5.2
Typical Mitigation for Construction-Related Activities

Construction Activity	Typical Mitigation Measure
Refuelling and Maintenance	- Identify suitable locations for designated refuelling and maintenance. - Restrict refuelling or maintaining equipment near watercourses. Non-spill equipment is required within 30 m of any watercourse. Fuelled equipment shall be stored overnight more than 30 m from the watercourse. - Prepare to intercept, clean-up, and dispose of any spillage which may occur (whether on land or water). - Have an emergency spill prevention kit on site at all times.
Traffic Control	- The Contractor shall prepare and submit a traffic plan to the Project Engineer for review and acceptance. - Traffic flow should be maintained at all times during construction for private access. The Contractor will co-ordinate detour routing and provide adequate signage and barricades and inspect on a regular basis to ensure signage is maintained.
Disposal	- Dispose of all construction debris in approved locations. - Do not empty fuel or lubricants into sewers or watercourses.
Work in Sensitive Areas	- Avoid encroachment into natural areas as much as feasible. - Install sediment fencing at limits of the work area to define the construction zone and prevent encroachment into sensitive areas. - Restore river bank following completion of the required work with native species, including protection of stream banks and removal of all construction materials and debris.
Silt Control	- Silt fences shall be installed and maintained down slope from any soil stockpile locations.
Dust Control	- Cover or wet down dry materials and rubbish to prevent blowing dust and debris. - Avoid the use of chemical dust control products adjacent to river.
Bridge Demolition	- Isolate stream channel beneath the bridge, during approved timing windows, and transfer trapped fish downstream. - Remove asphalt in advance of bridge demolition. - Remove all concrete debris from channel following demolition of the structure.
Site Clearing	- Protective measures shall be taken to safeguard trees from construction operations. - Equipment or vehicles shall not be parked, repaired or refuelled near the dripline area of any tree not designated for removal. Construction and earth materials shall also not be stockpiled within the defined dripline areas. - Minimize stripping of topsoil and vegetation as much as feasible.
Sedimentation/ Erosion Control	- Erect sediment fencing to control excess sediment loss during construction period. - Minimize the removal of vegetation from sloped approaches to watercourses.

Construction Activity	Typical Mitigation Measure
	- Protect watercourses, wetlands, catch basins and pipe ends from sediment intrusion. - Complete restoration works following construction. - Install straw bale check dams in ditch lines following rough grading of ditches.
Noise Control	- Site procedures should be established to minimize noise levels in accordance with local by-laws. - Provide and use devices that will minimize noise levels in the construction area. - Night time or Sunday work shall not be permitted, except in emergency situations.

5.8 Cost Recovery

The probable capital cost of the project is approximately $1,593,000 + HST (including engineering and an allowance for approvals). The proponent intends to finance the capital costs of the work through their capital works budget or through federal/provincial grant funding, if it becomes available.

6.0 PROJECT IMPLEMENTATION

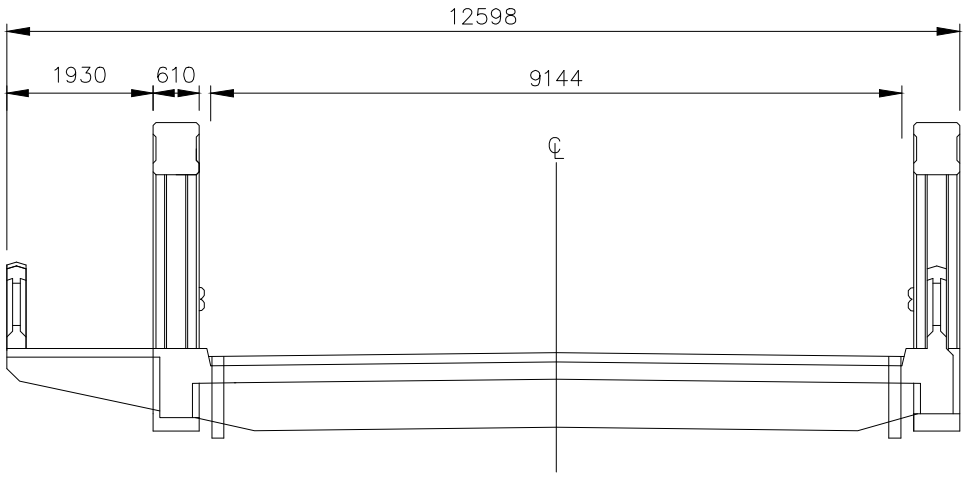
6.1 Selection of a Preferred Alternative

Given the foregoing, Alternative 1 – Replacement of the Bear Creek Bridge, was selected as the preferred solution to the identified problem. Figure 6.1 illustrates the proposed cross section of the new bridge.

6.2 Final Public Consultation

A Notice of Completion was circulated to local residents, stakeholders and government review agencies. The Notice identified the preferred alternative and provided the process for appeal of the selected alternative (i.e., a Part II Order request to the Minister of Environment, Conservation and Parks prior to the conclusion of the review period) if there are unresolved environmental issues. The following summarizes the distribution of the Notice.

Contents:	Identification of the preferred solution, key project components, key plan
Issued:	November 28, 2018
Placed In:	Standard Guide Advocate, The Independent, Sarnia This Week November 28 and December 5, 2018
Distributed to:	12 review agencies, Aboriginal Communities, adjacent property owners.
Review Period:	Concludes December 31st, 2018.
Posted:	County website



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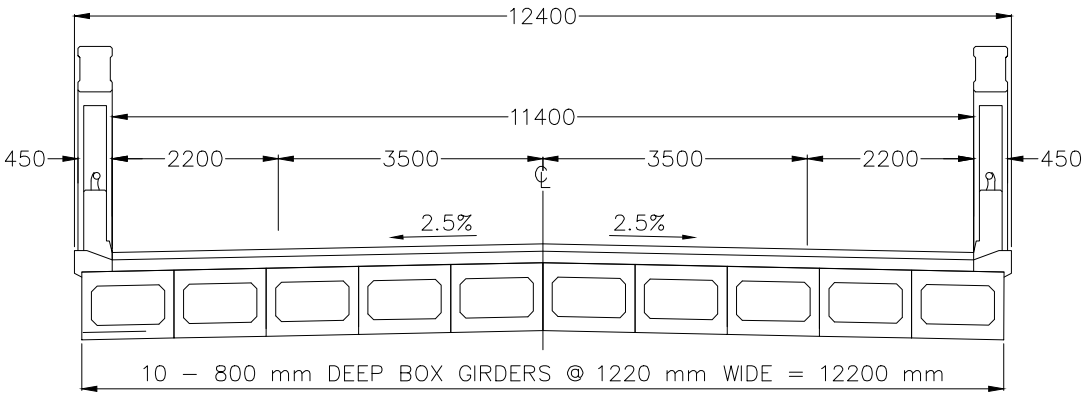
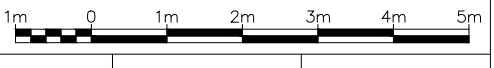
SCALE 1:100



PREFERRED DECK SECTION
SCALE 1:100



BMROSS engineering better communities

County of Lambton

Bear Creek Bridge

Preferred Deck Section

Date	PROJECT No.
Nov. 21, 2018	BR1279
SCALE 1:100	FIG. 6.1

6.3 Class EA Schedule

The recommended solution is considered a Schedule B project under the terms of the Class EA document. Schedule B activities are approved following the completion of an environmental screening process.

The following activities are required in order to complete the formal Class EA screening process:

- Complete the 30-day review period, defined in the Notice of Completion.
- Address any outstanding issues.
- Finalize the Screening Report.
- Advise the County and the MECP when the Class EA study process is complete.
- Obtain necessary approvals.

6.4 Approvals

6.4.1 Conservation Authorities Act

The proposed project will involve construction on lands regulated by the St. Clair Region Conservation Authority (SCRCA). In accordance with the Conservation Authorities Act, an application must be made to the Conservation Authority to obtain approval for the project. The application will set out the measures to protect sensitive lands, such as stream banks, during construction in order to minimize the negative impacts of the project on the ecology of the area. The Authority may require additional measures be incorporated into the construction plan as part of the approvals process.

6.4.2 Ministry of Natural Resources and Forestry (MNRF)

An authorization will be required from the Ministry of Natural Resources and Forestry to address impacts to Barn Swallows which will result from removal of the bridge. A Notice of Activity form will be submitted in advance of construction to allow existing nests to be removed.

6.5 Project Schedule

Following the completion of the Class EA process, the County intends to implement the project in 2019. The engineering design for the proposed bridge replacement will be undertaken in 2018 along with consultation with approval agencies and Aboriginal Communities who expressed an interest in the project. Due to the in-water work component, construction would likely be schedule for July to November of 2019.

7.0 SUMMARY

This report documents the Municipal Class Environmental Assessment (Class EA) process conducted to address deterioration present at the Bear Creek Bridge, which spans Bear Creek along the Egremont Road east of the community of Warwick, in the County of Lambton.

The Class EA process considered several options to address the deficiencies identified at the crossing, including construction of a new concrete beam bridge, rehabilitation or repair of the existing bridge, and doing nothing. Following consultation efforts that included a Public Open House held in July of 2018, replacement of the crossing was selected as the preferred alternative.

The recommended solution is considered a Schedule B project under the terms of the Class EA document. Under the terms of the Class EA, the project is approved subject to the completion of a screening process. The County of Lambton intends to proceed with the implementation of this project in 2019 with final design and approvals being sought in 2018.

All of which is respectfully submitted.

B. M. ROSS AND ASSOCIATES LIMITED

Per _____
Andrew Ross, P. Eng.

Per _____
Kelly Vader, MCIP, RPP
Environmental Planner

:hv

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