

Middlesex County

# **Albert Street Bridge Replacement (Strathroy) Municipal Class Environmental Assessment Schedule B Screening Report**

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**Project Number:**

60275667

**Date:**

October 2013

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# EXECUTIVE SUMMARY

## Background

The Albert Street Bridge is a steel truss bridge located in the Town of Strathroy on Albert Street just west of the Victoria Street intersection. It was constructed in 1937 with the last major rehabilitation in 1996 consisting of bearing replacement and structural steel reinforcing. The bridge is located on an arterial road which carries over 5,000 vehicles per day, is a vital link to the downtown area and is a heavily used pedestrian link due to its location to nearby residential and recreational areas.

The existing bridge consists of 2 through lanes (one east and one west bound) and a sidewalk on the north side. The bridge is a geometric bottleneck on Albert Street, due to a wider road cross section east of the bridge. Structurally, the bridge has extensive rusting and corrosion occurring on the trusses and spalling on the wingwalls. Given the current age, condition and spatial constraints of the existing bridge, the County is conducting a review to confirm the feasibility of replacing the bridge. The intent is to improve structural deficiencies, provide a wider structure and provide additional capacity for vehicular, pedestrian and cyclist traffic.

## Class EA Process

Middlesex County is subject to the provisions of the Environmental Assessment (EA) Act and its requirements to prepare an Environmental Assessment for most public works projects. Based on the Class EA process, projects are classified as Schedule "A", "A+" "B" or "C". The complexity of each project is based on the level of investigation, environmental effects, technical considerations and public/agency input, which may affect the selection of the project schedule. It is up to the proponent to determine and/or customize the planning process to meet the projects consultation and technical needs based on the complexity of issues.

The MEA Class EA document identifies work undertaken to *'reconstruct a water crossing where the reconstructed facility will not be for the same purpose, use, capacity (hydraulic or road capacity) or at the same location'* with a cost limit less than \$2.4M to be considered a Schedule 'B' activity. To adequately address the technical and environmental needs associated with the Albert Street Bridge Replacement, AECOM has undertaken this study in accordance with Class EA Schedule 'B' requirements (as amended in 2007 and 2011). This study was subject to Phases 1 and 2 of the Class EA process which included identifying the problem (deficiency) or opportunity, identifying alternative solutions to address the problem or opportunity taking into consideration the existing environment (social, technical, economic and natural environment), establishing a preferred solution, and taking into account review agency and stakeholder input.

## Public Consultation

Public involvement is an important part of the study process therefore several steps have been completed to inform relevant agencies, affected landowners, Aboriginal communities and members of the public about the project and to solicit their comments. The following mandatory points of contact as well as specific methods for contacting and consulting with stakeholders were undertaken. These include:

- Direct mailing to directly affected land owners and review agencies regarding notice of project milestones; including Notice of Project Commencement (November 26, 2012), Notice of Public Information Centre (April 18, 2013) and Notice of Completion (October 07, 2013).
- All notifications and documentation have been posted on the County website at: <http://www.middlesex.ca>

- Consultation with Aboriginal communities to determine the potential effect on their lands/treaty rights and their interest in the study was carried out through direct correspondence to Ministry of Aboriginal Affairs, Aboriginal Affairs and Northern Development Canada and local councils (Chippewas of the Thames, Oneida Nation of the Thames, Aamjiwnaang, Caldwell First Nation, Munsee-Delaware Nation, Bkejwanong Territory, Delaware Nation and Chippewas of Kettle & Stony Point).
- Consultation with review agencies (MOE, MNR and St. Clair Region Conservation Authority) was carried out through direct correspondence and a meeting was held on January 9, 2013 to review project scope and identify any issues the agencies had.
- A stakeholder meeting was held on February 6, 2013.
- A Public Information Centre (PIC) was held on May 2, 2013 to provide background information on the project, an overview of the Class EA process being followed, identification and evaluation of the alternative solutions considered and the recommended solution.
- Notices for all project milestones were published in the Strathroy Age Dispatch as follows:
  - Notice of Project Commencement (December 6 & December 13, 2012).
  - Notice of Public Information Centre (April 25 & May 2, 2013).
  - Notice of Completion (October 10 & October 17, 2013).

The following alternative solutions were reviewed as part of this project.

#### **Alternative 1 - Do Nothing**

This alternative was included to provide a base to which other alternatives could be compared. Under this alternative, no measures to improve the condition of the structure were considered and therefore the bridge would remain in its present condition. This means that problems which have been identified will remain unresolved and conditions would continue to deteriorate.

#### **Alternative 2 – Abandon Existing Bridge**

This alternative would involve abandoning the existing bridge. No repairs would be undertaken. Vehicular and pedestrian traffic would be re-routed.

#### **Alternative 3 – Rehabilitate Existing Bridge**

This alternative involves rehabilitation of sections of the bridge including deck replacement, structural steel strengthening and coating, expansion joint replacement and substructure rehabilitation.

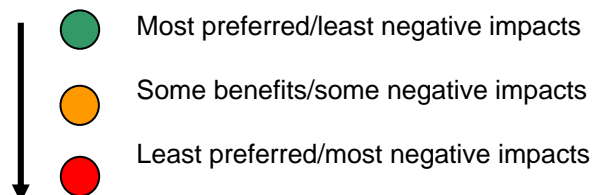
#### **Alternative 4 – Replace Existing Bridge**

This alternative involves the removal of all substructure and superstructure elements and replacement with a new bridge in the same location.

#### **Evaluation Process**

To assess the suitability of each alternative solution, a qualitative evaluation was used to identify significant advantages and disadvantages with respect to specific evaluation criteria developed for each environmental component (economic, social/cultural, natural environment, and technical). After the various evaluation criteria were developed, they were then applied to each of the alternative solutions to identify their potential effects on the environment.

To provide an impartial, traceable and consistent evaluation, as required by the Class EA process, the following method was used to illustrate the highest and lowest impact of each alternative relative to the evaluation criteria for each category considered (e.g., social/cultural, natural environment, technical and economic). A green circle and text illustrates the **least negative impact** or the **most preferred**, while a red circle and text illustrates the **greatest negative impact** or the **least preferred**.



The evaluation of alternatives has been captured in a matrix format to allow for direct comparison between the alternative solutions.

### Recommended Solution

All viable solutions were evaluated to identify a recommended solution to address the deficiencies of the existing bridge. **Alternative 4 –Replace Existing Bridge** was brought forward at the Public Open House as the recommended solution for the following reasons:

- Functional safety upgrades including railing improvements would be implemented.
- Wider bridge cross-section will provide for sidewalks on both sides of the bridge.
- Bridge aesthetics can be improved through design.
- No known impacts to Aboriginal Communities.
- On-road cycling can be accommodated following construction.
- No aquatic Species-At-Risk in immediate vicinity of the bridge therefore no disruption to Aquatic Species-At-Risk habitat.
- No in-water works required.
- Low potential for negative impacts to water quality if erosion and sediment control measures are in place prior to rehabilitation of the bridge.
- Life expectancy of bridge will be extended. The new bridge will meet the requirements of the Highway Bridge Design code.
- The service life of a new bridge is estimated to be a minimum of 75 years.
- A new bridge would not require any rehabilitation within the next 25 to 30 years.
- New bridge girders will match the existing structure depth below the existing road surface and will maintain existing hydraulic capacity.
- A new bridge will allow for installation of railings that meet current code requirements and will aid in modernization of the bridge cross section in accordance with current standards.
- A new bridge will provide a wider cross section similar to the width of the reconstructed road east of the bridge. In the future and not part of this project the road west of the bridge will be of equal width.
- The existing abutments will be maintained in place to reduce disruption of the watercourse and to facilitate construction of the new bridge.
- Rapid bridge construction techniques can mitigate the duration of full bridge closure.
- Existing hydro line will not require relocation.
- Lowest ongoing operation and maintenance costs as rehabilitation would not be required for 30 years.

## **Preliminary Project Schedule**

Subject to County Council approval, the following schedule has been identified:

- Detailed design: October 2013 – December 2013
- Project tendering: January 2014
- Start of construction: June 2014
- Full bridge closure: July and August 2014
- Completion of construction: October 2014.

# Table of Contents

## Statement of Qualifications and Limitations

## Distribution List

## Executive Summary

	page
<b>1. Introduction .....</b>	<b>7</b>
1.1 Report Format.....	7
1.2 Project Overview.....	7
1.3 Project Objectives.....	8
<b>2. Municipal Class Environmental Assessment Process.....</b>	<b>9</b>
2.1 Types of Projects.....	9
2.2 Class Environmental Assessment Phases 1-5.....	10
2.3 Consultation and Communication Program.....	11
<b>3. Project Need and Justification .....</b>	<b>12</b>
3.1 Identification of the Problem .....	12
3.2 Problem Statement.....	13
<b>4. Existing Conditions .....</b>	<b>14</b>
4.1 Physical Site Conditions .....	14
4.2 Cultural Environment .....	15
4.3 Natural Environment.....	15
4.3.1 Terrestrial Conditions.....	16
4.3.2 Aquatic Conditions.....	16
4.3.3 Species at Risk.....	16
4.4 Technical Environment .....	17
4.4.1 Hydraulic Analysis .....	17
4.4.2 Geotechnical Investigation .....	18
4.4.3 Bridge Structure Condition .....	18
4.5 Policy and Approvals .....	18
4.5.1 The Planning Act .....	18
4.5.2 Provincial Policy Statement.....	19
4.5.3 Official Plan.....	19
4.5.4 St. Clair Region Conservation Authority.....	19
4.5.5 Ministry of Natural Resources .....	20
4.5.6 Ministry of the Environment .....	20
4.5.7 Fisheries and Oceans Canada .....	20
4.5.8 Transport Canada.....	21
4.5.9 Ministry of Tourism, Culture and Sport.....	21
<b>5. Alternative Planning Solutions.....</b>	<b>22</b>
5.1 Alternative Solutions .....	22
5.2 Evaluation Framework and Criteria .....	22
5.3 Preliminary Recommended Solution .....	24
5.4 Consultation.....	25
5.4.1 Notice of Commencement .....	25
5.4.2 Agency Consultation.....	25



5.4.3	Stakeholder Consultation .....	25
5.4.4	Public Information Centre .....	25
5.4.5	Aboriginal Consultation.....	26
<b>6.</b>	<b>Preferred Solution.....</b>	<b>27</b>
6.1	Conceptual Design Details .....	27
6.2	Construction Staging and Traffic Management .....	27
6.3	Environmental Recommendations.....	28
6.4	Geotechnical Recommendations.....	28
6.5	Archaeological Recommendations .....	29
6.6	Permits and Approvals.....	29
6.7	Construction Mitigation Measures .....	30
6.8	Costs.....	30
6.9	Preliminary Project Schedule .....	30
<b>7.</b>	<b>Class EA Project Completion .....</b>	<b>31</b>
7.1	Filing Procedure.....	31
7.2	Notification of Completion.....	32

## List of Figures

Figure 1.1	Study Area
Figure 2.1	Municipal Class EA process
Figure 2.2	Consultation Process
Figure 4.1	Schedule B: Land Use & Transportation Plan
Figure 4.2	Schedule C: Special Policy Areas
Figure 4.3	Ecological Land Classifications
Figure 6.1	Preferred Solution General Arrangement Drawing
Figure 6.2	Traffic Management Plan

## List of Tables

Table 4.1	Species at Risk
Table 5.1	Environmental Components
Table 5.2	Evaluation Criteria
Table 5.3	Evaluation of Alternative Solutions
Table 5.4	Summary of Stakeholder Comments

## Appendices

Appendix A	Request for Proposal
Appendix B	Steel Bridge Condition Report
Appendix C	Archaeological Assessment (Golder Associates)
Appendix D	Natural Environment Background Information
Appendix E	Hydraulic Analysis Preliminary Findings
Appendix F	Geotechnical Investigation (Golder Associates)
Appendix G	Consultation
Appendix H	Aboriginal Consultation
Appendix I	NWPA Approval
Appendix J	Preliminary Cost Estimate
Appendix K	Notice of Completion

# 1. Introduction

The County of Middlesex (County) has initiated a Municipal Class Environmental Assessment (EA) to address structural deficiencies and determine the feasibility of replacing the Albert Street Bridge. AECOM Canada Ltd. (AECOM) has been retained by the County to complete this Municipal Class EA in accordance with the requirements for Schedule 'B' projects as described in the Municipal Engineers Association's "Municipal Class Environmental Assessment" document (October 2000, as amended in 2007 and 2011) and as outlined in the Request for Proposal, dated July 4, 2012 (**Appendix A**). This report has been prepared to provide members of the public, special interest groups, Aboriginal communities and government agencies with a structured overview of the screening process to ensure that the Municipal Class EA requirements have been met.

## 1.1 Report Format

As noted above this report presents the planning and public consultation work completed for the project. It includes:

- Overview of the project;
- Project objectives;
- Project requirements;
- Overview of the Class EA process;
- Identification and description of the problem;
- Overview of existing environmental conditions;
- Identification, development and evaluation of solutions;
- Correspondence related to the project;
- Public consultation details;
- A description of the preferred solutions and,
- Conceptual design and recommended mitigation and compensation measures for the preferred solution.

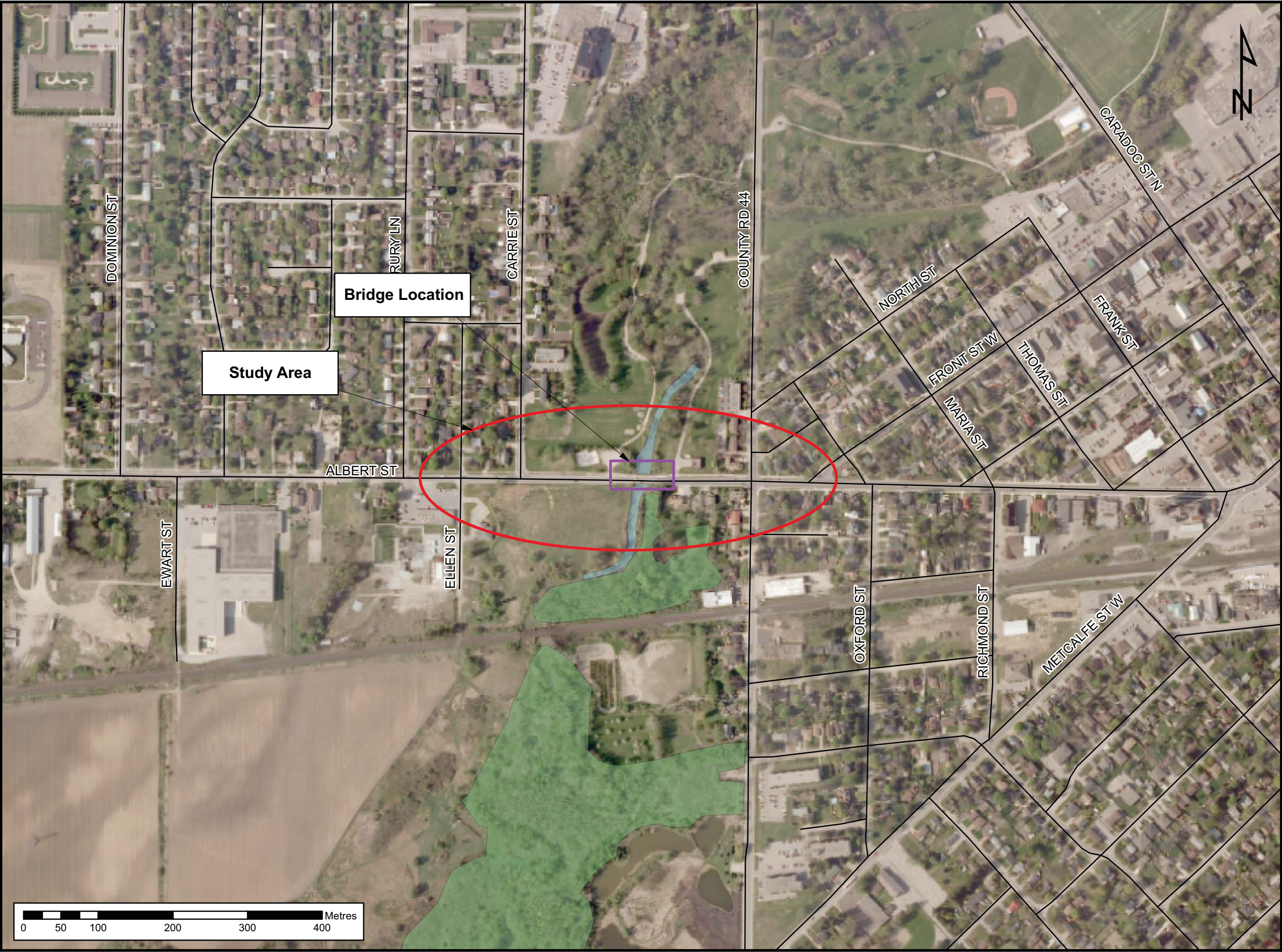
## 1.2 Project Overview

The Albert Street Bridge is a steel truss bridge located in the Town of Strathroy on Albert Street just west of the Victoria Street intersection. It was constructed in 1937 with the last major rehabilitation in 1996 consisting of bearing replacement and structural steel reinforcing. The bridge is located on an arterial road which carries over 5,000 vehicles per day, is a vital link to the downtown area and is a heavily used pedestrian link due to its location to nearby residential and recreational areas.

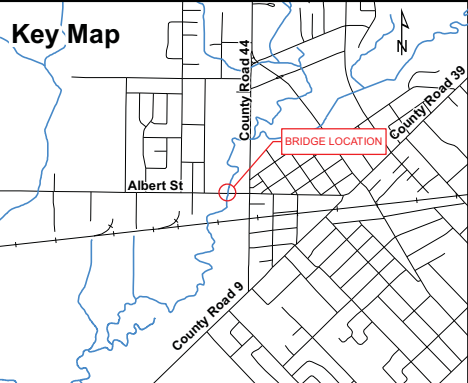
The existing bridge consists of 2 through lanes (one east and one west bound) and a sidewalk on the north side. The bridge is a geometric bottleneck on Albert Street, due to a wider road cross section east of the bridge. Structurally, the bridge has extensive rusting and corrosion occurring on the trusses and spalling on the wingwalls. Given the current age, condition and spatial constraints of the existing bridge, the County is conducting a review to confirm the feasibility of replacing the bridge. The intent is to improve structural deficiencies, provide a wider structure and provide additional capacity for vehicular, pedestrian and cyclist traffic.

See **Figure 1.1** for the location of the Albert Street Bridge.





**County of Middlesex  
Albert Street Bridge  
Replacement**



- Legend**
- Street
  - River
  - Wooded Area

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**Figure 1.1  
Study Area**





### 1.3 Project Objectives

The objective of this project is to determine the feasibility of replacing the Albert Street Bridge in accordance with MEA Municipal Class EA guidelines. The study incorporates key planning principles including public consultation, assessment of a reasonable range of solutions, consideration of the natural, social, economic and technical environments and provides clear documentation. The following was undertaken as part of this study:

- A review of all work previously completed for the bridge;
- A comparative evaluation of a series of solutions that include 'do nothing', rehabilitate the bridge, replace the bridge and close the bridge;
- Identification of the preferred solution;
- Consultation with members of the public, stakeholders, Aboriginal communities and relevant agencies; and
- Completion of a Screening Report, documenting a summary of the rationale, planning, design and consultation process undertaken to establish the preferred solution. This report will be placed on public record for the mandatory thirty (30) day review period for members of the public, stakeholders, Aboriginal communities and agency comment.

## 2. Municipal Class Environmental Assessment Process

Middlesex County is subject to the provisions of the *Environmental Assessment Act* (EAA) and its requirements to prepare an Environmental Assessment (EA) for applicable public works projects. The Ontario Municipal Engineers Association (MEA) "Municipal Class Environmental Assessment" (October 2000, as amended in 2007 and 2011) document provides a five-phase planning procedure approved under the EAA to plan and undertake all municipal sewage, water, stormwater management, and transportation projects that occur frequently, are usually limited in scale and have a predictable range of environmental impacts and applicable mitigation measures.

Key components of the Class EA Planning process include:

- Consultation early and throughout the process;
- Reasonable range of alternatives;
- Consideration of effects on the environment and ways to avoid/reduce impacts;
- Systematic evaluation of alternatives;
- Clear documentation; and
- Traceable decision making.

### 2.1 Types of Projects

Based on the MEA Class EA document, projects are classified as either Schedule "A", "A+", "B" or "C" projects. Each of these classifications requires a different level of review to complete the requirements of the Class EA, and thus comply with the EAA, as noted below:

**Schedule "A"** Projects are limited in scale, have minimal adverse effects and include the majority of municipal sewage, stormwater management and water operations, and maintenance activities. These projects are pre - approved and may be implemented without following the procedures outlined in the Class EA planning process.

**Schedule "A+"** The purpose of this schedule is to provide public notification for specific projects that are pre-approved under the Class EA where the proponent shall notify the public of infrastructure projects being implemented in their area. The public has the right to comment to municipal officials /council in their area. However, considering that the projects are pre-approved there is no appeal process to the Minister of the Environment on these projects.

**Schedule "B"** Projects have the potential for some adverse environmental effects. The proponent is required to undertake a screening process involving mandatory contact with directly affected public and relevant review agencies to ensure that they are aware of the project and that their concerns are addressed where possible.

Schedule "B" projects require that Phases 1 and 2 of the Class EA planning process be followed and a Project File/report be prepared and submitted for review by the public. If there are no outstanding concerns raised by the public and/or review agencies, then the proponent may proceed to project implementation (Phase 5). If however, the screening process raises a concern that cannot

be resolved, then the Part II Order<sup>1</sup> procedure (formerly referred to as a "bump-up") may be invoked. Alternatively, the proponent may voluntarily elect to plan the project as a Schedule "C" undertaking (described below).

Schedule "B" projects generally include improvements and expansions to existing facilities where there is the potential for some adverse environmental impacts. As a result, the proponent is required to proceed through a screening process including consultation with those who may be affected. Examples of Schedule "B" projects include activities such as the construction of new roads (less than \$2.4M), road widening and installation of traffic control devices. As a result, the proponent is required to proceed through a screening process (Phases 1 and 2) including consultation with those who may be affected.

**Schedule "C"** Projects have the potential for significant environmental effects and must proceed under the full planning and documentation procedures (Phases 1 to 4) specified in the Class EA document. Schedule "C" projects require that an Environmental Study Report (ESR) be prepared and submitted for review by the public. If concerns are raised that cannot be resolved, then the Part II Order procedure may be invoked.

Schedule "C" projects typically include the citing and construction of new facilities as well as major expansions to existing facilities, such as water or wastewater treatment plants. An example of a Schedule "C" project would be construction of a new road where the cost is higher than \$2.4M.

## 2.2 Class Environmental Assessment Phases 1-5

**Figure 2.1** illustrates the process followed in the planning and design of projects covered by the MEA Class EA. The figure incorporates steps considered essential for compliance with the requirements of the EAA that are summarized below.

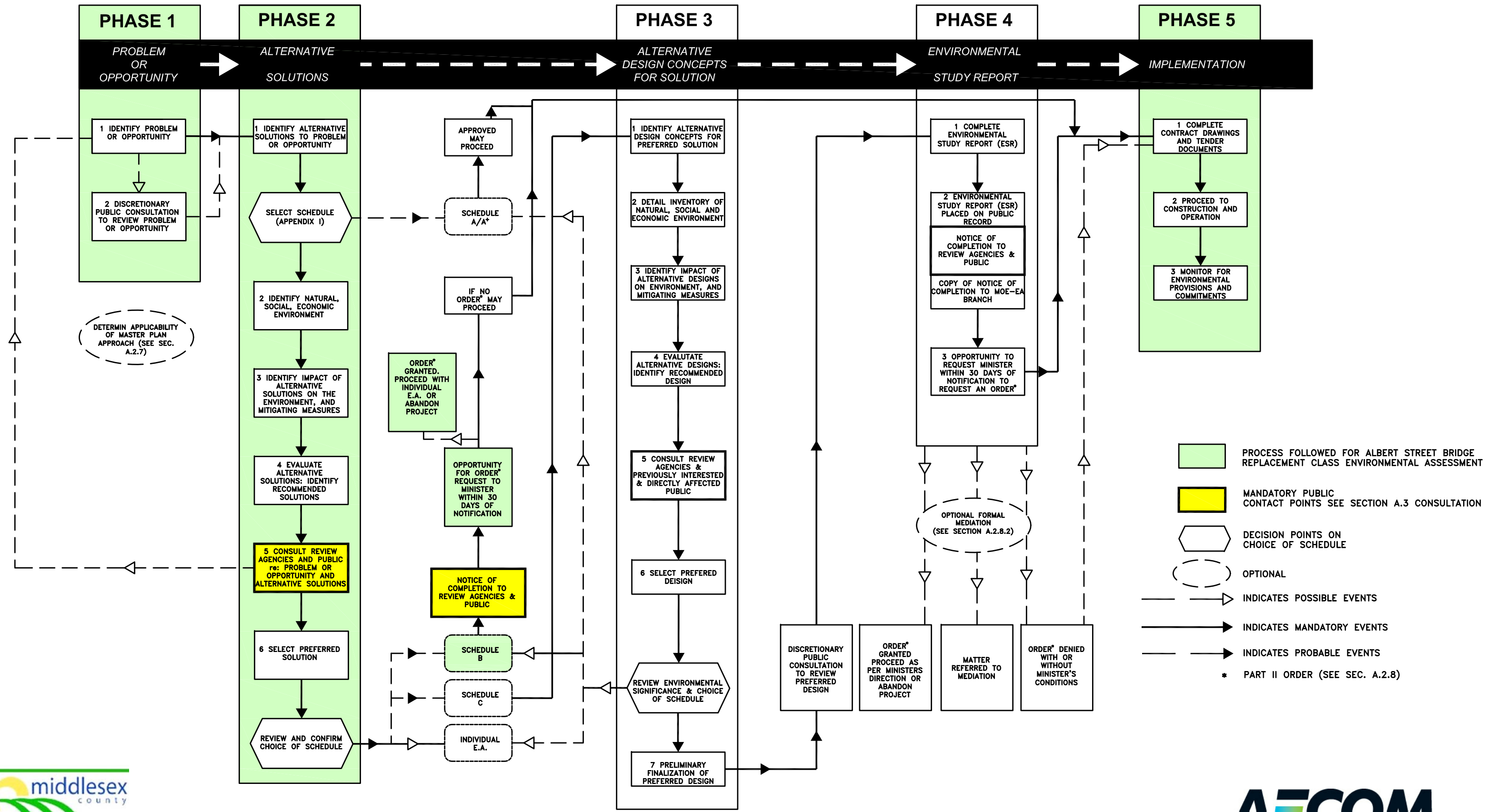
The five phases of the Class EA process are summarized below:

- |                |   |
|----------------|---|
| <b>Phase 1</b> | Identify the problem (deficiency) or opportunity.   |
| <b>Phase 2</b> | Identify alternative solutions to the problem or opportunity by taking into consideration the existing environment and establish the preferred solution accounting for public and agency review and input. Document the planning process in a Municipal Class EA project file and make such documentation available for scrutiny by review agencies and the public. |
| <b>Phase 3</b> | For Schedule "C" projects, examine alternative methods of implementing the preferred solution based upon the existing environment, public and government agency input, anticipated environmental effects and methods of minimizing negative effects and maximizing positive effects.  |
| <b>Phase 4</b> | For Schedule "C" projects, document, in an Environmental Study Report (ESR), a summary of the rationale and the planning, design and consultation process followed in the project and make such documentation available for scrutiny by review agencies and the public.   |
| <b>Phase 5</b> | Complete contract drawings and documents; proceed to construction and operation and monitor construction for adherence to environmental provisions and commitments. Where special conditions dictate, also monitor the operation of the completed facilities.   |

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<sup>1</sup> Part II Order refers to a request to the Minister of the Environment for a project to comply with Part II (addresses Individual Environmental Assessments) of the EAA. The requirement to prepare an Individual Environmental Assessment (EA) involves the preparation of a Terms of Reference and EA document that are submitted to MOE, other government agencies and the public for review.

Figure 2.1 :PLANNING AND DESIGN PROCESS FOR MUNICIPAL CLASS EA PROJECTS



The MEA Class EA document identifies work undertaken to *'reconstruct a water crossing where the reconstructed facility will not be for the same purpose, use, capacity (hydraulic road capacity) or at the same location'* with a cost limit less than \$2.4M, is considered to be a Schedule 'B' activity. To adequately address the technical and environmental needs associated with the Albert Street Bridge Replacement, AECOM has undertaken this study in accordance with Class EA Schedule 'B' requirements (as amended in 2007 and 2011). This study was subject to Phases 1 and 2 of the Class EA process which included identifying the problem (deficiency) or the opportunity, identifying alternative solutions to address the problem or opportunity, taking into consideration the existing environment, establishing a preferred solution, and taking into account review agency and stakeholder input.

## 2.3 Consultation and Communication Program

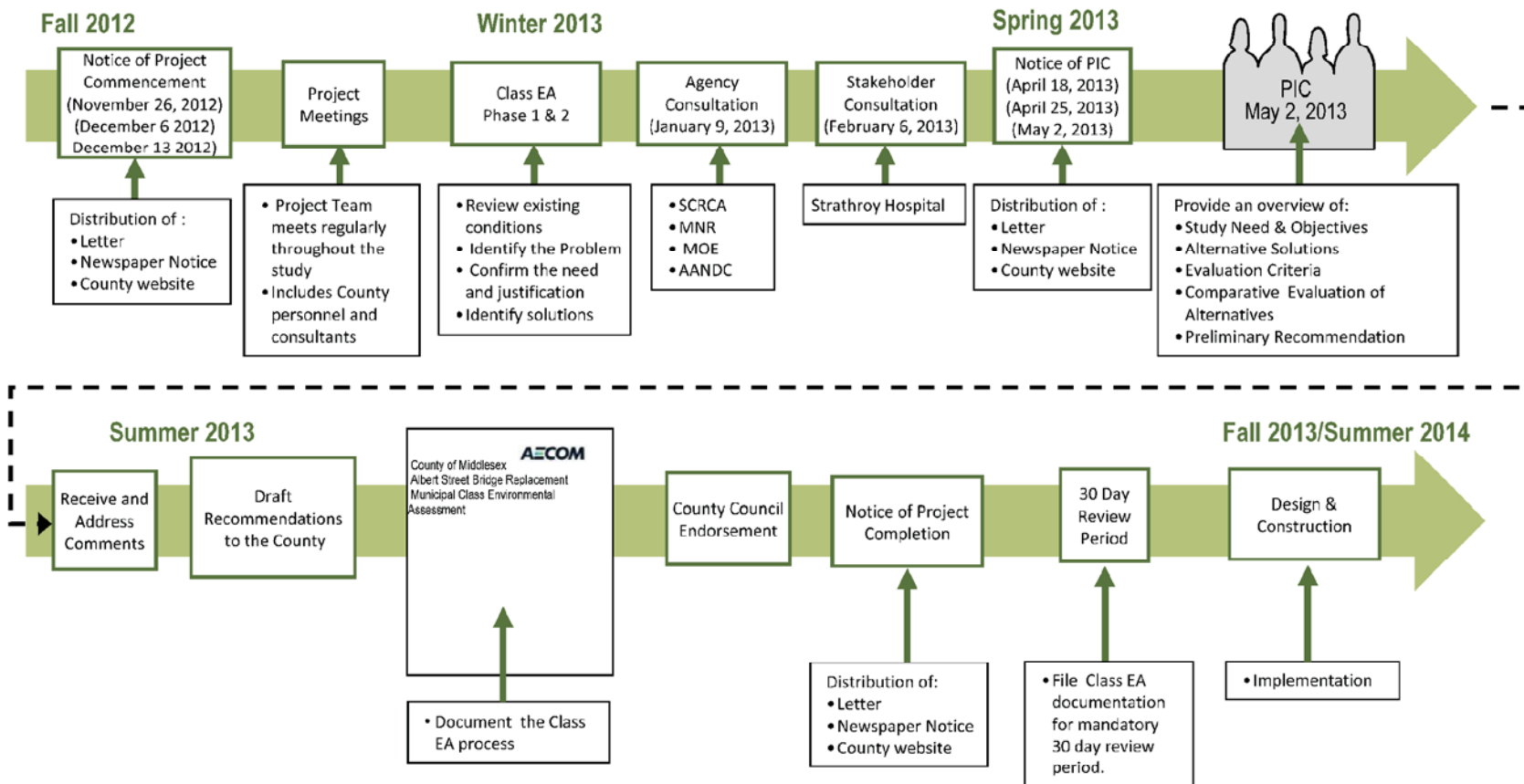
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  - Notice of Completion (October 10 & October 17, 2013).

Further details regarding agency, stakeholder, Aboriginal and public consultation is provided in **Section 5**.

**Figure 2.2 Consultation Process** provides an overview of the Class EA and consultation process followed for this project.





## County of Middlesex Albert Street Bridge Replacement

**Figure 2.2**  
Consultation Process



### 3. Project Need and Justification

As part of Phase 1 of the Class EA process, the problem or deficiency to be addressed is identified to provide a clear understanding of the problem and or opportunity which may not be obvious to the public. Therefore it is necessary to document all factors which lead to the conclusion that an improvement or change is necessary. This section of the report defines the need and provides justification for the County to undertake this Municipal Class EA.

#### 3.1 Identification of the Problem

A Steel Bridge Condition Report, completed in 2007, indicated the elements of the structure to be generally in adequate to satisfactory condition. The elements receiving the lowest ratings included the wingwalls (spalling), floor beams (considerable rusting/corrosion at the south truss), bottom south truss chord (considerable corrosion at floor beam connection) and diagonal truss connections to the south truss (considerable corrosion).

The Steel Bridge Condition Report and follow-up inspections from AECOM noted the following:

- The existing structure is 76 years old (and approaching the end of its functional service life).
- Rehabilitation history includes a deck replacement in 1977 and bearing replacement in 1996.
- There is medium to severe localized corrosion of existing structural steel, with some steel section loss (potentially impacting load carrying capacity).
- There is some deterioration of the concrete abutments with medium delaminations and cracking, some areas with efflorescence staining.
- The pedestrian railing system is substandard and does not meet current code requirements.
- The main truss is unprotected from impact loading from traffic.



**Spalling of Wing Walls**

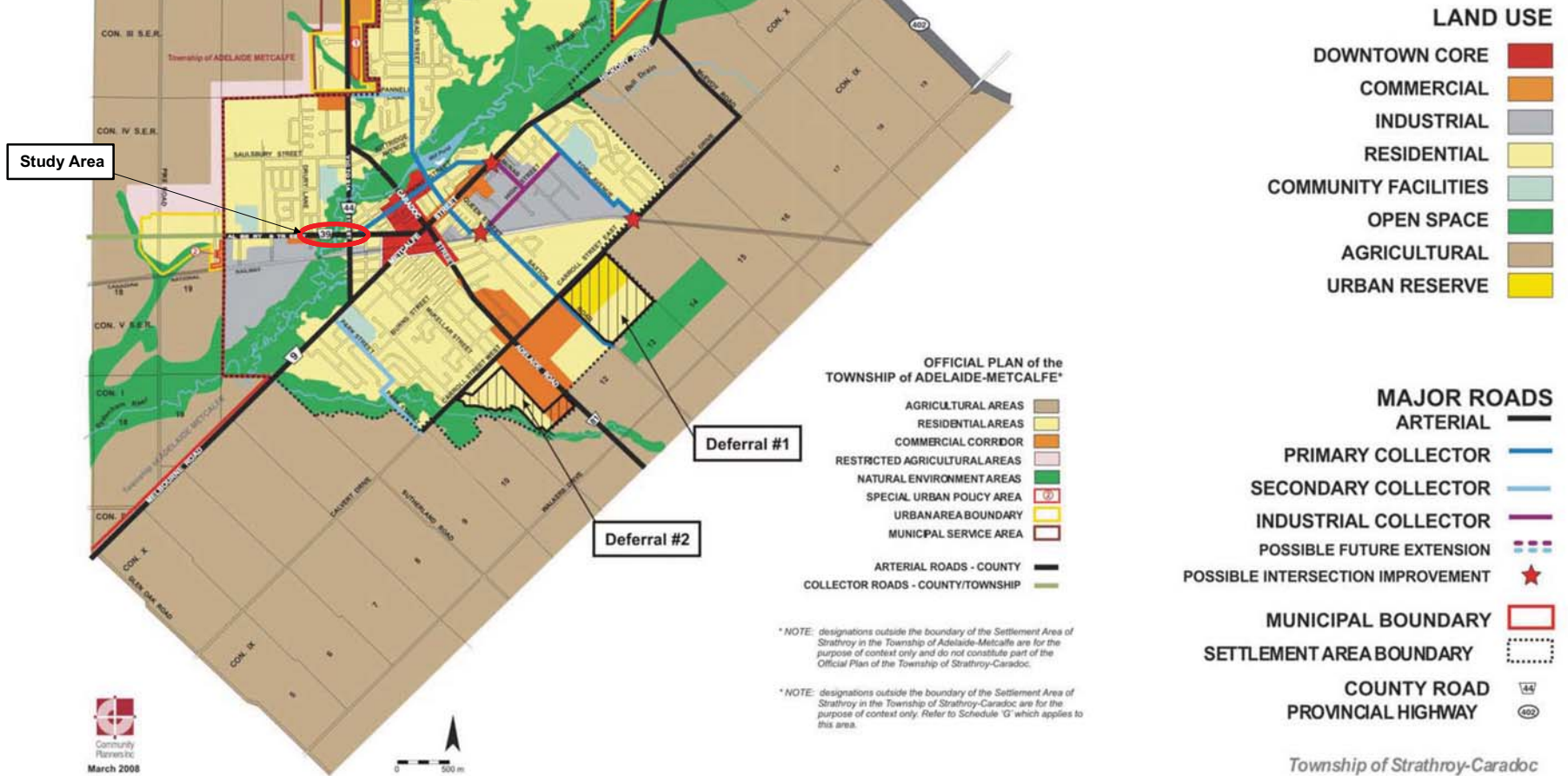


**South Truss corrosion**

See **Appendix B** for the complete Steel Bridge Condition Report.

The main areas of focus are: identifying, evaluating and selecting long-term cost effective strategies to address the deteriorated condition of the existing bridge; providing the necessary improvements to the roadway approaches to suit the bridge; minimizing and/or avoiding impacts to adjacent private property; provision of proven environmental protection and mitigation measures given the proximity of construction activities to the Sydenham River; and acquisition of necessary approvals, in a timely manner.

# **SCHEDULE 'B'** **Land Use & Transportation Plan** Settlement Area of Strathroy



Source of Data: County of Middlesex Official Plan



## **County of Middlesex** **Albert Street Bridge** **Replacement**

**Figure 4.1**  
 Schedule B: Land Use & Transportation Plan

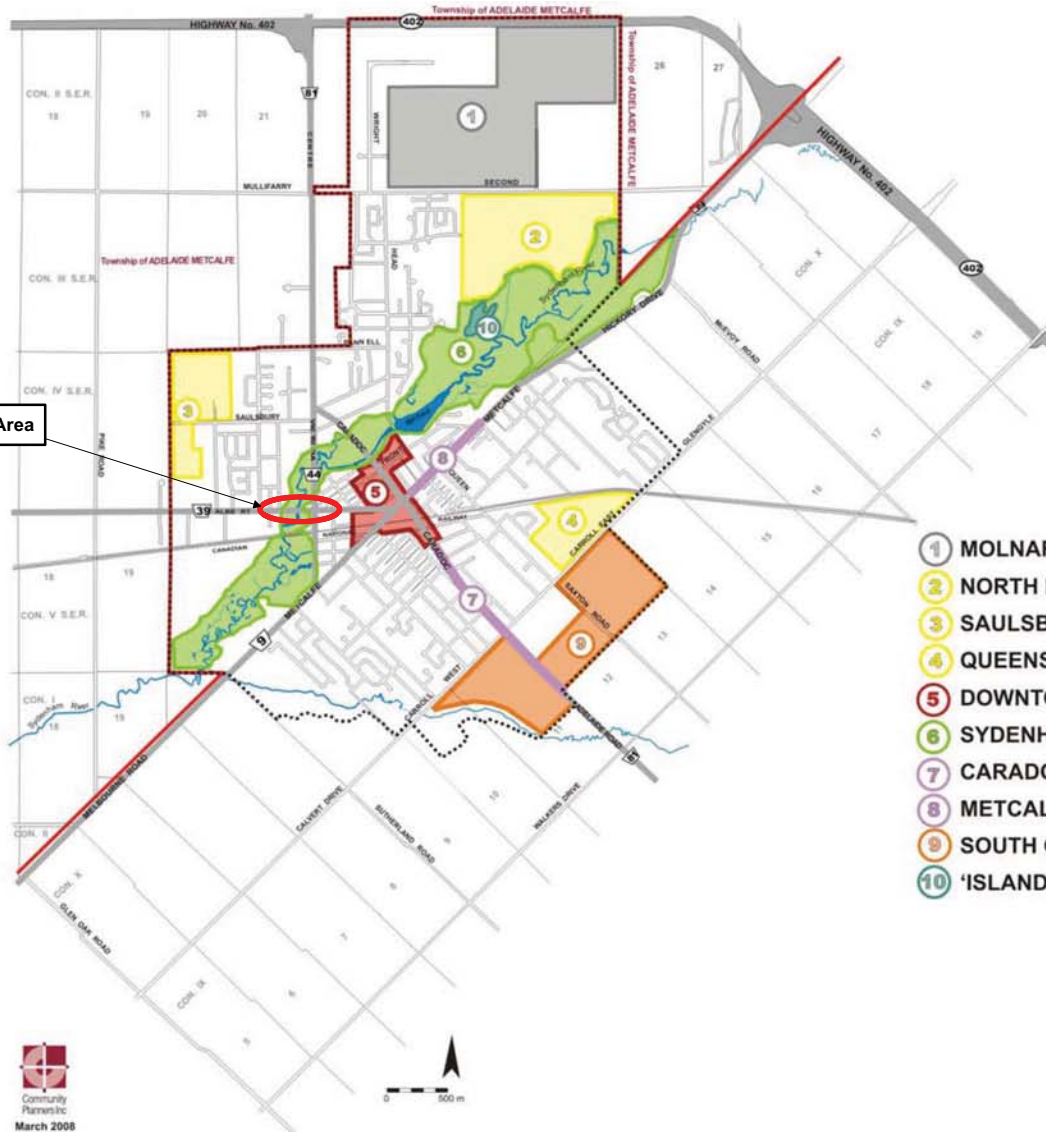




## SCHEDULE 'C' Special Policy Areas

### Settlement Area of Strathroy

Study Area



- |   |   |                  |
|---|---|------------------|
| ① | MOLNAR INDUSTRIAL PARK - SECONDARY PLAN ..... | Section 3.4.3.4  |
| ② | NORTH MEADOWS - SECONDARY PLAN .....          | Section 3.4.4.12 |
| ③ | SAULSBURY - SECONDARY PLAN.....               | Section 3.5.5.13 |
| ④ | QUEENS - SECONDARY PLAN.....                  | Section 3.4.4.13 |
| ⑤ | DOWNTOWN CORE - MASTER PLAN.....              | Section 3.4.1.7  |
| ⑥ | SYDENHAM RIVER VALLEY - MASTER PLAN.....      | Section 3.4.7.1  |
| ⑦ | CARADOC STREET - CORRIDOR PLAN .....          | Section 3.4.2.3  |
| ⑧ | METCALFE STREET - CORRIDOR PLAN.....          | Section 3.4.2.3  |
| ⑨ | SOUTH OF CARROLL - SERVICING PLAN.....        | Section 3.5.5.1  |
| ⑩ | 'ISLAND' - REGENERATION PLAN.....             | Section 3.4.4.14 |

MUNICIPAL BOUNDARY

SETTLEMENT AREA BOUNDARY

COUNTY ROAD  
PROVINCIAL HIGHWAY

Township of Strathroy-Caradoc

Source of Data: County of Middlesex Official Plan



## County of Middlesex Albert Street Bridge Replacement

**Figure 4.2**  
Schedule C: Special  
Policy Areas



### 3.2 Problem Statement

The Problem Statement sets out the framework for the study, and is based on the existing conditions as identified in the Steel Bridge Condition Report and AECOM's follow up inspections. The Problem Statement is as follows.

*The County of Middlesex has initiated a Municipal Class Environmental Assessment to identify a preferred solution to address the deficiencies of the Albert Street Bridge as they relate to the safety, structural condition, performance and applicable design standards. A preferred alternative should limit impacts to the adjacent Sydenham River and surrounding ecosystem and should support the County of Middlesex and the Municipality of Strathroy/Caradoc Official Plans by creating a safe link across the Sydenham River that promotes balanced transportation networks and a sustainable future for adjacent residents and institutions within the Community.*

## 4. Existing Conditions

This section of the report summarizes existing conditions (i.e., social/cultural environment, natural environment, technical environment and policy and/or approval requirements) relative to the alternative solutions and the study area. This information was used to aid in the evaluation of alternative solutions and identification of and their potential environmental impacts and mitigating measures.



**Albert Street Bridge**

### 4.1 Physical Site Conditions

Albert Street is a main east-west arterial through the Town of Strathroy carrying over 5000 vehicles daily. The Albert Street Bridge crosses the Sydenham River between Carrie Street and Victoria Street at the west end of town. Current land use designations adjacent to the bridge as shown on Schedule 'B' of the Strathroy-Caradoc Official Plan include Open Space, Commercial, Residential and Community Facility (Strathroy Middlesex General Hospital) (**Figure 4.1**). Schedule 'C' Special Policy Areas of the Strathroy-Caradoc Official Plan identifies the land adjacent to the bridge as part of the Sydenham River Valley which is classified as a significant natural area and a significant recreational asset (**Figure 4.2**).

Alexandra Park is located north of the bridge on both sides of the river. A pumping station is located north east of the bridge. A small woodland is located immediately to the south of the bridge along the eastern edge of the Sydenham River and two wetlands are located approximately 120 m north and 200 m south of the bridge.

There are no existing utilities or services located on the bridge. However, street lights and hydro lines are located along the north side of the bridge. A storm outline and disconnected gas main are located on the south side of the bridge.



**Sidewalk on north side of bridge**



**Stormwater outlet**

## 4.2 Cultural Environment

The Cultural Environment refers to cultural heritage and archaeological resources. The Canadian Environmental Assessment Agency defines cultural heritage resources as a wide range of resources, including, cultural landscapes and landscape features, archaeological sites, structures, engineering works, artifacts and associated records. These resources are distinguished from others by the historic value placed on them through their association with an aspect(s) of human history.

The objective of an Archaeological Assessment is to compile all available information about the known and potential cultural heritage resources within the study area and to provide specific direction for the protection, management and/or recovery of these resources. As part of this project a Stage 1 Archaeological Assessment was completed to:

- Provide information about the study area's geography, history, previous archaeological fieldwork and current land conditions;
- Evaluate in detail the study area's archaeological potential which will support recommendations for Stage 2 survey for all or parts of the property, if required; and
- Recommend appropriate strategies for Stage 2 survey, if required.

According to the findings of the Stage 1 Archaeological Assessment conducted by Golder Associates, there are no known (registered) archaeological sites in the study area or within close proximity. There is potential for pre-contact Aboriginal resources on undisturbed lands immediately above the top-of bank of the river. However, disturbed lands within this area would have no archaeological potential due to past disturbances. The nature of these disturbances include the road, the bridge, sidewalks along Albert Street and areas previously impacted by above ground and below ground services.

The first settlers in the vicinity of the study area arrived in 1832 and by 1878 the Town of Strathroy was a thriving community with many businesses and residents. As in any urban area, a particular block of land within an established community has potential for the future recovery of mid to late 19<sup>th</sup> century artifacts and/or potential for the future recovery of archaeological evidence of former buildings, especially along a well-travelled roadway such as Concession Street (now Albert Street). Thus it can be concluded that any undisturbed lands in the study area that would potentially be impacted by the proposed Albert Street Bridge replacement have archaeological potential for Euro-Canadian resources.

Based on the findings of the Stage 1 assessment, a Stage 2 assessment is not required unless work is undertaken for this project in undisturbed areas.

See **Appendix C** for the Stage 1 Archaeological Assessment.

## 4.3 Natural Environment

The study area is located within the east branch of the Sydenham River within the Sydenham River subwatershed. The subwatershed captures an area of 224km<sup>2</sup> within the municipalities of Middlesex Centre, Strathroy-Caradoc and Adelaide-Metcalf. Dominant land uses within the subwatershed includes agriculture, woodlots and urban/industrial areas. The geology is dominated by sandplain and shallow overburden aquifers are found within the subwatershed. The Sydenham River provides warm water habitat for 41 fish species including the Northern Pike, Largemouth Bass, Smallmouth Bass, Rock Bass and sunfish species.

Natural heritage features that have been identified within or in close proximity to the study area during review of background information and a site assessment completed on January 3, 2013 include the following:

- The Sydenham River Provincially Significant Wetland Complex, which is comprised of multiple wetlands along the Sydenham River to the north and south of the study area;
- Alexandra Park, which is a community park that is located north of Albert Street and generally follows the Sydenham River valley through the Town of Strathroy;
- Forested communities which are primarily located along the east and west banks of the Sydenham River; and
- Cultural meadow which is located south of Albert Street west of the Sydenham River.

#### 4.3.1 Terrestrial Conditions

A total of four unique ecological communities were identified as a result of the assessment of the terrestrial conditions at the site. This includes a Fresh to Moist Lowland Deciduous Forest (FOD7) located along the east and west banks of the Sydenham River to the north and south of the bridge, community parkland to the north of the bridge, a pond (OAO) located approximately 120 m to the north west of the bridge, a Dry to Moist Mineral Cultural Meadow (CUM1-1) to the south west of the bridge and a small Deciduous Swamp (SWD) wetland community to the south east of the bridge (**Figure 4.3**).

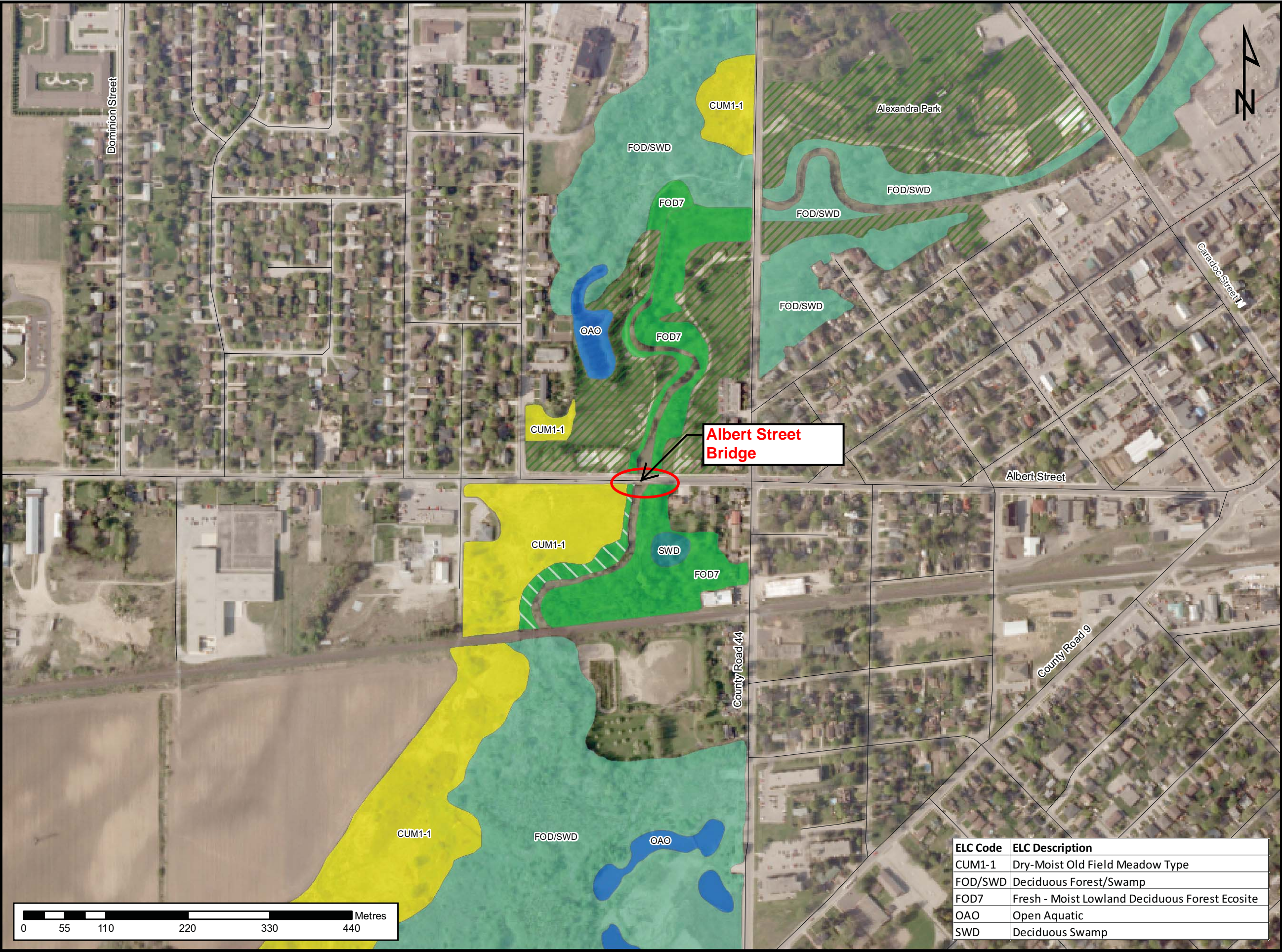
#### 4.3.2 Aquatic Conditions

The Sydenham River within the study area is a warm water permanent system that flows in a south westerly direction. The site assessment of the aquatic features within the study area determined that the Sydenham River at the site is comprised primarily of flats with some riffles, runs and pools. The in-stream cover is low within the middle of the channel, however overhanging vegetation along the banks does provide some cover for fish species. The upstream reach receives runoff from the adjacent properties and severe erosion was observed on both the right and left banks. Sediment deposition was observed in many locations, including along the abutments of the bridge. This branch of the Sydenham River acts as a fish migration route between the headwaters of the Sydenham River to downstream branches.

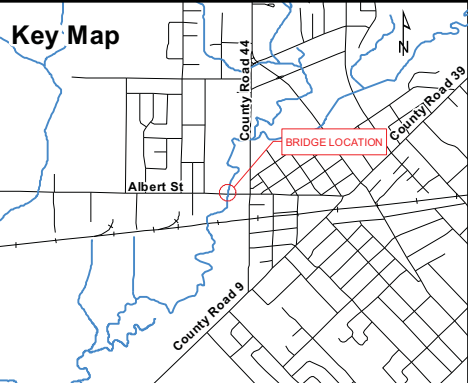
#### 4.3.3 Species at Risk

An analysis of the habitat preferences of SAR which are known to occur or have historically occurred within the Township of Strathroy-Caradoc and the habitat present at the site determined that suitable habitat for nine species protected under the ESA may be present within the study area, (**Table 4.1**). Species that are most likely to be present within the study area, partially due to their relative abundance within the province and the suitability of the habitat at the site, include Barn Swallow, Snapping Turtle and Monarch Butterfly. During the completion of the survey several nests, which were later confirmed to be Barn Swallow (a threatened species under the ESA) nests, were observed underneath the bridge. This was the only SAR which was confirmed to be present within the study area.





County of Middlesex  
Albert Street Bridge  
Replacement



Legend

- Street
- ELC Code**
- Alexandra Park
  - CUM1-1
  - FOD/SWD
  - Potential Turtle Nesting - Significant Wildlife Habitat
  - FOD7
  - OAO
  - SWD

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Ecological Land  
Classification

Figure 4.3

ELC Code	ELC Description
CUM1-1	Dry-Moist Old Field Meadow Type
FOD/SWD	Deciduous Forest/Swamp
FOD7	Fresh - Moist Lowland Deciduous Forest Ecosite
OAO	Open Aquatic
SWD	Deciduous Swamp





**Table 4.1: Species at Risk**

Common Name	Scientific Name	Species at Risk in Ontario (SARO) Status	Last Observed Date
Spiny Softshell	<i>Apalone spinifera</i>	THR	June 20, 2008
Eastern Hog-nosed Snake	<i>Heterodon platirhinos</i>	Threatened	Unknown
Barn Swallow	<i>Hirundo rustica</i>	THR	2007
Silver Shiner	<i>Notropis photogenis</i>	THR	August 9, 1989
Willowleaf Aster	<i>Symphyotrichum praealtum</i>	THR	September 2, 1992
Snapping Turtle	<i>Chelydra serpentina</i>	SC	Unknown
Monarch Butterfly	<i>Danaus plexippus</i>	SC	Unknown
Blue Ash	<i>Fraxinus quadrangulata</i>	SC	July 25, 1954
Northern Map Turtle	<i>Graptemys geographica</i>	SC	August 17, 1987

Due to the size and disturbed nature of the habitat present within the study area and its close proximity to human settlement there is limited potential for Significant Wildlife Habitat (SWH). The only type of SWH that may be present in the study area is turtle nesting habitat which could be present south of the bridge along the west bank of the Sydenham River. The proposed works should have little to no effect on this potential habitat provided they remain within the existing Albert Street right of way. However discussions with MNR are required to determine the best course of action to address nesting Barn Swallows.

See **Appendix D** for the complete Natural Environment Background Information.

## 4.4 Technical Environment

### 4.4.1 Hydraulic Analysis

A preliminary hydraulic analysis was conducted to determine the accuracy of the existing model and flood risk provided by SCRCA. The model was updated to include additional details of the Albert Street Bridge crossing, a downstream CN Rail crossing and flow data for the 2-year through 100-year event.

The results of the updated modeling indicate:

- Flood elevations at the crossing are controlled by downstream features therefore increasing the hydraulic conveyance of the crossing with the proposed bridge will not lower flood elevations.
- A proposed bridge replacement that does not reduce hydraulic conveyance will not adversely affect flood elevations.
- The recommended soffit clearance of 1.0m for the 50-year event is not achieved with the existing bridge.
- The existing crossing at the bridge does not overtop under the 100-year event, however the road on either side of the bridge does.

As a result of these findings and due to constraints associated with raising the road, it is recommended that the existing conditions of the road be matched and a slight improvement be made to the soffit clearance in the 2-year event. These recommendations have been supported by the County and SCRCA (**Appendix E**).

The hydraulic analysis is found in **Appendix E**.

#### 4.4.2 Geotechnical Investigation

A geotechnical investigation was undertaken by Golder Associates to explore the subsurface soil and groundwater conditions at the study area. Boreholes were drilled to determine soil stratigraphy and the existing pavement structure. The following observations were found:

- Soil conditions encountered in the boreholes generally consist of pavement structure, topsoil and fill over complex interlayered strata of fine sand, silt and silty clay.
- The water level in the Sydenham River was measured at an elevation of 220.6m
- Near surface soils are not suitable for the support of shallow bridge foundations.

The design of the preferred alternative will comply with the recommendations of the geotechnical investigations. The geotechnical investigation is found in **Appendix F**.

#### 4.4.3 Bridge Structure Condition

A Steel Bridge Condition Report, completed in 2007, indicated the elements of the structure to be generally in adequate to satisfactory condition. The elements receiving the lowest ratings included the wingwalls (spalling), floor beams (considerable rusting/corrosion at the south truss), bottom south truss chord (considerable corrosion at floor beam connection) and diagonal truss connections to the south truss (considerable corrosion).

Other general report comments noted the following:

- Corrosion of existing structural steel, including truss chords and floor beam connection. Recommendations for recoating the structural steel were provided;
- Delamination and cracking of the concrete substructure, including wingwalls and abutments;
- The deck underside appeared to be in good condition; and
- The pedestrian railing system was in fair condition with corrosion.

### 4.5 Policy and Approvals

The following section outlines the policies and approvals relevant to this study.

#### 4.5.1 The Planning Act

The Planning Act (2005) sets out the ground rules for land use planning in Ontario and describes how land uses may be controlled, and who may control them. Pursuant to the Planning Act, the Province of Ontario is the primary planning authority in Ontario. The Planning Act enables the Province to delegate some of its planning authority to the upper-tier municipalities (e.g. counties and regional/district municipalities, as well as planning boards) while retaining control through the approval process. Municipalities must conform to approved policies of the Provincial government and its agencies. Provincial ministries, municipal councils, planners and other stakeholders implement the Act when such actions include:

- Preparing Official Plans and planning policies that guide future development considering provincial interests, such as protecting and managing natural resources; and
- Regulating and controlling land uses through zoning by-laws and minor variances.

#### 4.5.2 Provincial Policy Statement

The Provincial Policy Statement (PPS) is the complimentary policy document to the Planning Act. Issued under the authority of Section 3 of the Planning Act, the PPS provides direction on matters of provincial interest related to land use planning and development and promotes the provincial “policy-led” planning system that recognizes and addresses the complex interrelationship among environmental, economic and social factors in land use planning (MMAH, 2005). The PPS provides for enhanced protection of the environment by identifying the significance of the natural heritage system and water resources, including natural hazards and water quality, air quality and energy use.

The Transportation System policies (Section 1.6.5) specify that transportation systems should be provided which are safe, energy efficient, facilitate the movement of people and goods and are appropriate to address projected needs (1.6.5.1); existing use shall be make of existing and planned infrastructure (1.6.5.2); and connectivity within and among transportation systems and modes should be maintained and, where possible, improved including connections which cross jurisdictional boundaries (1.6.5.3).

#### 4.5.3 Official Plan

Official Plans contain policies that provide direction for the allocation of land use, provision of services and facilities and policies to control the use of land, having regard for social, economic and environmental matters. This report has regard for and complies with both the County of Middlesex Official Plan and the Municipality of Strathroy-Caradoc Official Plan policies as noted below.

##### County of Middlesex Official Plan (2006) Policies:

2.4.2.2 – the County shall b) allocate resources to ensure the transportation system meets the needs of the road users and growth policies of the County; e) encourage safe, convenient and visually appealing pedestrian facilities in settlement areas.

##### Municipality of Strathroy – Caradoc Official Plan (2008) Policies:

##### Section 2.7 Natural Environment Goals and Objectives:

Section 2.7.1 b) - To prevent development and site alteration from occurring in wetlands and in significant habitats of threatened or endangered species.

Section 2.7.1 c) - To ensure that new development, site alteration, the expansion of existing development and the provision of public facilities and infrastructure result in no negative impacts on the natural features or their ecological functions.

Section 2.7.4 - The Sydenham River is nationally and globally significant for its freshwater mussels, a number of which have been declared as endangered. To sustain these and other endangered aquatic species, listed under the Species at Risk Act and the Endangered Species Act, protecting habitat along river corridors as well as implementing water management strategies are critical.

#### 4.5.4 St. Clair Region Conservation Authority

Ontario Regulation 97/04 is the generic regulation that applies to work in areas prone to flooding and erosion hazards. Under this regulation, individual conservation authorities are given jurisdiction within their watersheds to regulate development in areas of hazard potential.

Ontario Regulation 171/06: Development, Interference with Wetlands and Alterations to Shorelines and Watercourses (under the Ontario Regulation 97/04) is the local regulation for the SCRCA watershed. This regulation fulfils the general purpose of ensuring public safety with regard to natural hazards such as flooding and erosion within areas regulated by the SCRCA.

The SCRCA implements this regulation by issuing permits for works located within their regulation limit which includes a) areas adjacent or close to the shoreline of the Great Lakes – St. Lawrence River System; b) river or stream valleys; c) hazard lands; d) wetlands; or e) area where development could interfere with the hydraulic function of a wetland.

Work proposed as part of this project, within or adjacent to the Sydenham River will require consultation and approval with the SCRCA.

#### 4.5.5 Ministry of Natural Resources

The Ministry of Natural Resources (MNR) is mandated to promote healthy ecosystems and develop effective policies for resource management. MNR is responsible for administering legislation in support of their mandate, including the Endangered Species Act (ESA, 2007). This act provides a protection and recovery strategy for Species at Risk (SAR) in Ontario. Methods of protection include protection of SAR habitat; support for private and public organizations; recovery of species; and strict enforcement (Ontario 2012). The ESA regulation applies to extirpated (destroyed), endangered and threatened species. Species of Special Concern are not protected under the ESA.

As it relates to this project, if SAR are found within the study area, permitting through MNR will be required.

#### 4.5.6 Ministry of the Environment

The Ontario Ministry of Environment (MOE) administers the Ontario EA Act. Though no formal application procedure is required, this report will be available to the MOE to ensure that the requirements of the EA Act and Class EA process have been met.

#### 4.5.7 Fisheries and Oceans Canada

Fisheries and Oceans Canada (formerly Department of Fisheries and Oceans – DFO) is responsible for the protection and recovery of aquatic Species at Risk under federal jurisdiction (*Species at Risk Act*, SARA). They provide permitting under the Act in partnership with the local conservation authority who provides initial review under the Fisheries Act.

The Fisheries Act defines fish habitat as “spawning grounds and nursery, rearing, food supply, migration and any other areas on which fish depend directly or indirectly in order to carry out their life processes”. Section 35(1) of the Federal Fisheries Act prohibits the harmful alteration, disruption or destruction (HADD) of fish habitat. DFO can issue a Subsection 35(2) Authorization for a HADD of fish habitat, but first require sufficient information on the existing fish habitat as well as the extent of the proposed impacts. DFO relies on sound science and their Risk Management Framework (RMF) to determine if and how the Fisheries Act applies to specific areas and proposed impacts.

DFO provides SCRCA authority to screen projects on their behalf for potential impacts to fish and fish habitat. Any project proposing HADD of fish habitat will be referred to DFO for their review.

#### 4.5.8 Transport Canada

Transport Canada is responsible for enforcing legislation and regulations as they relate to waterways within Canada. For this project the role of Transport Canada is to administer the Navigable Waters Protection Act (NWP) and provide approval for any works that impact navigation of certain waterways.

An application for review was made to Transport Canada. Approval was received to proceed with works according to the approved General Arrangement drawing.

#### 4.5.9 Ministry of Tourism, Culture and Sport

Archaeological Assessments determine the archaeological potential of properties or areas and are required for all land development projects under the Planning Act and public development projects under the Environmental Assessment Act. The Ministry of Tourism, Culture and Sport (MTCS) reviews archaeological assessments to determine if they meet the requirements of the Ministry's *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011) in accordance with the *Ontario Heritage Act*, R.S.O. 1990, c. 0.18 (Ontario Government 1990). The primary focus of the Ministry is to determine if all fieldwork and reporting for an assessment has been undertaken according to the terms and conditions of a licensed archaeologist and if potential archaeological sites have been properly conserved. If assessments are accepted by the Ministry they are entered into a register of archaeological reports and development can proceed.

MTCS will review the Stage 1 Archaeological Assessment and if it is accepted into the registry they will concur with the report recommendations.

## 5. Alternative Planning Solutions

Phase 2 of the Municipal Class EA process focuses on identifying alternative solutions to the problem/opportunity and evaluating the alternative solutions to identify a recommended solution(s). All reasonable and feasible alternative solutions that could be implemented to address the problem and/or opportunity are identified and evaluated during part of Phase 2 of the Class EA process.

### 5.1 Alternative Solutions

The following alternative solutions were reviewed as part of this project.

#### **Alternative 1 - Do Nothing**

This alternative was included to provide a base to which other alternatives could be compared. Under this alternative, no measures to improve the condition of the structure were considered and therefore the bridge would remain in its present condition. This means that problems which have been identified will remain unresolved and conditions would continue to deteriorate.

#### **Alternative 2 – Abandon Existing Bridge**

This alternative would involve abandoning the existing bridge. No repairs would be undertaken. Vehicular and pedestrian traffic would be re-routed.

#### **Alternative 3 – Rehabilitate Existing Bridge**

This alternative involves rehabilitation of sections of the bridge including deck replacement, structural steel strengthening and coating, expansion joint replacement and substructure rehabilitation.

#### **Alternative 4 – Replace Existing Bridge**

This alternative involves the removal of all substructure and superstructure elements and replacement with a new bridge in the same location.

### 5.2 Evaluation Framework and Criteria

The evaluation of alternative solutions was based on a qualitative assessment to consider the feasibility of solutions/strategies and to identify significant advantages and disadvantages of each alternative with regard to the evaluation criteria developed. This framework forms the rationale for the identification of the preferred solution. A qualitative evaluation based on the environmental components, representing a broad definition of the environment as outlined in the EA Act was used and is described below.

**Table 5.1: Environmental Components**

Environmental Component	Description
<b>Social/Cultural</b>	Component that evaluates potential effects on residents, neighbourhoods, businesses, community character, social cohesion, community features, and historical/archaeological and heritage components.
<b>Natural Environment</b>	Component having regard for protecting significant natural and physical elements of the environment (i.e. air, land, water and biota) including natural heritage and environmentally sensitive policy areas.
<b>Technical</b>	Component that considers technical suitability and other engineering aspects of the solutions.
<b>Economic/ Financial</b>	Component that considers the potential effect on costs.

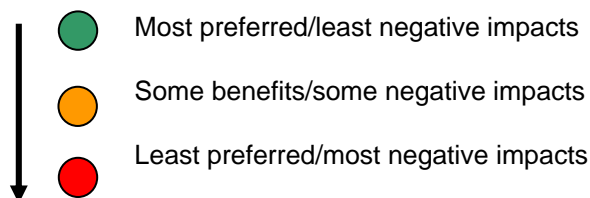
To assess the suitability of each alternative solution, a qualitative evaluation was used to identify significant advantages and disadvantages using a specific set of criteria developed for each environmental component (social/cultural, natural environment, technical and economic environments). **Table 5.2** outlines the evaluation criteria identified for this project.

**Table 5.2: Evaluation Criteria**

CRITERIA	ISSUE	RATIONALE
<b>SOCIAL / CULTURAL</b>	Public Health and Safety	<ul style="list-style-type: none"> <li>Bridge structural safety</li> <li>Disruption/inconvenience to public during construction</li> </ul>
	Cultural Heritage Resources	<ul style="list-style-type: none"> <li>Disruption of site having significant archaeological, historical, or architectural value</li> </ul>
	Aesthetics	<ul style="list-style-type: none"> <li>Visual appearance with or without mitigation</li> <li>Materials used in construction</li> </ul>
	Nuisance Impacts	<ul style="list-style-type: none"> <li>Noise &amp; traffic disruption during construction</li> </ul>
	Property Impacts	<ul style="list-style-type: none"> <li>Potential acquisition of additional land for construction</li> </ul>
	Pedestrian/cyclist Impacts	<ul style="list-style-type: none"> <li>Potential rerouting or sidewalks and paths</li> </ul>
	Impacts to Existing Land Use	<ul style="list-style-type: none"> <li>Disruption to existing businesses adjacent to study area</li> </ul>
	Aboriginal Issues	<ul style="list-style-type: none"> <li>Land Claims/Treaty Rights</li> </ul>
<b>NATURAL ENVIRONMENT</b>	Terrestrial Wildlife / Vegetation	<ul style="list-style-type: none"> <li>Reduction or deterioration of wildlife habitat</li> <li>Effects on wildlife habitat related to food and shelter</li> <li>Effects of contamination on wildlife</li> <li>Effects of timing of construction on breeding periods</li> <li>Removal or disturbance of significant trees and/or ground flora</li> <li>Changes in vegetation composition</li> </ul>
	Aquatic Life/Vegetation	<ul style="list-style-type: none"> <li>Reduction or deterioration of habitat</li> <li>Effects of contamination on aquatic life</li> <li>Effects of timing of construction on spawning periods</li> <li>Changes in vegetation composition</li> </ul>
	Water Quality	<ul style="list-style-type: none"> <li>Changes in water quality</li> </ul>
<b>TECHNICAL</b>	Service Life	<ul style="list-style-type: none"> <li>Anticipated years of service</li> </ul>
	Hydraulic Performance	<ul style="list-style-type: none"> <li>Changes in hydraulic capacity</li> </ul>
	Local Traffic	<ul style="list-style-type: none"> <li>Impacts to traffic patterns</li> <li>Impacts to level of service</li> </ul>
	Design	<ul style="list-style-type: none"> <li>Materials</li> <li>Substructure, trusses, deck</li> <li>Loads</li> <li>Excavation requirements</li> <li>Protection of existing services</li> <li>Access to private properties</li> </ul>
	Construction	<ul style="list-style-type: none"> <li>Implementation</li> <li>Noise/Vibration during construction</li> <li>Construction access</li> </ul>
	Operation & Maintenance	<ul style="list-style-type: none"> <li>Adjacent property requirements</li> <li>Vegetation establishment</li> </ul>
	Approval Requirements & Regulatory Requirements	<ul style="list-style-type: none"> <li>Provincial &amp; Municipal Requirements</li> <li>Conservation Authority Requirements</li> <li>Building Code</li> </ul>
<b>ECONOMIC / FINANCIAL</b>	Total Capital Cost Estimate	<ul style="list-style-type: none"> <li>Total Project Costs (design/construction)</li> </ul>
	Operating and Maintenance Cost Estimate	<ul style="list-style-type: none"> <li>Costs associated with operation and maintenance</li> </ul>



To provide an impartial, traceable and consistent evaluation, as required by the Class EA process, the following method was used to illustrate the highest and lowest impact of each alternative relative to the evaluation criteria for each category considered (e.g., social/cultural, natural environment, technical and economic). A green circle and text illustrates the *least negative impact* or the *most preferred*, while a red circle and text illustrates the *greatest negative impact* or the *least preferred*.



The evaluation of alternatives has been captured in a matrix format to allow for direct comparison between the alternative solutions. Refer to **Table 5.3 - Evaluation of Alternative Solutions**.

### 5.3 Preliminary Recommended Solution

All viable solutions were evaluated to identify a recommended solution to address the deficiencies of the existing bridge. **Alternative 4 –Replace Existing Bridge** was brought forward at the Public Open House as the recommended solution for the following reasons:

- Functional safety upgrades including railing improvements would be implemented.
- Wider bridge cross-section will provide for sidewalks on both sides of the bridge.
- Bridge aesthetics can be improved through design.
- No known impacts to Aboriginal Communities.
- On-road cycling can be accommodated following construction.
- No aquatic Species-At-Risk in immediate vicinity of the bridge therefore no disruption to Aquatic Species-At-Risk habitat.
- No in-water works required.
- Low potential for negative impacts to water quality if erosion and sediment control measures are in place prior to rehabilitation of the bridge.
- Life expectancy of bridge will be extended. The new bridge will meet the requirements of the Highway Bridge Design code.
- The service life of a new bridge is estimated to be a minimum of 75 years.
- A new bridge would not require any rehabilitation within the next 25 to 30 years.
- New bridge girders will match the existing structure depth below the existing road surface and will maintain existing hydraulic capacity.
- A new bridge will allow for installation of railings that meet current code requirements and will aid in modernization of the bridge cross section in accordance with current standards.
- A new bridge will provide a wider cross section similar to the width of the reconstructed road east of the bridge. In the future and not part of this project the road west of the bridge will be of equal width.
- The existing abutments will be maintained in place to reduce disruption of the watercourse and to facilitate construction of the new bridge.
- Rapid bridge construction techniques can mitigate the duration of full bridge closure.
- Existing hydro line will not require relocation.
- Lowest ongoing operation and maintenance costs as rehabilitation would not be required for 30 years.

Table 5.3 - Evaluation of Alternative Solutions

Alternatives	ALTERNATIVE 1 Do Nothing No improvements or changes would be made to the bridge.	ALTERNATIVE 2 Remove Existing Bridge/ Do Not Replace Bridge	ALTERNATIVE 3 Rehabilitate Existing Bridge	ALTERNATIVE 4 Remove Existing Bridge and Replace with a New Bridge
Criteria				
<b><u>Social/Cultural Impacts</u></b> <ul style="list-style-type: none"><li>Public Health &amp; Safety</li><li>Cultural Heritage Resources (archaeological features, built heritage resources, cultural heritage landscapes)</li><li>Aesthetics</li><li>Nuisance Impacts (noise, traffic disruption during construction)</li><li>Property Impacts/acquisition</li><li>Pedestrian/cyclist access</li><li>Impact to existing Land Use</li><li>Aboriginal Issues</li></ul>	<ul style="list-style-type: none"><li>Bridge will continue to deteriorate over time with potential increased risk to public safety.</li><li>Existing railing is substandard and does not meet current safety codes.</li><li>Overall functional safety upgrades required for the structure.</li><li>Existing bridge provides a sidewalk on one side only.</li><li>No impact to cultural heritage resources within the area.</li><li>Potential loss of structure if bridge continues to deteriorate.</li><li>Existing bridge aesthetics will deteriorate over time.</li><li>Potential nuisance impacts due to on-going maintenance requirements.</li><li>No property impacts at the present time.</li><li>No known impacts to Aboriginal Communities.</li><li>Pedestrian/cycling access across Albert Street would be interrupted once the condition of the bridge deteriorates, resulting in a 1.8 km detour.</li><li>Removing the bridge would not directly impact the existing land uses, but would impact traffic patterns and pedestrian movement in the area.</li></ul>	<ul style="list-style-type: none"><li>Bridge will continue to deteriorate overtime with potential increased risk to public safety.</li><li>No impact to cultural heritage resources within the area.</li><li>Full bridge closure and traffic detouring required resulting in increased travel distances for vehicles.</li><li>No known impacts to Aboriginal Communities.</li><li>Pedestrian/cycling access across Albert Street would be interrupted once the condition deteriorates, resulting in a 1.8 km detour.</li><li>Removing the bridge would not directly impact the existing land uses, but would impact traffic patterns and pedestrian movement in the area.</li></ul>	<ul style="list-style-type: none"><li>No functional safety upgrades would be implemented.</li><li>Substandard railing could be improved.</li><li>No impact to cultural heritage resources within the area.</li><li>Stage 2 Archaeological Assessment may be required if work occurs outside of the existing right-of-way.</li><li>Full bridge closure and traffic detouring required resulting in increased travel distances for vehicles and pedestrians.</li><li>Full bridge closure may impact emergency services and reduce accessibility to hospital across Albert Street.</li><li>The structure is not designated as a Heritage Structure under the Heritage Act.</li><li>Bridge aesthetics can be maintained /improved through design.</li><li>No known impacts to Aboriginal Communities.</li><li>The County has the ability to provide a temporary pedestrian crossing north of the existing bridge for use during construction. Pedestrian access will only be available on one side of the bridge once rehabilitation is complete.</li><li>On-road cycling can be accommodated following construction.</li><li>Separate cycling lanes will not be provided.</li><li>Some disruption to the surrounding land uses during construction. Disruption typical for a roadway construction project (noise, dust, redirection of traffic).</li></ul>	<ul style="list-style-type: none"><li>Functional safety upgrades including railing improvements would be implemented.</li><li>Wider bridge cross-section will provide for sidewalks on both sides of the bridge.</li><li>Stage 2 Archaeological Assessment may be required if work occurs outside of the existing right-of-way.</li><li>Full bridge closure and traffic detouring required resulting in increased travel distances for vehicles and pedestrians.</li><li>Full bridge closure may impact emergency services and reduce accessibility to hospital across Albert Street.</li><li>The structure is not designated as a Heritage Structure under the Heritage Act. There is no local interest in preserving the structure as is by the Municipality or County.</li><li>Bridge aesthetics can be improved through design.</li><li>No known impacts to Aboriginal Communities.</li><li>The County has the ability to provide a temporary pedestrian crossing north of the existing bridge for use during construction.</li><li>On-road cycling can be accommodated following construction.</li><li>Separate cycling lanes will not be provided.</li><li>Some disruption to existing land uses during construction. Disruption typical for a roadway construction project (noise, dust, redirection of traffic).</li></ul>
<b><u>Natural Environmental</u></b> <ul style="list-style-type: none"><li>Terrestrial Wildlife &amp; Vegetation</li><li>Aquatic Life &amp; Vegetation</li><li>Water Quality</li></ul>	<ul style="list-style-type: none"><li>Potential for negative impact to terrestrial and aquatic habitat as a result of bridge deterioration overtime.</li><li>Potential for negative impacts to water quality as a result of bridge deterioration overtime.</li></ul>	<ul style="list-style-type: none"><li>Potential for disruption to terrestrial Species-At-Risk habitat.</li><li>MNR permitting under the Endangered Species Act may be required due to presence of Barn Swallow habitat on bridge.</li><li>No in-water works required.</li><li>Low potential for negative impacts to water quality if erosion and sediment control measures are in place prior to removal of the bridge.</li></ul>	<ul style="list-style-type: none"><li>Potential for disruption to terrestrial Species-At-Risk habitat.</li><li>No aquatic Species-At-Risk in immediate vicinity of the bridge therefore no disruption to Species-At-Risk habitat.</li><li>No in-water works required.</li><li>MNR permitting under the Endangered Species Act may be required due to presence of Barn Swallow habitat on bridge.</li><li>Low potential for negative impacts to water quality if erosion and sediment control measures are in place prior to rehabilitation.</li></ul>	<ul style="list-style-type: none"><li>Potential for disruption to terrestrial Species-At-Risk habitat.</li><li>No aquatic Species-At-Risk in immediate vicinity of the bridge therefore no disruption to Aquatic Species-At-Risk habitat.</li><li>No in-water works required.</li><li>MNR permitting under the Endangered Species Act may be required due to presence of Barn Swallow habitat on bridge.</li><li>Low potential for negative impacts to water quality if erosion and sediment control measures are in place prior to rehabilitation of the bridge.</li></ul>

Alternatives	ALTERNATIVE 1 Do Nothing	ALTERNATIVE 2 Remove Existing Bridge/ Do Not Replace Bridge	ALTERNATIVE 3 Rehabilitate Existing Bridge	ALTERNATIVE 4 Remove Existing Bridge and Replace with a New Bridge
Criteria	No improvements or changes would be made to the bridge.	Remove Existing Bridge/ Do Not Replace Bridge	Rehabilitate Existing Bridge	Remove Existing Bridge and Replace with a New Bridge
<b><u>Technical/ Engineering</u></b> <ul style="list-style-type: none"><li>• Service Life</li><li>• Hydraulic Performance</li><li>• Impact on local traffic patterns and level of service</li><li>• Design (materials, substructure, trusses, deck)</li><li>• Construction implementation</li><li>• Maintenance</li><li>• Approval Requirements</li><li>• Conformance with Municipal, Provincial and Regulatory requirements</li></ul>	<ul style="list-style-type: none"><li>• Deterioration of the bridge will continue until closure is required.</li><li>• No construction related impacts to adjacent community.</li><li>• No conflict with existing utilities.</li><li>• Existing traffic impacts resulting from narrow width of bridge will continue.</li><li>• Main truss is unprotected from impact loading from traffic.</li><li>• Existing load carrying capacity of bridge may be impacted by continuing corrosion/loss of existing structural steel.</li><li>• Existing concrete abutments continue to deteriorate.</li><li>• Service life potential of the existing bridge has been met.</li><li>• No agency approvals required.</li><li>• Not consistent with Provincial Policy 1.6.5.3 as discontinuing maintenance will eventually limit connectivity of the transportation system.</li></ul>	<ul style="list-style-type: none"><li>• Agency approvals required for bridge closure.</li><li>• Impacts to side streets, entrances and traffic volume as a result of bridge closure.</li><li>• Not consistent with Provincial Policy 1.6.5.3 as removing the bridge limits the connectivity of the existing transportation system.</li></ul>	<ul style="list-style-type: none"><li>• Life expectancy of bridge is estimated to be limited due to the condition of the existing components. The service life expectancy until the next rehabilitation or replacement is approximately 15 to 20 years.</li><li>• Functional upgrades to bridge width are not possible with this option. Narrow traffic lanes and one sidewalk will be maintained which is not consistent with road reconstruction east of the bridge and proposed upgrades west of the bridge.</li><li>• Full bridge closure (12 weeks) or reduction to one lane is required (8 weeks).</li><li>• Hydraulic capacity of the bridge is unchanged.</li><li>• Navigational clearances temporarily disrupted during rehabilitation.</li><li>• Temporary impacts to side streets, entrances and traffic volume as a result of full bridge closure.</li><li>• Main truss is located adjacent to the traffic load and exposed to potential impacts.</li><li>• No utility relocations required.</li><li>• Bridge rehabilitation extends service life of bridge.</li><li>• Stormwater Management treatment is required as part of the overall design.</li><li>• Sediment/erosion control required during construction to restrict debris entering the river.</li><li>• Flooding and erosion assessment required to satisfy St. Clair Region Conservation Authority requirements.</li><li>• Site is located within the St. Clair Region Conservation Authority regulated area. St. Clair Region Conservation Authority approval required.</li><li>• Consistent with Provincial Policies for “Transportation Systems” and “Transportation and Infrastructure Corridors”, including maintaining or improving connectivity within and among transportation systems and modes (1.6.5.3).</li></ul>	<ul style="list-style-type: none"><li>• Life expectancy of bridge will be extended. Will meet the requirements of the Highway Bridge Design code - Service life of new bridge is estimated to be a minimum of 75 years. A new bridge would not require any rehabilitation within the next 25 to 30 years.</li><li>• Localized disruption during rehabilitation as structure would be closed to through traffic.</li><li>• New bridge girders will match the existing structure depth below the existing road surface and will maintain existing hydraulic capacity.</li><li>• Replacement of bridge will allow for installation of railings that meet current codes requirements and modernization of bridge cross section according to current standards.</li><li>• New cross section will provide a wider roadway platform of similar dimensions as the recent road reconstruction east of the bridge and similar reconstruction /upgrades planned for the west side of the bridge.</li><li>• The existing abutments will be maintained in place to reduce disruption of the watercourse and to facilitate construction of the new bridge.</li><li>• Full bridge closure required during replacement.</li><li>• Rapid bridge construction techniques can mitigate the duration of full bridge closure.</li><li>• Lane reductions are required for remaining bridge work.</li><li>• Temporary impacts to side streets, entrances and traffic volume as a result of full bridge closure.</li><li>• Work cannot be staged due to the configuration of the existing truss structure.</li><li>• Navigational clearances temporarily disrupted during replacement.</li><li>• Existing hydro line will not require relocation.</li><li>• Existing stormwater outlets will require relocation.</li><li>• Stormwater Management treatment is required as part of the overall design.</li><li>• Sediment/erosion control required during construction to restrict debris entering the river.</li><li>• Flooding and erosion assessment required to satisfy St. Clair Region Conservation Authority requirements.</li><li>• Site is located within the St. Clair Region Conservation Authority regulated area. St. Clair Region Conservation Authority approval required.</li></ul>

Alternatives	ALTERNATIVE 1 Do Nothing No improvements or changes would be made to the bridge.	ALTERNATIVE 2 Remove Existing Bridge/ Do Not Replace Bridge	ALTERNATIVE 3 Rehabilitate Existing Bridge	ALTERNATIVE 4 Remove Existing Bridge and Replace with a New Bridge
Criteria				<ul style="list-style-type: none"><li>Consistent with Provincial Policies for “Transportation Systems” and “Transportation and Infrastructure Corridors”, including maintaining or improving connectivity within and among transportation systems and modes (1.6.5.3).</li></ul>
<u>Economic</u> <ul style="list-style-type: none"><li>Total Estimate Capital Costs</li><li>Estimated Operating &amp; Maintenance Costs</li></ul>	<ul style="list-style-type: none"><li>No associated capital cost as nothing would be implemented.</li><li>Potential for ongoing operation and maintenance costs as bridge continues to deteriorate.</li></ul>	<ul style="list-style-type: none"><li>Low capital costs.</li><li>Low operation and maintenance costs.</li></ul>	<ul style="list-style-type: none"><li>Medium capital costs.</li><li>High future maintenance costs.</li></ul>	<ul style="list-style-type: none"><li>Highest capital costs.</li><li>Lowest ongoing operation and maintenance costs as rehabilitation would not be required for 30 years.</li></ul>

Legend

Most preferred least negative impacts

Some benefits, some negative impacts

Least preferred most negative impacts

## 5.4 Consultation

Public involvement is an important and mandatory component of the Class EA process. Section 2.3 of this report provides an overview of the input received as part of the consultation and communication program for this project. This section details consultation undertaken with relevant agencies, affected landowners, Aboriginal communities and members of the public through meetings and correspondence.

### 5.4.1 Notice of Commencement

In response to the Notice of Project Commencement sent out on November 26, 2012, an enquiry was received from the Middlesex Hospital Alliance to determine the extent of construction and road closures and the potential impact to the Strathroy Middlesex General Hospital.

### 5.4.2 Agency Consultation

A meeting was held with MOE and SCRCa on January 9, 2013 to provide information on the project and to receive any issues or concerns the agencies had. No significant issues were raised. **Table 5.4** provides an overview of the issues/comments raised.

### 5.4.3 Stakeholder Consultation

A stakeholder presentation was held on February 6, 2013 with the Municipality of Strathroy-Caradoc and the Middlesex Hospital Alliance to provide an overview of the project, discuss issues and considerations and to discuss the possible project alternatives.

### 5.4.4 Public Information Centre

A Public Information Session (PIC) was held on May 2, 2013 at the Strathroy-Caradoc Town Hall. The intent of the meeting was to provide the public with information on the study regarding existing conditions, environmental issues, alternatives considered and evaluated and to present the recommended preferred alternative. One (1) resident was in attendance at this meeting.

**Table 5.4** provides a summary of the comments received.

**Table 5.4: Summary of Stakeholder Comments**

Review Agency/Special Interest Group/ / Public	Summary of Comments/Questions Received
Members of the Public	Concerns relating to the sight lines of the new railing vs the existing railing.
MOE	<p>Would design alternatives be considered as part of this project?</p> <p>Location of infrastructure associated with the project.</p> <p>Protection measures as a result of using existing bridge abutments and constructing new abutments adjacent to existing.</p> <p>Stormwater treatment as a result of increased cross section.</p> <p>Aboriginal consultation to include more than notifications.</p> <p>Any proposed temporary pedestrian links constructed should be assessed and documented appropriately.</p> <p>Approval required for a permit to take water if necessary.</p>



SCRCA	Interested in the hydraulic capacity of the Sydenham River. Approval required by SCRCA. Approvals under the Fisheries Act may be required.
Middlesex Hospital Alliance	Concerns relating to construction and road closures and impacts to EMS.

All material related to public consultation for this project can be found in **Appendix G**.

#### 5.4.5 Aboriginal Consultation

Consultation with Aboriginal communities and agencies was undertaken to determine the potential effect of the project on lands/treaty rights and their interest in the study. Consultation was carried out through direct correspondence to the Ministry of Aboriginal Affairs (MAA), Aboriginal Affairs and Northern Development Canada (AANDC) and local councils (Chippewas of the Thames, Oneida Nation of the Thames, Aamjiwnaang, Caldwell First Nation, Munsee-Delaware Nation, Bkejwanong Territory, Delaware Nation and Chippewas of Kettle & Stony Point).

Information was received from the Federal and Provincial agencies regarding Aboriginal communities having interest in the vicinity of the study area. Additionally, two (2) Aboriginal communities acknowledged receipt of the information provided to them and indicated further correspondence may be necessary. One of these communities (Caldwell First Nation) requested additional information on water quality issues and SAR. Information was provided to the community and no further comments were received.

All material related to Aboriginal consultation for this project can be found in **Appendix H**.

## 6. Preferred Solution

Further to the alternative evaluation and public, stakeholders, Aboriginal and agency input, **Alternative 4 – Replace Existing Bridge** is recommended as the preferred solution. This section of the report describes the conceptual design details and requirements for the replacement of the Albert Street Bridge.

### 6.1 Conceptual Design Details

The following work is recommended for the Albert Street Bridge and is illustrated on **Figure 6.1: Preferred Solution**.

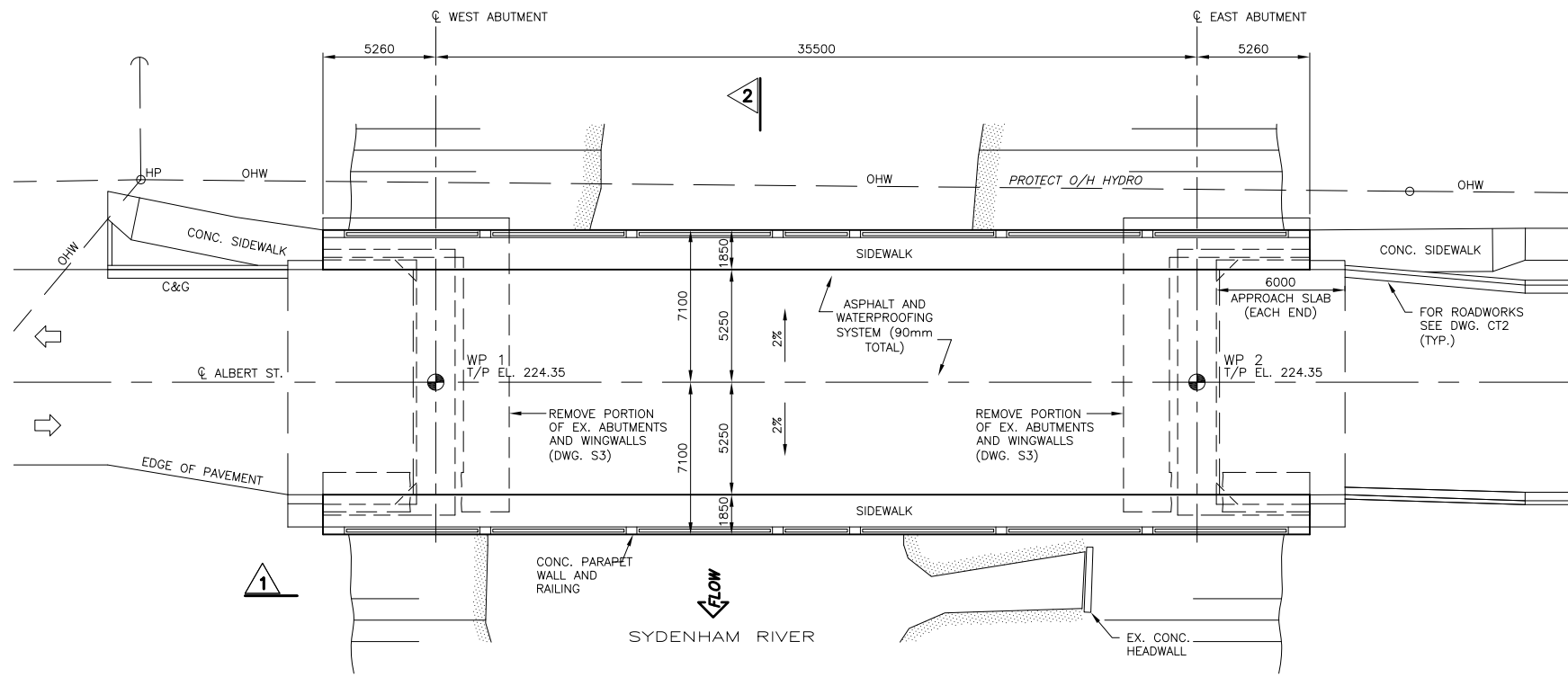
- The existing steel truss structure and concrete deck will be completely removed. The top portion of the existing concrete abutment and a portion of the existing concrete wingwalls will be removed to suit the new bridge construction.
- The proposed bridge is a 35.5 m long single span, precast concrete box girder structure. The concrete box girders are 1 m deep and incorporate a 225 mm deck slab. The box girders will be connected with longitudinal grouted and reinforced pockets. The top surface of the deck will consist of waterproofing and two layers of asphalt paving.
- The superstructure will be supported on a precast concrete cap and steel H-piles driven into the approach fill (friction piles). The width of the structure will be 15.7 m, incorporating a 1.5 m wide sidewalk on both sides of the bridge and a 10.5 m wide roadway platform for two through lanes and one middle turn lane (future configuration) on Albert Street.
- There will be a concrete parapet wall (similar to a Performance Level 2 type system) with railings on both sides of the bridge.
- Asphalt paving will extend on both bridge approaches and match existing pavement elevations.

### 6.2 Construction Staging and Traffic Management

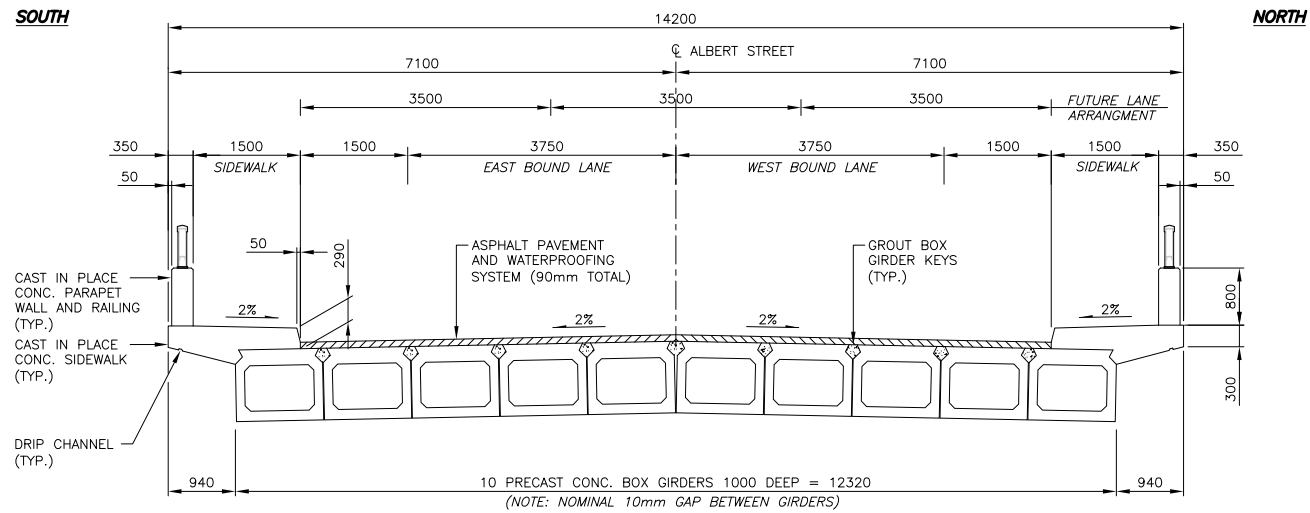
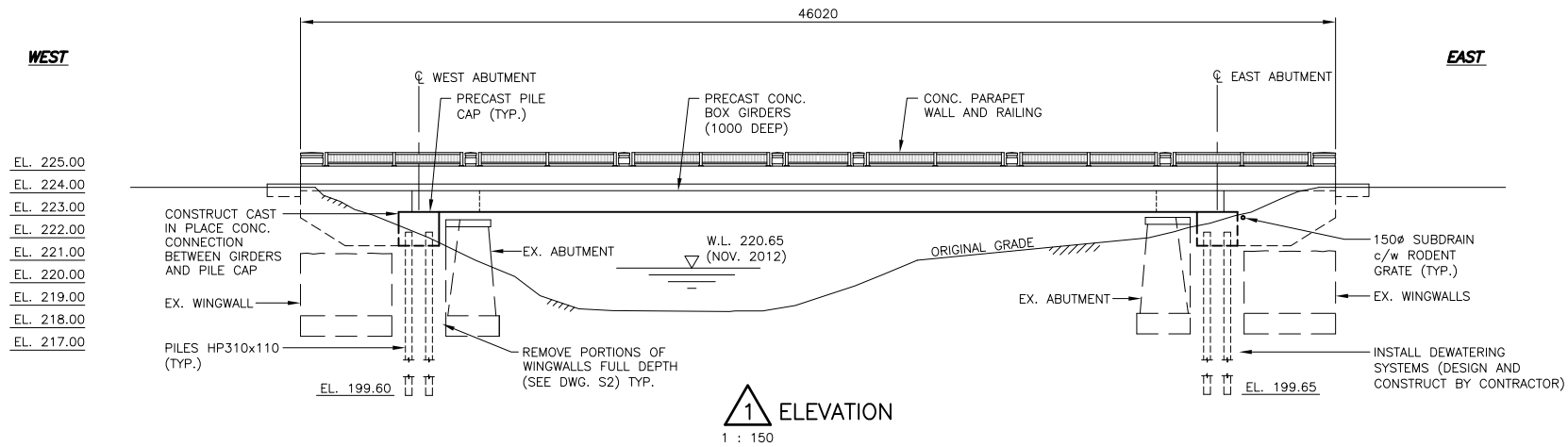
Due to the structural composition of pony truss structures, the existing bridge structure on Albert Street cannot be replaced in stages. Full closure of vehicular and pedestrian traffic on Albert Street is required to facilitate the removal of the structure.

Local detours and bypass detours for vehicular traffic during construction will be provided. Considerations for the main detour routes included truck traffic levels, general road traffic volumes, locations of traffic signals and County Road designations. The main north-south and east-west detour routes for local traffic are Carrie Street and Salisbury Street respectively and Kerwood Road (County Road 6) and Egermont Drive (County Road 22) for truck and bypass traffic. Appropriate signage will be located in advance of the detours. Refer to Figure 6.2 for traffic detour plans.

Techniques of rapid bridge construction will be incorporated into the design of the new bridge to reduce construction duration. While the total duration of construction is 16 weeks, Albert Street will be closed to traffic for a total of 8 weeks. Inclusion of Contractor Incentive/Disincentive clauses as well as extended working hours for particular construction operations will also be considered.



P L A N  
1 : 150



 SECTION  
1 : 50

**GENERAL NOTES :**

1. CLASS OF CONCRETE :
- |                     |        |
|---------------------|--------|
| PRECAST BOX GIRLERS | 50 MPa |
| SHEAR GROUT KEY     | 50 MPa |
| REMAINDER           | 35 MPa |
2. CLEAR COVER TO REINFORCING STEEL :
- |           |             |
|-----------|-------------|
| FOOTINGS  | 100±25      |
| REMAINDER | 70±25 (UNO) |
3. REINFORCING STEEL :
- (1) REINFORCING STEEL SHALL BE GRADE 400 UNLESS OTHERWISE SPECIFIED.
- (2) BARS MARKED WITH PREFIX 'S' DENOTE STAINLESS STEEL BARS.
- (3) STAINLESS REINFORCEMENT STEEL SHALL BE TYPE 316LN OR DUPLEX 2205 AND HAVE A MINIMUM YIELD STRENGTH OF 420 MPa.
- (4) UNLESS SHOWN OTHERWISE, TENSION LAP SPLICES SHALL BE CLASS B.
- (5) BAR HOOKS SHALL HAVE STANDARD HOOK DIMENSIONS USING MINIMUM BEND DIAMETERS, WHILE STIRRUPS AND TIES SHALL HAVE MINIMUM HOOK DIMENSIONS. ALL HOOKS SHALL BE IN ACCORDANCE WITH THE STRUCTURAL STANDARD DRAWING SS12-1 AND SS12-2, UNLESS INDICATED OTHERWISE.

**CONSTRUCTION NOTES :**

1. THE CONTRACTOR SHALL VERIFY EXISTING DIMENSIONS AND DETAILS ON SITE AND REPORT ANY DISCREPANCIES TO THE CONTRACT ADMINISTRATOR BEFORE PROCEEDING WITH THE WORK.
2. BEFORE STARTING WORK THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM. EXISTING UTILITIES SHALL REMAIN OPERATIONAL THROUGHOUT CONSTRUCTION. FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION.
3. SAFEGUARD ALL EXISTING STRUCTURES, SERVICES AND UTILITIES WHO WILL BE AFFECTED BY THE WORK OF THIS CONTRACT. UTILITIES DAMAGED OR DISTURBED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE CONTRACT ADMINISTRATOR AT THE CONTRACTORS EXPENSE.
4. CONTRACTORS LAYDOWN AREA SHALL BE FIELD LOCATED WITH CONTRACT ADMINISTRATOR.
5. RESTORE ALL DISTURBED AREAS TO ORIGINAL OR BETTER CONDITION.
6. ALBERT STREET (COUNTY ROAD 39) TO BE CLOSED AT ALBERT STREET BRIDGE DURING PHASE 1. SHORT DURATION LANE REDUCTIONS ONLY FOR PHASE 2.
7. THE CONTRACTOR SHALL CONTROL ALL SEDIMENT FROM ENTERING THE WATERWAY TO THE SATISFACTION OF THE CONTRACT ADMINISTRATOR.
8. REMOVED MATERIALS FROM THE CONTRACT SITE SHALL BE DISPOSED OF AT AN APPROVED SITE. ARRANGED FOR BY THE CONTRACTOR.
9. CONTRACTOR TO PREPARE AND MAINTAIN A WORKING AS BUILT FULL SIZE "REDLINE" MARKUP SET OF THE CONTRACT DRAWINGS. WORKING AS BUILTS SHALL BE KEPT CURRENT ON A WEEKLY BASIS. THE "REDLINE" SET SHALL DEPICT ALL CURRENT VARIATIONS/DEVIATIONS (INCLUDING, BUT NOT LIMITED TO THE FOLLOWING, ADDENDUMS, CHANGE ORDERS, FIELD ADJUSTMENTS, EXISTING AND NEW UTILITY LINES). MEASUREMENTS ARE TO BE SHOWN FOR ALL CHANGE OF DIRECTION POINTS AND ALL COMPONENTS. THESE SHALL BE SHOWN WITH TWO OFFSET DISTANCES TO PERMANENTLY FIXED FEATURES.

### DESIGN SPECIFICATIONS :

1. CAN/CSA STANDARD 56-00, 2000 EDITION, THE CANADIAN HIGHWAY BRIDGE DESIGN CODE.
2. ALL MATERIALS AND CONSTRUCTION SPECIFICATIONS SHALL BE IN ACCORDANCE TO THE ONTARIO PROVINCIAL STANDARDS, MIDDLESEX COUNTY STANDARDS AND THE OCCUPATIONAL HEALTH AND SAFETY ACT (OHSA).

**REFERENCE PLANS :**

DETAILS OF EXISTING BRIDGE HAVE BEEN DERIVED FROM DRAWINGS BY DEPARTMENT OF HIGHWAYS ONTARIO, OCTOBER, 1937, THE CANADIAN BRIDGE COMPANY, OCTOBER, 1937, MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, DATED JUNE, 1977, AND DILLON CONSULTING ENGINEERS AND PLANNERS, MAY 1995 AND MARCH 1996.

**APPLICABLE STANDARD DRAWINGS :**

OPSD 3950.100 JOINTS, CONCRETE EXPANSION  
AND CONSTRUCTION ON  
STRUCTURE

**GEOTECHNICAL INVESTIGATION :**

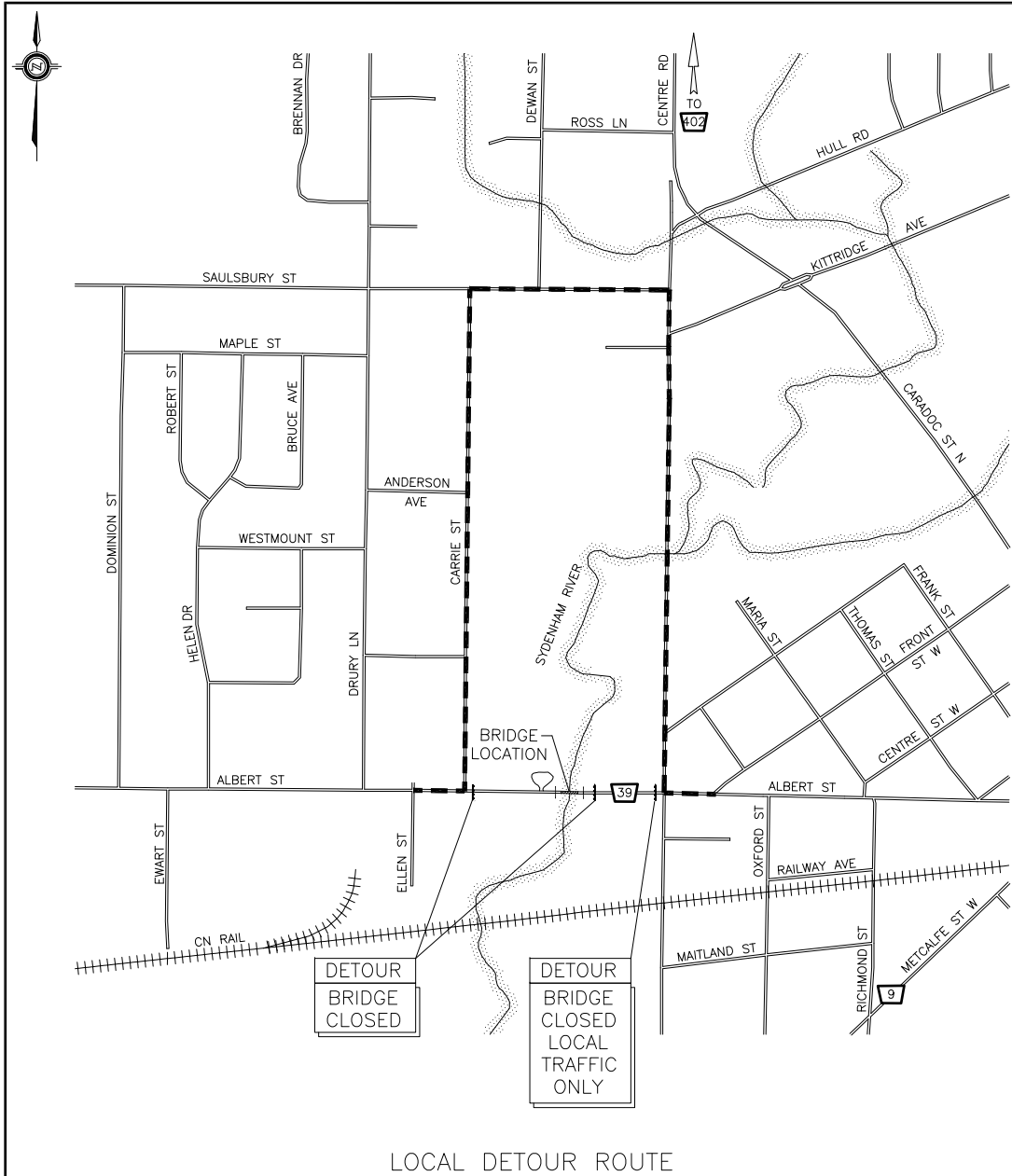
REPORT BY GOLDERS ASSOCIATED LTD.,  
REPORT NUMBER 12-1132-0133-1000-R01,  
DATED FEB. 2013.

**LIST OF ABBREVIATIONS :**

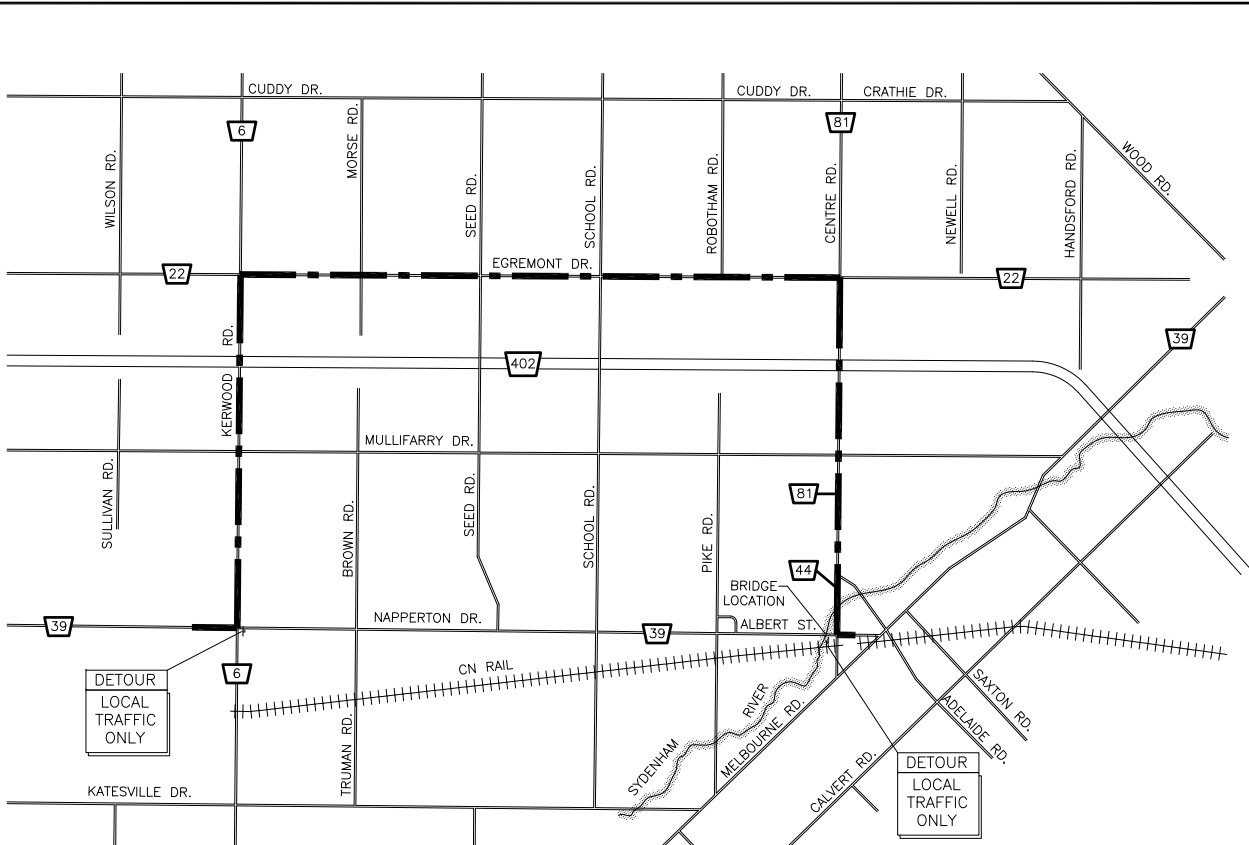
℄	CENTRELINE	T/P	TOP OF PAVEMENT
C.J.	CONSTRUCTION JOINT	TYP.	TYPICAL
DWG.	DRAWING	WP	WORKING POINT
EL.	ELEVATION (METRES)	W.L.	WATER LEVEL
EX	EXISTING	UNO	UNLESS NOTED
EXP	EXPANSION		OTHERWISE
MIN.	MINIMUM		

<div>COUNTY OF MIDDLESEX</div> <div>ALBERT STREET BRIDGE, STRATHROY ONTARIO</div> <div>BRIDGE No. ST-04 (MTC SITE 19-194)</div> <div>BRIDGE REPLACEMENT</div> <div>FIGURE 6.1: PREFERRED SOLUTION</div> <div>GENERAL ARRANGEMENT</div>				<div>PREPARED BY</div> <div>AECOM</div> <div>THIS DRAWING HAS BEEN PREPARED FOR USE BY THE COUNTY OF MIDDLESEX AND ITS PARTIES, EXCEPT AS AGREED BY AECOM AND MIDDLESEX. IT IS NOT TO BE REPRODUCED OR RELIED UPON BY THIRD PARTIES WITHOUT THE WRITTEN CONSENT OF AECOM. AECOM ACCEPTS NO RESPONSIBILITY TO ANY PARTY THAT MODIFIES THIS DRAWING WITHOUT THE WRITTEN CONSENT OF AECOM. THIS DOCUMENT AND ITS CONTENTS MUST BE OBTAINED FROM STATED DIMENSIONS.</div>	<div>PREPARED FOR</div> <div></div> <div>Middlesex COUNTY</div>	<div>AECOM</div> <div>250 YORK STREET</div> <div>LONDON, ONTARIO</div> <div>N6B 6K2 CANADA</div> <div>519-487-73-0510</div>	<div>VERIFY SCALE IF PLAN SHEET IS REDUCED</div> <div>1" = 30 CM</div>			
<div>PROJECT START DATE (M/Y)</div> <div>JUNE 2013</div>	<div>PROJECT NO.</div> <div>60275667</div>	<div>FILENAME</div> <div>Figure 5.1 Preferred.dwg</div>	<div>SHEET NO.</div> <div>8 of 18</div>	<div>DRAWING NO.</div> <div>S1</div>	<div>DRN:</div> <div>T.G.</div> <div>CHK: —</div>	<div>DES:</div> <div>J.P.</div> <div>APP: —</div>	<div>REV</div> <div>0</div>	<div>ISSUED FOR REVIEW</div> <div>T.G. X</div>	<div>CHK</div> <div>X</div>	<div>DATE (YMD)</div> <div>X</div>





LOCAL DETOUR ROUTE



TRUCK DETOUR ROUTE

COUNTY OF MIDDLESEX ALBERT STREET BRIDGE, STRATHROY ONTARIO BRIDGE No.ST-04 (MTC SITE 19-194)		PROJECT START DATE ( M / Y ) JUNE 2013	
BRIDGE REPLACEMENT FIGURE 6.2: TRAFFIC MANAGEMENT PLAN		PROJECT NO. 60275667	
		FILENAME Figure 6.2 Detour.dwg	
		SHEET NO. 4 of 17	
		DRAWING NO. CT4	
PREPARED BY <b>AECOM</b> THIS DRAWING HAS BEEN PREPARED FOR USE OF AECOM'S CLIENT AND MAY NOT BE USED, REPRODUCED, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, WITHOUT THE WRITTEN PERMISSION OF AECOM. AECOM ACCEPTS NO RESPONSIBILITY, AND DENIES ANY LIABILITY WHATSOEVER, TO ANY PARTY THAT MODIFIES THIS DRAWING WITHOUT SCALE. THIS DOCUMENT, ALL MEASUREMENTS MUST BE OBTAINED FROM STATED DIMENSIONS.		PREPARED FOR  AECOM 250 YORK STREET LONDON, ONTARIO N6B 6K2 CANADA 516-473-0510	
		DRN: T.G. CHK: — APP: — DES: —	
		REV 0 ISSUED FOR REVIEW	
		DESCRIPTION	
		T.G. X X X X DRN CHK DATE (YMD)	
		VERIFY SCALE IF PLAN SHEET IS REDUCED 30 CM	

## 6.3 Environmental Recommendations

Based on the Natural Environment Background Information received and field surveys completed (Section 4.3 & Appendix D), the following recommendations are provided.

- Correspondence with the OMNR regarding the presence of nesting Barn Swallow under the bridge should be continued to determine the best course of action to address this issue. The following rules will apply to this project as identified under the ESA for altering a structure that is habitat for a Barn Swallow;
  - Report a rare species sighting to the Natural Heritage Information Centre;
  - Register the work and the affected species with MNR (before work begins);
  - Minimize the effect of the activity on Barn Swallow (i.e., remove existing nests, install and monitor exclusion netting);
  - Create and maintain new habitat for Barn Swallow at the existing location or at a new nearby structure;
  - Monitor the new habitat and report on observations; and
  - Prepare and maintain records that relate to the activity and habitat.
- Any works that will take place within the SCRCA Regulation Limits will require a permit under the Ontario Regulation 171/06.
- No in-water works are anticipated as a result of the proposed work.
- Should the removal of woody vegetation be required it will be completed outside of the breeding bird season, which typically ranges from May 1<sup>st</sup> to July 31<sup>st</sup>. If the removal of woody vegetation is required during this period the area(s) that the removal is to occur will be surveyed for nesting birds by a qualified professional.
- Should the proposed works be in close proximity to any trees that are not to be removed by the proposed works tree protection fencing should be installed 2 to 5 m outside of the dripline for that species.
- Where restoration plantings take place native salt tolerant species which are typically associated with the vegetation communities within the study area will be utilized where feasible.

## 6.4 Geotechnical Recommendations

Based on the Geotechnical Investigation undertaken and the anticipated foundation loads for the new bridge structure, a piled foundation was recommended. Steel H-piles (HP 310x110 type) can be driven to a depth of approximately 22 m. To achieve the required overall load resistance, two rows of piles are recommended.

- Piles should be installed and monitored in accordance with OPSS 903.
- For construction of integral abutments it will be necessary to install sections of 3m long, 600mm diameter steel pipes below the bottom of the pile caps to provide the flexibility required for the integral abutment design. These pipes will extend to about elevation 218.6m or about 3.5m below the measured groundwater level and must have the soil within them removed for pile installation.
- Backfill adjacent to abutments should consist of free draining Granular B Type I material. Effective drainage of the backfill should be provided using properly filtered weep holes and drains.
- Erosion and scour protection adjacent to, as well as both upstream and downstream of the abutments will be required. Based on the nature of the soils, the provision of a robust, non-woven separation geotextile beneath any rip rap is required.

- Recommended thickness and types of materials for new pavement reconstruction associated with the proposed bridge replacement are as follows:
  - HL3 Surface Asphalt (50mm)
  - HL 8 Binder Asphalt (100mm)
  - Granular A Base (150mm)
  - Granular B Subbase (400mm)

Complete geotechnical recommendations are found in Appendix F.

## 6.5 Archaeological Recommendations

Based on the findings of the Stage 1 assessment, a Stage 2 assessment is not required unless work is undertaken in undisturbed areas.

## 6.6 Transport Canada Recommendations

The following Navigable Waters Works Regulations, Section 5 and 6, apply to the construction of the proposed bridge:

- No person shall permit any tools, equipment, vehicles, temporary structures or parts thereof used or maintained for the purpose of building or placing a work in navigable water to remain in such water after the completion of the project.
- Where a work or a portion of a work that is being constructed or maintained in a navigable water causes debris or other material to accumulate on the bed or on the surface of such water, the owner of that work or portion of that work shall cause the debris or other material to be removed to the satisfaction of the Minister.

Additionally, the following NWPA terms and conditions apply (NWPA subsections 5(1) and (3)):

- A sign stating "Construction Ahead" shall be placed and maintained 100 metres upstream of the work during all periods of in stream activity taking place between April and October of any year.
- A minimum navigational clearance of 1.5 metres vertical by 3 metres horizontal shall be maintained during all periods of in stream activity taking place between April and October of any year.
- All vessels navigating the waterway shall be allowed access through or around the work site at all times during construction and shall be assisted as necessary.
- The Minister or his representatives must be allowed unimpeded access to any site related to the project for inspection and/or monitoring purposes.

Upon commencement of project works, a Statutory Declaration must be signed by a Commissioner of Oaths and returned to Transport Canada (Sarnia), complete with photographs as evidence of all conditions of Approval are being met (**Appendix I**).

## 6.7 Permits and Approvals

As part of the detail design process, the following permits/approvals will be required:

- St. Clair Region Conservation Authority - the structure falls within the SCRCA regulated area therefore approval under Ontario Regulation 171/06 is required.
- Department of Fisheries and Oceans – It is the intent of this project that the work will be completed such that no in-water work will be required. Once further details are determined for the bridge and construction

impacts, discussions will be held with SCRCA to determine the extent of documentation required (if necessary).

- Approval has been received under the NWP from Transport Canada to proceed with works according to the approved General Arrangement drawing (**Section 6.7** and **Appendix I**).
- Ontario Ministry of Natural Resources – may require a letter of advice issued by the OMNR provided that, the design of the bridge would allow/promote the continued use of the bridge for Barn Swallow nesting and the completion of the works outside of the nesting period for this species (typically late May to Mid-August (Brown et al. 1999). OMNR indicated that further details regarding the project would be required prior to determining the appropriate course of action.
- Acceptance of the archaeological assessment is required by MTCS into the register of archaeological reports.

## 6.8 Construction Mitigation Measures

Mitigative measures will be incorporated during detailed design to protect and /or enhance the environment against negative impacts.

- All work will comply with current County standards and widely acceptable construction practices.
- Normal construction monitoring procedures will be undertaken to ensure proper monitoring and mitigation measures are implemented.
- Silt fencing will be required adjacent to construction areas to prevent runoff toward the Sydenham River. The integrity of all sediment trapping devices must be monitored regularly (weekly and following rain events) and properly maintained. Such structures are to be removed only after the soils of the construction areas have been stabilized and then only after the trapped sediments have been removed.
- Materials from the existing bridge structure and waste from removal methods (eg. concrete sawcutting effluent) will be contained upon removal and not permitted to fall into the water course.

## 6.9 Costs

The preliminary cost estimate to implement the recommended alternative is approximately \$2,160,000. This estimate includes all necessary road works, bridge work and miscellaneous costs. See **Appendix J** for details of the preliminary cost estimate.

## 6.10 Preliminary Project Schedule

Subject to County Council approval, the following schedule has been identified:

- Detailed design: October 2013 – December 2013
- Project tendering: January 2014
- Start of construction: June 2014
- Full road closure: July and August 2014
- Completion of construction: September 2014.

## 7. Class EA Project Completion

This Screening Report has been prepared as per the Municipal Class EA process for **Schedule B** projects. It outlines the process which Middlesex County has undertaken to confirm the feasibility of replacing the Albert Street Bridge in order to provide a wider structure to accommodate additional capacity for vehicular, pedestrian and cyclist traffic. This process has involved mandatory contact with the directly affected public, stakeholders Aboriginal communities and review agencies to ensure that they were aware of the project and that their concerns have been addressed, along with a detailed evaluation of all reasonable and feasible solutions, leading to a recommended and preferred solution. This represents the conclusion of the planning procedures as outlined in the Municipal Class EA process. This section of the report outlines the next steps to be completed prior to the County proceeding with the replacement of the Albert Street Bridge.

### 7.1 Filing Procedure

By following the procedures outlined in the Municipal Class EA document (revised October 2000, as amended in 2007 and 2011), for the solicitation of input from members of the public, stakeholders, Aboriginal communities and interested agencies, all significant concerns were identified, discussed and where applicable, incorporated into the draft report, and development of the preferred solution documented herein.

The draft report will be placed on public record (filed with the County Clerk and the Township), for the required thirty (30) day review period, during which time interested parties are invited to review its contents. The public thereby has the opportunity to change the status of this project from a Schedule 'B' Municipal Class EA to an individual environmental assessment, should any concerns remain unresolved. The procedure is termed a "Part II Order" and may result in a formal public hearing.

The "Part II Order" procedure is described by the "Municipal Class Environmental Assessment" document, (revised October 2000, as amended in 2007 and 2011), as follows:

1. A person with a concern brings it to the attention of the proponent (i.e. Middlesex County) and AECOM during the Planning Process;
2. If the concern cannot be resolved through discussions with the proponent, the person may request that the proponent voluntarily elevate the project to an individual environmental assessment;
3. If the proponent refuses and the person with the concern wishes to pursue the matter, they shall make a written submission to the Minister of the Environment at 135 St. Clair Avenue West, 15<sup>th</sup> Floor, Toronto, Ontario, M4V 1P5, with a copy to the proponent and AECOM, requesting the Minister to comply with 'Part II' of the Environmental Assessment Act. This written request must be submitted to the Minister within the thirty (30) calendar day review period (commencing once the proponent has filed the Screening Report on the public record for public review and issued the Notice of Completion);
4. The Minister shall consider both sides of the argument and make a decision;
5. If the Minister agrees to the "Part II Order" request, then the Minister shall give notice with reasons to the proponent and the person requesting the "Part II Order" that the Class EA approval does not apply to the specific project under discussion. The proponent shall then be required to prepare and submit an Individual EA for that project; or resolve the issue with the person making the request, or defer the project;
6. If the Minister does not agree to the "Part II Order" then the Minister shall give notice with reasons to the person making the request and to the proponent.



## 7.2 Notification of Completion

In accordance with the Class EA document a Notice of Completion was advertised in the Strathroy Age Dispatch on October 10, 2013 and October 17, 2013 and mailed out to each of the previously contacted review agencies, property owners, Aboriginal communities and stakeholders on October 07, 2013. This notice outlined the project's completion, included the recommended solution, the thirty (30) day review period and the right to request the Minister of the Environment to issue an order to comply with Part II of the EA Act. The report was placed on public record on October 14, 2013 for public and stakeholder review at the Strathroy-Caradoc Town Hall, the Strathroy Library, the County of Middlesex office and the London office of AECOM. Comments and/or concerns are to be submitted no later than November 12, 2013. Anyone who still has any outstanding concerns, within the thirty (30) day review period can request the Minister of Environment to issue an order to comply with Part II of the EA Act if this concern cannot be addressed by the Municipality. This is known as a "Part II Order", bumping up the status of the project to full Individual Environmental Assessment. Details about the "Part II Order" procedure are included in Section 7.1 of this report and in the Notice of Completion provided in **Appendix K**.

The work undertaken in preparing and filing this report represents completion of the Class EA process. Subject to the completion of the mandatory thirty (30) day review period, and no Part II Order requests, the County intends to proceed with detailed design in 2013 and implementation in 2014.