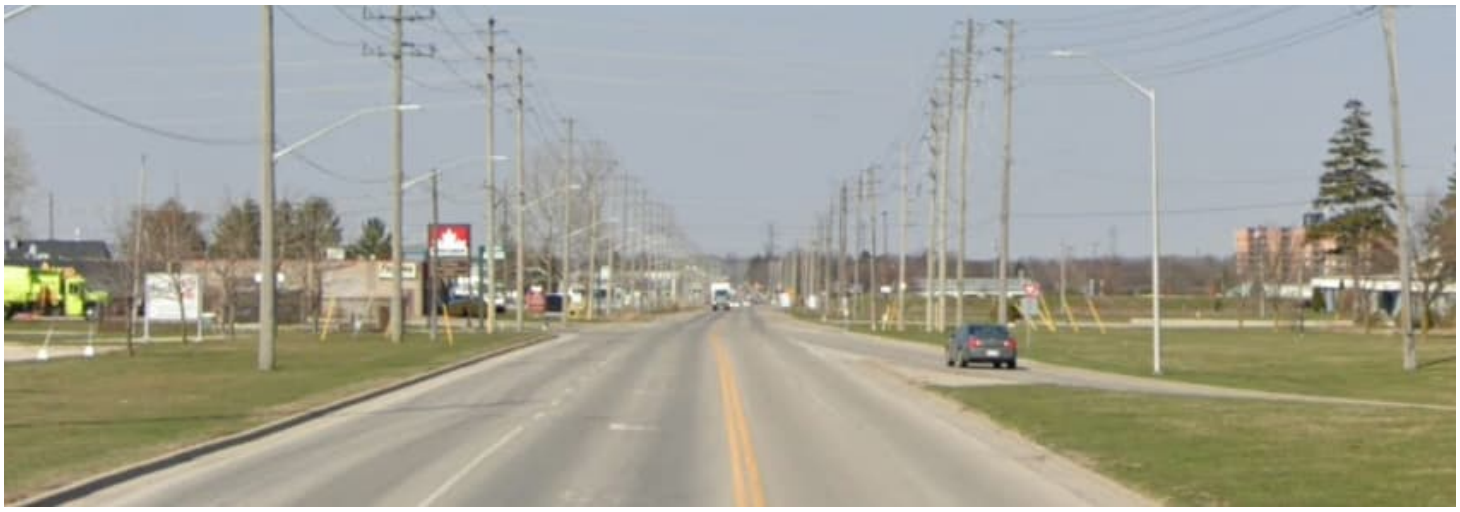

Highbury Avenue Widening Municipal Class Environmental Assessment Study

Environmental Study Report

Final

November 7, 2023

Prepared for:

RVA

ST. THOMAS
THE RAILWAY CITY

Highbury Avenue Widening Municipal Class Environmental Assessment Study

Environmental Study Report

Final

November 7, 2023

Prepared for:

R.V. Anderson Associates Limited
557 Southdale Road East, Suite 200
London ON N6E 1A2 Canada
T 519 681 9916 **F** 855 833 4022
rvanderson.com

RVA 226579

November 7, 2023

City of St. Thomas
545 Talbot Street, PO Box 520
St. Thomas, ON N5P 4V7

Attention: Patrick Anckaert, P.Eng., Senior Project Manager, Industrial Development

Dear Patrick:

Re: Highbury Avenue Widening Class Environmental Assessment Study
Environmental Study Report – Final

Please find enclosed the final Environmental Study Report (ESR) for the Highbury Widening Class Environmental Assessment Study completed by R.V. Anderson Associates Limited.

This Class Environmental Assessment was conducted in accordance with the requirements of the Municipal Class Environmental Assessment (Class EA) – Schedule 'C'. As such, we have prepared a Notice of Completion, for distribution to stakeholders and general advertisement inviting the public to review this Environmental Study Report. The public will be invited to provide comments or concerns with this study. If no requests have been received by the Minister of Environment, Conservation and Parks within 60 calendar days of filing of the Notice of Study Completion, the City may implement the study recommendations, complete the design and proceed to construction.

We appreciate the input received from the City and collaboration throughout the study. If you have any questions, please do not hesitate to contact the undersigned by email or at 905-681-9916 ext. 5026.

Yours very truly,

R.V. ANDERSON ASSOCIATES LIMITED
Henry Huotari, P. Eng.
Senior Project Manager

Digitally signed by Andrew McGregeor
Date: 2023.11.02 15:14:10 -04'00'

Andrew McGregor, MCIP, RPP
Senior Planner

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Highbury Avenue Widening and South Edgeware Road Improvements Class Environmental Assessment Study

Final

City of St. Thomas

In Association With:

RVA 226579

November 7, 2023

Highbury Avenue Widening and South Edgeware Road Class Environmental Assessment Study Environmental Study Report

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EXECUTIVE SUMMARY

In response to ongoing and future developments on the northeast side of the City of St. Thomas, Ontario, the announcement of a new Volkswagen electric vehicle battery plant, proposed new industrial development, and associated increases in traffic volumes on Highbury Avenue and South Edgeware Road, the City of St. Thomas is planning for improvements to Highbury Avenue and South Edgeware Road. To address the need to make operational and safety improvements along the corridors for future development and associated traffic demands, the study considered road widening, intersection improvements and upgrades, and accommodation of underground services (watermain, storm and sanitary sewer).

Various technical studies were completed to assess the existing conditions and potential impacts of the alternatives being considered. Studies included: Traffic Operations Analysis, Environmental Impact Study, Stage 1 – 2 Archaeological Assessment, Stormwater Management Strategy, Noise and Air Impact Assessments and Geotechnical Investigation. The findings of these studies were incorporated into the evaluation of alternative solutions. A Cultural Heritage Assessment was completed separately by the City.

This report summarizes the Class Environmental Assessment (Class EA) that was conducted to select the preferred solutions for improvements to Highbury Avenue and South Edgeware Road in the City of St. Thomas. The study area is outlined in Figure 1.1. Portions of this work are being conducted on Ministry of Transportation (MTO) lands, and as such the MTO Environmental Assessment (EA) process will also be satisfied.

Environmental Assessment Phase 1 – Problem & Opportunity Statement

The Need and Justification for this project was developed from the policies and programs articulated in previously prepared planning documents.

- St. Thomas Official Plan which provided the overall framework that guides growth and development in the City.
- St. Thomas Official Plan Amendment No. 90 (2018) which identifies lands in the northeast corner of the City as Employment Lands.
- St. Thomas Transportation Master Plan Update (2021) which recommends widening Highbury Avenue from two to four lanes, and South Edgeware Road from two to three lanes.

In accordance with the Phase 1 requirements of the Municipal Class Environmental Assessment process for a Schedule 'C' project, a "Problem and Opportunity Statement" was prepared following the assessment of the existing conditions within the study area to identify the various problems and opportunities to be addressed throughout the study.

The Study Problem & Opportunity Statement developed for the project is comprised of the following key elements:

- The Highbury Avenue and South Edgeware Road corridors do not balance the full range of potential users within the community, including users of all ages and abilities, pedestrians, cyclists, transit vehicles and motorists.
- The existing Highbury Avenue and South Edgeware Road corridors and subject intersections do not accommodate projected traffic volumes.
- Connectivity between the subject corridors and St. Thomas Expressway (Highway 3) requires improvements to accommodate future traffic volumes.
- The existing watermains and sewers along the corridor are not currently positioned to provide opportunities for future connection to designated development lands.

Connectivity between the subject corridors and the St. Thomas Expressway (Highway 3) was not previously examined by the City's Transportation Master Plan (2021) so an evaluation was carried out as part of this project to satisfy the Class EA Phase 2 process requirements.

Environmental Assessment Phase 2 – Alternative Solutions

A detailed examination of existing and future traffic conditions on Highbury Avenue and South Edgeware Road has confirmed that the current two-lane cross section on both roads is insufficient to accommodate future anticipated traffic demands and that widening is required. Alternative solutions to implement the Highbury Avenue widening consisted of:

- Alternative 1: Do Nothing
- Alternative 2: Widen Highbury Avenue from two to four lanes
- Alternative 3: Widen Highbury Avenue from two to five lanes

Based on the comparative evaluation that was undertaken using criteria representing the broad definition of the environment as described in the EA Act and incorporating feedback from the public and agencies, the preferred solution was identified to be Alternative 3.

The following alternative solutions (Phase 2 Class EA) to improve connectivity with Highway 3 were developed:

- Alternative 1: Do Nothing
- Alternative 2: Upgrade Centennial Avenue and Existing Intersections

- Alternative 3: Realign Highbury Avenue with New Traffic Signals at Key Intersections
- Alternative 4: Realign Highbury Avenue with New Roundabout Intersections

Based on the comparative evaluation that was undertaken using criteria representing the broad definition of the environment as described in the EA Act and incorporating feedback from the public and agencies, the preferred solution was identified to be Alternative 4: Realign Highbury Avenue with new roundabout intersections.

Following Public Information Centre #1, held in March 2023, the Phase 2 Class EA preferred solution(s) to address the problem / opportunity statement were confirmed to include:

- Widening Highbury Avenue to 4 lanes between Dennis Road and Edgeware Line.
- Widening South Edgware Road to 3 lanes between Burwell Road and eastern terminus.
- Realigning Highbury Avenue with new Roundabout Intersections including:
  - Extending Highbury Avenue south with 4 lanes to provide improved connectivity with St. Thomas Expressway (Highway 3);
  - Upgrading South Edgeware Road at Highbury Avenue intersection to a multi-lane roundabout; and
  - Upgrade St. Thomas Expressway at Centennial Ave with the new Highbury Avenue extension to a multi-lane roundabout.
- Upgrading underground services (watermain, storm and sanitary sewer) as required.

Environmental Assessment Phase 3 – Alternative Design Concepts

In Phase 3 of the EA, alternative design concepts to implement the key aspects of the preferred solution were developed and evaluated. In addition, a revised Highbury Avenue widening recommendation was put forth.

The City's Transportation Master Plan (2021) recommendation to widen Highbury Avenue to 4 lanes (as presented in PIC #1), was updated to widen Highbury Avenue to 5 lanes between Ron McNeil Line and Dennis Road and between Edgeware Line and South Edgeware Road.

The recommendation was updated based on new information regarding development along Highbury Avenue not available in 2021 including:

- Additional traffic volumes associated with the large industrial development planned along Highbury Avenue.
- Providing improved turning opportunities to additional new developments with driveway entrances along Highbury Avenue.

Based on the updated recommendation, the following alternative design concepts (Phase 3 Class EA) to widen Highbury Avenue were developed:

- Alternative 1: Widen about the Centreline
- Alternative 2: Widen to the East of the Centreline
- Alternative 3: Widen to the West of the Centreline
- Alternative 4: Do Nothing

As per the Phase 2 preferred solution, the following alternative design concepts (Phase 3 Class EA) to widen South Edgeware Road were developed:

- Alternative 1: Widen about the Centreline with an Urban Cross-Section
- Alternative 2: Widen to the East of the Centreline with a Rural Cross-Section
- Alternative 3: Do Nothing

Several alternative design concepts (Phase 3 Class EA) were developed to improve connectivity to Highway 3 for three intersections – Ron McNeil Line at Highbury Avenue, South Edgeware Road at Highbury Avenue, and Highway 3 at Highbury Avenue.

The preferred design concept after completing Phase 3 evaluations is:

- Widen Highbury Avenue between Ron McNeil Line and Dennis Road to 5 lanes to the east.
- Widen Highbury Avenue between Dennis Road and Edgeware Line to 4 lanes to the east.
- Widen Highbury Avenue between Edgeware Line and South Edgeware Road about the centreline with a 5-lane urban cross-section.
- Widen South Edgeware Road to 3 lanes about the centreline with an urban cross-section.
- Upgrade the Ron McNeil Line and Highbury Avenue intersection to a multi-lane roundabout.
- Upgrade the South Edgeware Road and Highbury Avenue intersection to a multi-lane roundabout at the northwest corner.
- Upgrade the Highway 3 and Highbury Avenue intersection to a multi-lane roundabout to the south.

Impacts, Mitigation & Monitoring

The key impacts associated with the implementation of the proposed solution and general mitigation required have been identified. In addition to the mitigation measures identified in the report, additional work will be required to be completed following the Class EA, prior to

construction. During detailed design, findings from the Class EA will be confirmed through additional investigations, planning and consultation with the public and technical agencies.

Preliminary Construction Timing and Cost Estimates

Construction is anticipated to commence in 2024, and last two construction seasons. The anticipated timeline for the proposed works is outlined in the table below.

Table ES 1 – Preliminary Timing Summary

Activity	Timing
Detailed Design	2023
Utility Relocations and Property Acquisition	Late 2023 / Early 2024
Construction	2024 / 2025

A preliminary cost estimate has been prepared for the construction of the recommended design. The preliminary cost estimate to complete the reconstruction of the roadway and intersection is $36,892,000, as shown in the table below.

Table ES 2 – Preliminary Cost Estimate

Item	Cost
Miscellaneous / General (Bonding, Insurance, Traffic Control, Pre-Condition Surveys)	$3,345,000
Roadwork	$19,184,000
Storm Sewers and Culverts	$500,000
Watermain	$750,000
Sanitary Servicing	$1,000,000
Streetlighting and Traffic Signals	$1,325,000
Temporary Works	$500,000
Subtotal	**$26,604,000**

Item	Cost
Engineering & Construction Administration (15%)	$3,998,000
Contingency (15%)	$3,998,000
Utility Relocation and Property Acquisition	$2,292,000
Total	**$36,892,000**

1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

The City of St. Thomas Transportation Master Plan Update (TMP), completed in 2021, identified the need to widen Highbury Avenue from Ron McNeil Line to Edgeware Road, and South Edgeware Road, from Burwell Road to Highbury Avenue to accommodate additional traffic from residential and industrial growth in St. Thomas. In reviewing the required improvements to these corridors as set out in the TMP and the overall transportation network, an opportunity to improve connectivity between the subject corridors and St. Thomas Expressway (ON Highway 3), was identified.

In response, the City has completed a Class Environmental Assessment (Class EA) for improvements to Highbury Avenue from Ron McNeil Line to Edgeware Road, and South Edgeware Road, from Burwell Road to Highbury Avenue. The study also considered options for improved connectivity with St. Thomas Expressway to the study corridors. The Class EA was completed to address the traffic needs as well as municipal servicing improvements (watermain, sanitary sewer, and drainage) of the corridor in consideration of ongoing and planned development.

The study was carried out as a Schedule 'C' project under the Municipal Engineers Association *Municipal Class Environmental Assessment (October 2000, amended in 2007, 2011 & 2015)* which is a planning process approved under Ontario's Environmental Assessment Act. In addition, this Environmental Study Report (ESR) will satisfy the requirements of the Ontario Ministry of Transportation (MTO) Class EA for Provincial Transportation Facilities for a Group 'B' project for work near St. Thomas Expressway (Highway 3).

1.2 Study Area

The study area included the Highbury Avenue corridor from Ron McNeil Line south to South Edgeware Road and Highway 3, South Edgeware Road from Burwell Road east to Centennial Avenue and Centennial Avenue between St. Thomas Expressway (Highway 3) and South Edgeware Road. The study area is outlined in Figure 1.1.

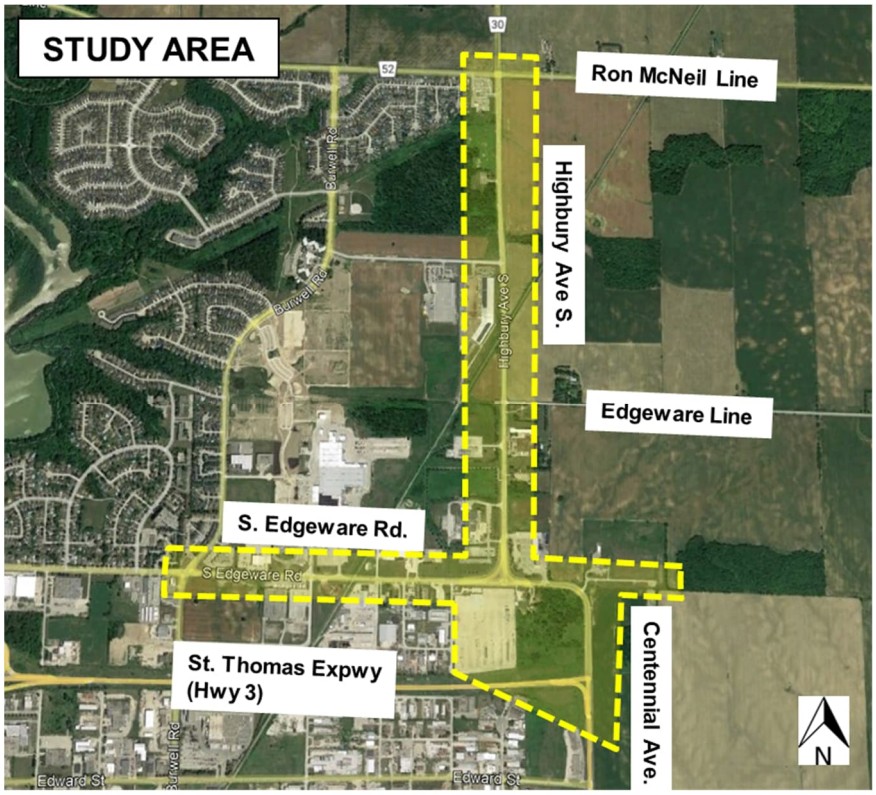

Figure 1.1 Study Area

1.3 Background

The City of St. Thomas Transportation Master Plan Update (TMP), completed in 2021, identified the need to widen Highbury Avenue from Edgeware Road to Ron McNeil Line, and South Edgeware Road, from Burwell Road to Highbury Avenue to accommodate additional traffic from residential and industrial growth in St. Thomas.

The Highbury Widening Class EA was completed to identify a design to implement the recommendations of this previously completed studies in a way which minimizes impacts to the broad definition of the environment as described in the EA Act.

1.3.1 Additional Relevant Studies

Highway 3 Twinning (MTO)

The Ontario Ministry of Transportation (MTO) has initiated a Class EA Study for improvements to Highway 3 from Highway 4 to Centennial Avenue in the City of St. Thomas. This study has been divided into two projects: 1) Talbotville Bypass & Highway 4 Widening MTO Group 'A' Class EA, and 2) Highway 3 Twinning MTO Group 'B' Class EA. This project includes the following improvements:

- Talbotville Bypass & Highway 4 Widening MTO Group 'A' Class EA:
  - Widening the existing Highway 4 from two to four lanes from the new Talbotville Bypass to Clinton Line,
  - A new Highway 3 alignment bypassing Talbotville connecting Highway 3 near Ron McNeil Line to Highway 4,
  - A Roundabout at Highway 4 and Talbotville Bypass, and
  - An interchange at Ron McNeil Line / Wonderland Road.

- Highway 3 Twinning MTO Group 'B' Class EA:
  - Twinning of Highway 3 from Ron McNeil Line / Wonderland Road to Centennial Avenue,
  - Interchange at Wellington Road, and
  - Improvements to First Avenue interchange.

For more information on this project, visit: www.highway3elgin.ca.

Major Arterial Road Municipal Class Environmental Assessment (City of St. Thomas)

The City of St. Thomas is establishing a new industrial subdivision in the northeast. To accommodate growth and development and provide access to this new subdivision, the City is considering building a new major arterial road that will connect Centennial Avenue and Yarmouth Centre Road.

The City has initiated a Municipal Class EA for this project to consider options to address transportation and traffic needs of the corridor and planned development. For more information on this project, visit:

https://www.stthomas.ca/cms/One.aspx?portalId=12189805&pageId=19634221

1.4 Study Objectives

The Class EA was completed in response to ongoing and planned development on the east side of the City, and the associated increases in traffic. As such, the study was completed to review opportunities to address:

- Traffic operations and safety,
- Active transportation (walking, cycling) needs,
- Roadway drainage improvements and stormwater management, and
- Upgrades of underground services (watermain, storm and sanitary sewer) as required.

1.5 Class Environmental Assessment Process

1.5.1 Municipal Class Environmental Assessment

This study was conducted in accordance with the requirements of the Municipal Class Environmental Assessment (MCEA) – Schedule 'C', which is an approved process under the Environmental Assessment Act. The figure below illustrates the framework for the Class EA process which is a legislated planning process comprising of up to five phases with mandatory points of public contact. The focus of the framework is a comprehensive and transparent decision-making process.

The Class EA is broken down into phases, as follows:

- Phase 1 – Identify problem or opportunity;
- Phase 2 – Identify alternative solutions, evaluate, and select the preferred solution;
- Phase 3 – Identify alternative design concepts, evaluate, and select the preferred design concepts;
- Phase 4 – Complete the Environmental Study Report (ESR) and place it on the public record; and
- Phase 5 – Project implementation, which is to undertake the contract drawings and tender documents for the project and proceed to construction and operation of the project.

This Schedule 'C' study requires the completion of Phases 1 through 4 of the Municipal Class Environmental Assessment process, with the final deliverable comprising the documentation of the planning process as provided in this Report. The Project will then proceed to Phase 5.

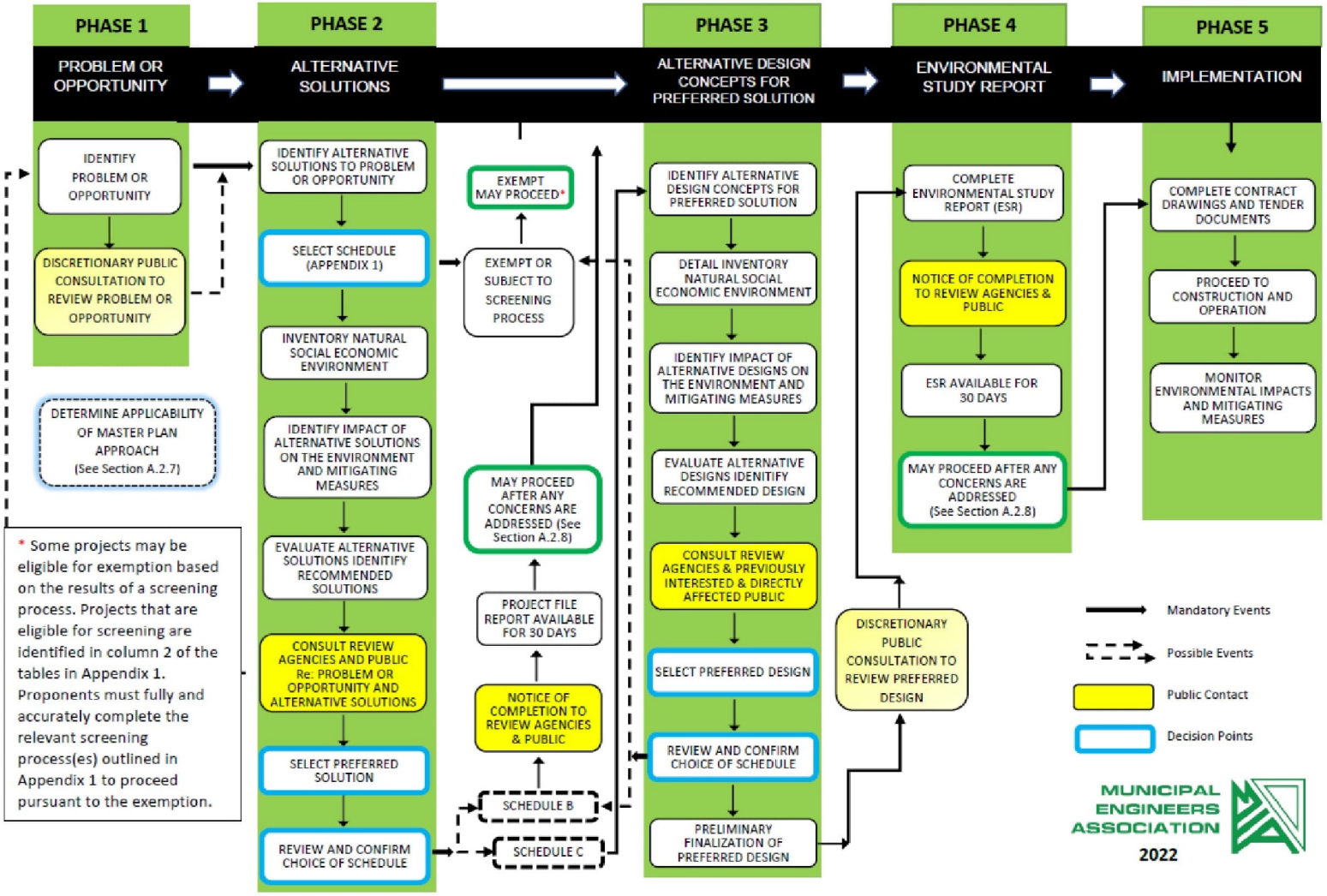

Figure 1.2 – Municipal Class Environmental Assessment Process (Municipal Engineers Association, 2022)

1.5.1.1 SECTION 16 ORDER REQUESTS

Anyone with concerns related to any aspect of the study may express such concerns in writing to the Project Manager at the City of St. Thomas within the 30-calendar day review period following the Notice of Study Completion. All comments and concerns should be sent directly to Project Manager at the City of St. Thomas.

In addition, a request may be made to the Ministry of the Environment, Conservation and Parks for an order requiring a higher level of study (i.e. requiring an individual/comprehensive EA approval before being able to proceed), or that conditions be imposed (e.g. require further studies), **only on the grounds that the requested order may prevent, mitigate or remedy adverse impacts on constitutionally protected Aboriginal and treaty rights**. Requests on other grounds will not be considered. Requests should include the requester contact information and full name for the ministry.

Requests should specify what kind of order is being requested (request for additional conditions or a request for an individual/comprehensive environmental assessment), how an order may prevent, mitigate, or remedy those potential adverse impacts, and any information in support of the statements in the request. This will ensure that the ministry is able to efficiently begin reviewing the request.

The request should be sent in writing or by email to:

Minister of the Environment, Conservation and Parks
Ministry of Environment, Conservation and Parks
777 Bay Street, 5th Floor
Toronto ON M7A 2J3
minister.mecp@ontario.ca

and

Director, Environmental Assessment Branch
Ministry of Environment, Conservation and Parks
135 St. Clair Ave. W, 1st Floor
Toronto ON, M4V 1P5
EABDirector@ontario.ca

Requests should also be sent to the City of St. Thomas by mail or by e-mail.

1.5.2 Class EA for Provincial Transportation Facilities

As this project includes work near the St. Thomas Expressway (Highway 3) and is within a portion of the Ontario Ministry of Transportation (MTO) right-of-way, the project must also consider the MTO Class EA for Provincial Transportation Facilities process. The MTO's Class EA was approved under the Ontario Environmental Assessment Act in 1999 and amended in 2000. It defines the EA process to be followed for projects and activities similar in complexity that are undertaken by the MTO and/or within MTO jurisdiction. Provided the appropriate EA process is followed, projects and activities included under the MTO Class EA do not require formal review and approval separately under the EA Act.

This project is classified as a Group B project, which are major improvements to existing facilities. This Environmental Study Report (ESR) will satisfy both the requirements of the Municipal Class EA as a Schedule C project as well as the MTO Class EA for Provincial Transportation Facilities for a Group 'B' project for work near St. Thomas Expressway (Highway 3).

1.6 Policy and Planning

The Provincial Policy Statement, 2020 (PPS, Ministry of Municipal Affairs and Housing (MMAH), 2020) sets the policy direction for regulating development and land use planning in the province. Both provincial and local land use planning decisions build on the PPS and its relevant policies. The works with land use planning systems to support the government's goals to increase housing, support jobs, and reduce red tape.

The City of St. Thomas's Transportation Master Plan Update, 2021, which justified the need for this project, has been kept up to date in accordance with the PPS. The Transportation Master Plan addresses policies on developing transportation systems that are safe, energy efficient, facilitate the movement of people and goods, and maximize the use of existing infrastructure. The City of St. Thomas Official Plan, 2018 notes the conversion of industrial lands to employment lands to remain consistent with Section 1.3 of the PPS, and includes clear designations outlined for various employment lands.

This report will confirm that no provincially or locally designated parks, conservation area, reserves, provincially significant wetlands (PSW), or Areas of Natural or Scientific Interest (ANSI) were identified within the Study Area.

1.7 Study Organization

The Class Environmental Assessment Study was carried out by a consulting team led by R.V. Anderson Associates Limited (RVA) on behalf of the City of St. Thomas. The study team is outlined below:

City of St. Thomas:

- Justin Lawrence – Industrial Development
- Nathan Bokma – Industrial Development
- Pat Anckaert – Industrial Development

Consulting Team:

- R.V. Anderson Associates Limited – Lead Consultant, Planning, Stormwater Management, Natural Heritage, and Engineering
- EXP Limited – Geotechnical Investigation
- Parslow Heritage Consultancy Inc. – Archaeology & Cultural Heritage Assessment
- OTI – Traffic Data Collection
- RWDI – Noise and Air Quality Assessment

1.8 Study Schedule

The EA study was initiated in March 2023. Key dates throughout the study were as follows:

Table 1.1 – Study Schedule

EA Stage	Date
Notice of Study Commencement and Public Information Centre (PIC) #1	March 23, 2023
Notice of PIC #2	July 20, 2023
Notice of Study Completion	November 2023

1.9 Consultation Overview

Public Consultation is a key feature of environmental assessment planning projects. Input received from the public and various stakeholder groups, potentially affected Indigenous communities, as well as from provincial ministries, agencies, and authorities can generate meaningful dialogue between the project planners and the public. This consultation allows for the exchange of ideas and the broadening of the information base, leading to better decision-making during the study.

Various Indigenous communities, government agencies, authorities, and interest groups were informed of the Class EA Study Commencement, Public Information Centres and Notice of Study Completion, through local newspaper notices, direct mailings (paper & electronic) to stakeholders and agencies, and notices distributed to property owners in the study area.

A complete list of technical agencies, special interest groups, and Indigenous communities that were contacted as part of the study is provided in Appendix 1 of this report.

1.9.1 Contact with Stakeholders and Indigenous Communities

As per EA requirements, notification to the public and stakeholders of study commencement is required, as well as notification of Public Information Centres. Notification of Study Commencement, Public Information Centres, and Notice of Study Completion (forthcoming) was provided through several different methods and media, as outlined below.

- General Public:
  - Project updates including study timelines, PIC dates, and PIC materials were posted on the City of St. Thomas municipal website.
  - All notices were posted on the City's social media (Twitter, Facebook).
- Residents & businesses within Study Area:
  - All Notices were mailed to all property residents within the study area.
- Technical Agencies, Local Interest Groups and Indigenous Communities:
  - All Notices were sent via email.
- Project Mailing List (stakeholders who submitted comments during the study or indicated interest in the project):
  - All Notices were sent via email.

Refer to Appendix 1 for copies of the published notifications and the stakeholder list. A summary of the consultation completed throughout the study is provided in Section 9.0.

2.0 EXISTING CONDITIONS

2.1 Transportation Needs Assessment

In support of the Class EA, a Transportation Operations Analysis was undertaken to analyze the existing and future needs of the intersection, from a multi-modal operational and safety perspective. The full technical memo is provided in Appendix 2.

2.1.1 Highbury Avenue

Within the study area, Highbury Avenue is a north-south oriented roadway, and is classified as a Major Arterial, with two-lanes (one-lane per direction), a rural cross section, and a posted speed limit of 60 km/h.

There are approximately 9,960 – 15,140 total vehicles travelling along Highbury Avenue within the study area daily which serves as a connector with the City of St. Thomas, Highway 401, and the City of London. There are no significant existing or traffic capacity issues on the roadway, however, capacity improvement is required to accommodate future planned development.

2.1.2 South Edgeware Road

Within the study area, South Edgeware Road is an east-west oriented roadway, and is classified as a Major Arterial with two-lanes (one-lane per direction), a rural cross section, and a maximum speed limit of 60 km/h. South Edgeware Road provides access to existing commercial and industrial developments on both sides of the road.

2.1.3 Active Transportation (Pedestrian and Cyclist Facilities)

There are currently no active transportation facilities within the Study Area.

Map 5 of the Elgin – St. Thomas Cycling Master Plan (2014) identifies proposed active transportation facility types within the City and Elgin County. Paved shoulders were proposed along South Edgeware Road and on Highbury Avenue from South Edgeware Road to Edgeware Line. Edgeware Line is identified as a proposed signed route leading east out of the City. With the expansion of industrial lands and the associated increase in vehicular traffic demands, paved shoulders may not be the most appropriate type of facility for cyclists and pedestrians. A more viable alternative would be to utilize Burwell Road, identified as a proposed on-road bike lane facility, to connect to Dennis Road which would take users across Highbury Avenue at a signalized intersection into the development site. Active transportation facilities could be provided internally within the development.

2.1.4 Connectivity with Highway 3

Highbury Avenue currently terminates at South Edgeware Road. Vehicles travelling to and from Highway 3 to Highbury Avenue utilize Centennial Avenue and the east leg of South Edgeware Road. A more direct connection of Highbury Avenue to Highway 3 would provide a shorter route and improve overall traffic operations by eliminating the need to travel through an additional intersection at Centennial Avenue and South Edgeware Road.

2.1.5 Rail Crossing

There are existing level rail crossings on Highbury Avenue between Edgeware Line and Dennis Road and on South Edgeware Road between Burwell Line and Highbury Avenue. The rail crossings are each on a skew to the road and warning flashers provide motorists with advance notice of an approaching train. The rail line (both crossings) are owned by CP Rail and operated by Ontario Southland Railway.

2.1.6 Public Transit

There are currently no public transit routes servicing the study area. The closest routes operate at the west limit of the Study Area along Burwell Road (Route 1 and Route 5b). The proposed expansion of industrial lands and anticipated workforce required is an opportunity to extend existing transit routes and provide service to the developments.

2.2 Municipal Services

2.2.1 Stormwater

The project study area lies within the Kettle Creek with the Nineteen Creek Watershed to the east of the study area. The surrounding land use is a mixture of residential developments, commercial / industrial development, and agricultural lands. Runoff from the external drainage areas to the east of Highbury Avenue is conveyed across the road via existing culverts. Highbury Avenue is primarily a rural cross-section road, with runoff conveyed via ditches to the existing outlet points at crossing culvert locations. No existing SWM measures are present for road drainage and drainage flows to the west, towards Kettle Creek via ditches and swales.

Along South Edgeware Road external drainage from industrial/commercial lots is conveyed to the roadway via storm service connections and overland flow routes. The existing roadway has a rural section, with partial ditches and storm sewers. Drainage is conveyed along the shoulder of the road to ditches and catch basins. The existing storm sewer at the east end of

Edgeware flows north along Highbury to discharge to the west approximately 300m north of Edgeware Road. Ditch flows from the western section of Edgeware Road outlet to the rail corridor and are conveyed south towards Thomas Expressway (Highway 3. Drainage along St. Thomas Expressway (Highway 3) flows through roadside ditches and a storm sewer network which ultimately outlets to Kettle Creek.

In addition to the local drainage networks several municipal drains are present within the vicinity of the Study Area: Robertson, Evely, Harries, Windon and Jacobs.

A hydraulic analysis of the five existing crossing culverts along Highbury Avenue was completed using PCSWMM software. The existing culverts have sufficient capacity to manage 50-year and 100-year design storm flows without overtopping Highbury Avenue. A detailed summary of the results of this analysis are included in Appendix 10.

2.2.2 Watermain

The Elgin-Middlesex Pumping Station is located on the north side of South Edgeware Road, east of Highbury Avenue at Centennial Road. This facility is a secondary water supply system drawing water from Lake Erie for the City of St. Thomas, City of London, and the Town of Aylmer.

Existing water infrastructure along Highbury Avenue includes a 1050mm diameter transmission line along the east side which feeds the City of London. A 400mm PVC watermain runs along the east side of Highbury Avenue and crosses to the west side at the CP rail crossing and provides water to City of St. Thomas residents.

Existing water infrastructure along South Edgeware Road includes a 400mm ductile iron cement lined watermain on the south side constructed in 1993 and a 30 inch (750mm) high pressure watermain on the north side of, constructed in 1967. The 750mm watermain is reaching the end of its' service life.

2.2.3 Wastewater

Existing wastewater infrastructure consists of a 375mm diameter local sanitary sewer on Edgeware Line which heads north along Highbury Avenue to Dennis Road constructed in 2021. A 300mm diameter sewer runs south along Highbury Avenue and connects to a sanitary pumping station at the south-east corner of South Edgeware Road and Harper Road. Along South Edgeware Road, there is a 375mm sewer east of Highbury Ave and a 300mm sewer west of Highbury Ave, both connecting to the sanitary pumping station at Harper Road. From the Harper Road pumping station, flows are directed into a 150mm force main and ultimately to the City's treatment plant.

A separate Class Environmental Assessment is underway to determine the sanitary sewer requirements of the proposed industrial development. Any proposed infrastructure improvements can be accommodated within the road allowance on Highbury Avenue and South Edgeware Road if required.

2.2.4 Utilities

The following utilities are present within the various corridors:

- Utility poles owned by Hydro One and Entegrus are located on both sides of the Highbury Avenue corridor and both sides of the South Edgeware Road corridor throughout the study area.
- The Enbridge Gas underground plant is generally located on the west side of the Highbury Avenue corridor and on the south side of the South Edgeware Road corridor throughout the study area. There is also Enbridge Gas underground plant located on the east side of the Highbury Avenue corridor north of Edgeware Line.
- The Bell Canada plant is located underground and aerially on utility poles, generally on the east side of the Highbury Avenue corridor and the south side of the South Edgeware Road corridor throughout the study area, with isolated sections on the north side of South Edgeware Road.
- The Rogers plant is located underground on the east side of the Highbury Avenue corridor south of Edgeware Line and aerially on utility poles north of Edgeware Line throughout the study area. The Rogers plant is also located underground on the south side of the South Edgeware Road corridor throughout the study area.
- The Start Communications plant is located underground on the east side of the Highbury Avenue corridor south of Edgeware Line.

2.3 Socio-Economic Environment

Highbury Avenue is a major north / south corridor that connects the north-east side of the City of St. Thomas with Highway 401 and the City of London. South Edgeware Road is a major east / west corridor that provides connectivity to north / south corridors. The Highbury Avenue portion of the Study Area is located in a landscape which is transitioning from rural / urban residential and agricultural land use in the north to a commercial and industrial one at the south. Land use along South Edgeware Road is characterized as a mix of urban industrial and commercial with several residential units.

The City's Official Plan (Figure 2-1) indicates that the study area has a land use designation of "Industrial" along with a parcel east of Highbury Avenue designated as "Rural".

The City conducted a servicing study in 2020 to examine the potential of increasing available lands for industrial development and subsequently rezoned rural lands east of Highbury Avenue along Edgeware Line as Employment Lands.

In 2023, PowerCo SE (Volkswagen) announced the development and construction of a new electric vehicle battery plant on lands bounded by Ron McNeil Line, Highbury Avenue, Yarmouth Centre Road, and South Edgeware Road. In addition, the City pursued acquisition of additional nearby lands for the development of an expanded industrial park south of South Edgeware Road and east of Centennial Road/Centennial Avenue.

In 2023, the provincial government enacted Bill 63, St. Thomas – Central Elgin Boundary Adjustment Act, for the annexation of a portion of the Municipality of Central Elgin to the City of St. Thomas. The Act received Royal Assent on March 2, 2023, and expanded the City of St. Thomas boundary in the northeast corner of the City, adjacent to the Study Area. This expansion facilitated the consolidation of employment lands in the area under one municipal jurisdiction.

2.4 Natural Environment

An Environmental Impact Study (EIS) documenting existing environmental conditions within the study area and potential effects of the proposed project on natural heritage features was prepared by RVA's Ecological Services Team. Findings of their report are summarized in the sections below. The full report is provided in Appendix 3.

2.4.1 Aquatic Habitats and Communities

The Study Area is located within the Kettle Creek watershed, entirely within the Upper Kettle Creek subwatershed, under the jurisdiction of the Kettle Creek Conservation Authority (KCCA) and the Ministry of Natural Resources and Forestry (MNRF) Aylmer District.

There are several surface water features that cross Highbury Avenue. These tributaries are 1st order streams (Strahler Stream Order) that drain from the employment/agricultural lands east of Highbury Avenue to the west, where they join and flow through employment/agricultural and residential lands and ultimately into the Dalewood Reservoir.

2.4.2 Vegetation

A two-season floral inventory and Ecological Land Classification (ELC) community survey was completed for the Study Area. Field visits were timed to correspond with a summer and fall inventory window to identify as many plant species as possible.

Land use within the Study Area is primarily rural, dominated by row crop agricultural with additional areas of commercial/industrial, rural residential and natural heritage. The Study Area is actively transitioning to industrial/commercial land uses and as a result current land uses are somewhat patchily distributed. In general, lands on the west side of Highbury Avenue are mainly commercial/industrial, separated by undeveloped or actively cultivated lands, including the wooded natural heritage features. Lands to the east of Highbury are mainly row crop agriculture, with a small section of rural residential and industrial land uses between South Edgeware Line and South Edgeware Road. All vegetation communities identified within the study area are common and secure in the province.

2.4.3 Wildlife and Wildlife Habitat

The Study Area contains terrestrial habitats that have the potential to support a variety of bird life. Most bird species identified within the study area are protected under the Migratory Birds Convention Act (MBCA) and/or the Fish and Wildlife Conservation Act (FWCA).

Due to the nature of the Study Area, vertebrate wildlife expected to be observed within the Study Area are species commonly encountered in association with both anthropogenic and natural habitats. Wildlife and signs observed during site investigations included an Eastern Gartersnake (*Thamnophis sirtalis*) and Eastern Gray Squirrel (*Sciurus carolinensis*). No Special Concern (SC) or provincially rare (S1-S3) mammal species were noted as occurring in the Study Area during background review, however, MECP noted the potential presence of Endangered mammals, including Species at Risk (SAR) bats (Endangered), that are assumed to include Little Brown Myotis (*Myotis lucifugus*), Northern Long-eared Myotis (*Myotis septentrionalis*) Tri-colored bat (*Perimyotis subflavus*), and Eastern small-footed bat (*Myotis leibii*).

The habitat types within the Study Area are suitable to support many insect species, including rare butterfly and Odonate (dragonfly and damselfly) species. As insects are not commonly surveyed for and can have short periods of detection (adult stage), it is possible that other species of provincial interest may utilize habitat within or adjacent to the Study Area. One invertebrate species of Special Concern, Monarch (*Danaus plexippus*), was identified within the Study Area, associated with the Mineral Cultural Meadow/roadside habitat that was noted to contain Common Milkweed (*Asclepias syriaca*), a host plant for Monarch.

A full list of wildlife, including SAR species, their habitat preferences, and assessment of their probability of occurrence as determined following field investigations within the Study Area is presented in Appendix 3.

2.4.4 Designated Natural Areas

Designated natural areas include areas identified for protection by the Ontario Ministry of Natural Resources and Forestry and the City of St. Thomas.

No provincially or locally designated parks, conservation areas, reserves, provincially significant wetlands (PSW), or Areas of Natural or Scientific Interest (ANSI) were identified in the Study Area. The following sections examine the designated natural areas and features found in the Study Area.

2.4.5 Significant Woodlands

Southwest of the Ron McNeil Line and Highbury Avenue intersection, a large, wooded area is present. This feature is identified as Natural Heritage on City of St. Thomas Official Plan mapping (Schedule A 2018) and as 'woodland' on NHIC mapping. Additional small, wooded areas are present immediately east of the large woodland noted above on the east side of Highbury Avenue, as well as to the northwest and northeast of the Highway 3 and Centennial Road intersection. The woodland to the northeast is predominantly outside of the Study Area but has been reviewed in its entirety as a component of other municipal projects.

2.5 Cultural Heritage Environment

Section 2.5 describes the existing conditions of the cultural heritage component of the environment. Cultural heritage resources include archaeological resources, built heritage resources and cultural heritage landscapes.

2.5.1 Archaeological Resources

A Stage 1 archaeological assessment (under Project Information Form number (PIF) P243-0506-2023) of the study area was completed on September 13, 2023 by Parslow Heritage Consultancy Inc. A Stage 1 AA consists of a review of geographic, land use and historical information for the property and the relevant surrounding area, and contacting MCM to find out whether, or not, there are any known archaeological sites on or near the property. Its purpose is to identify areas of archaeological potential and further archaeological assessment (e.g., Stage 2-4) as necessary.

After background research, the Study Area is shown to contain or be close to several historic transportation routes. These include the two main roads of interest Edgeware Road, and Highbury Avenue (County Road 30), as well as the no longer in use North Edgeware Road. The Study Area also contains the Canadian Pacific Railroad within its boundaries, marking another potential area of interest. Finally, while a site inspection was not done during the

background research of this Stage 1 report, both modern aerial and topographic maps taken of the study area show potential for areas of elevation – of particular note East of Talbot line. Areas of elevated topography are of special interest for indigenous and early historic site potential.

The Stage 1 Archaeological Assessment report is provided in Appendix 5.

Any further recommended archaeological assessment (e.g., Stage 2, 3, 4) shall be completed as soon as possible during detailed design and prior to any ground disturbing activities.

2.5.2 Built Heritage Resources and Cultural Heritage Landscapes

The following reports were prepared within the study area to identify known (previously recognized) and potential built heritage resources and cultural heritage landscapes (BHR/CHL):

- Cultural Heritage Evaluation Report, Proposed Industrial Development, Edgeware Line, City of St. Thomas, and Municipality of Central Elgin, ON. (dated January 25, 2023, by TMHC Inc.,) incorporate the lands east of Highbury Avenue, north of Edgeware Line to approximately Dennis Road. Two Properties (44592 Edgeware Line and 10343 Yarmouth Centre Road) were determined to meet the criteria for cultural heritage value or interest but are not within the study are for this current undertaking. The CHER is included in Appendix 4.
- Cultural Heritage Evaluation Report (CHER): Proposed Industrial Development, Yarmouth Centre Road, City of St. Thomas, Ontario (dated April 18, 2023, by TMHC Inc.), incorporates the lands south of Edgeware Line and east of Centennial Road. The CHER did not identify any properties of cultural heritage value or interest. The CHER is included in Appendix 4.

The screening checklist, Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes, developed by the Ministry of Citizenship and Multiculturalism, was completed for the area depicted in yellow in Figure 2.1 below (see Appendix 4 for screening checklist). The area was determined to have low potential for built heritage resources and cultural heritage landscapes. Therefore, no technical cultural heritage studies have been undertaken.

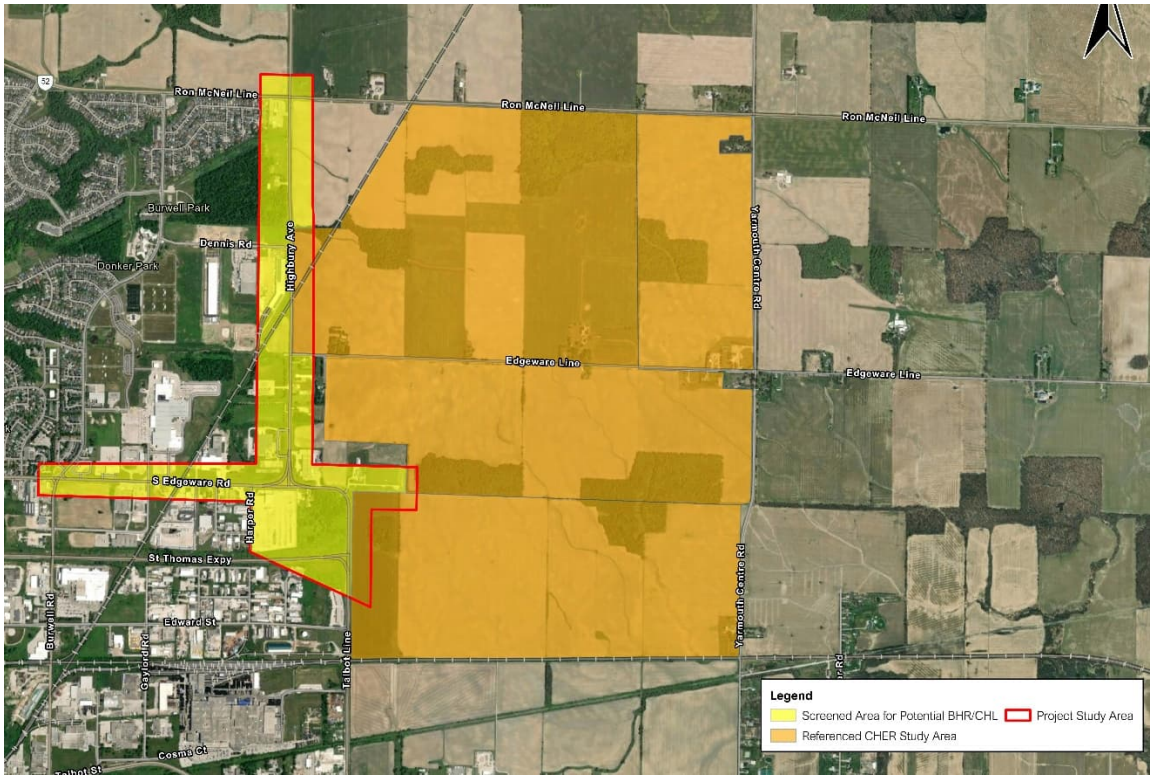

Figure 2.1 Cultural Heritage Study Areas

The results of the 2022 CHER indicated that two properties, collectively known as 44592 Edgeware Line, met the criteria for cultural heritage value. The report also indicated that an adjacent property to the CHER's study area at 10343 Yarmouth Centre Road is listed on Central Elgin's Clerk's List of Heritage Properties. The Highbury Avenue and South Edgeware Road Class EA Project Team identified that the properties at 44592 Edgeware Line and 10343 Yarmouth Centre Road are outside this Project's defined study area (more than 1,500m away) and this Project will have no impacts to these properties. Any impacts to these properties resulting from proposed industrial developments will be addressed separately by the City.

The City of St. Thomas engaged TMHC Inc. to produce a second Cultural Heritage Evaluation Report in 2023 for the expanded study areas of the proposed industrial development. The added parcels of land are located on the west edge of Yarmouth Centre Road, south of Ron McNeil Line and on the south edge of South Edgeware Road, east of Centennial Road. The 2023 Cultural Evaluation Report concluded that no properties in the studied area were found to meet criteria for having cultural heritage value.

Based on the results of the above mentioned 2022 and 2023 CHERs, no further cultural heritage evaluations or assessments were deemed necessary as part of the Highbury Avenue and South Edgeware Road Class EA.

The complete 2022 and 2023 Cultural Heritage Evaluation reports produced by TMHC Inc. are in Appendix 4.

2.6 Geotechnical Assessment

A preliminary and detailed geotechnical investigation was undertaken by EXP to evaluate the subsurface soil and groundwater conditions within the study area based on borehole data from previous geotechnical work along the alignments of the project as well as new boreholes placed in conjunction with this study. The complete Geotechnical Assessment Report prepared is provided in Appendix 6.

2.7 Noise and Air Quality Assessments

Noise and air quality assessments were carried out by RWDI. The environmental noise assessment identified six Noise Sensitive Areas (NSAs) within the study area. Upon further analysis, the environmental noise assessment concluded that the relative increase in future sound levels due to the undertaking was not significant, i.e., less than 5dB as per MTO's Environmental Guide for Noise. The absolute future sound levels exceeded 65 dBA at NSA #1, however the construction of a noise barrier did not meet the administrative or technical feasibility criteria. Therefore, no noise barrier is recommended.

Construction sound is temporary in nature but will be noticeable at times in noise sensitive areas. The estimated sound levels have the potential to be an annoyance to homes within the study limits of this project, therefore mitigation measures have been identified to minimize the potential for noise impacts and will be included during any future construction. The mitigation measures are outlined in Section 7.2.2 and in the Noise Assessment Report in Appendix 7.

The air quality assessment concluded that the proposed improvements and roadway modifications within this project are not expected to have an impact on air quality. The project is not expected to cause undesirable levels of air pollutants at any nearby sensitive receptors, and therefore, no mitigation measures are recommended for the operational phase of the project. Construction activities may have temporary impacts to air quality as it involves heavy equipment that generates air pollutants and dust. Operating procedures will be diligently implemented to deal with these emissions and an emissions management plan will be required as part of the construction tendering process.

The complete Noise Assessment and Air Quality Assessment Reports are provided in Appendix 7.

3.0 PROBLEM AND OPPORTUNITY STATEMENT

Per Phase 1 requirements of the Municipal Class Environmental Assessment process for a schedule 'C' project, a "Problem and Opportunity Statement" was prepared to identify in detail the various problems and opportunities to be addressed by the study. In essence, the Problem Statement outlines the need and justification for the overall project and establishes the general parameters, or scope, of the study.

The Problem Statement was developed following the assessment of the existing conditions within the study area, as described above, along with having discussions with City staff regarding municipal servicing and transportation infrastructure needs; and through consultation with the public and technical agencies undertaken throughout the study.

The Study Problem & Opportunity Statement developed for the project is comprised of the following key elements:

- The Highbury Avenue and South Edgeware Road corridors do not balance the full range of potential users within the community, including users of all ages and abilities, pedestrians, cyclists, transit vehicles and motorists.
- The existing Highbury Avenue and South Edgeware Road corridors and subject intersections will not accommodate projected traffic volumes.
- Connectivity between the subject corridors and St. Thomas Expressway (Highway 3) requires improvements to accommodate future traffic volumes.
- The existing watermains and sewers along the corridor are not currently positioned to provide opportunities for future connection to designated development lands.

4.0 ALTERNATIVE SOLUTIONS

Under Phase 2 of the Class EA process, all reasonable solutions to the problem are identified and described, including the "Do Nothing" alternative. After general inventories of the technical, natural, social, cultural, and economic environments are prepared and potential environmental impacts are determined for each alternative, the net positive and negative effects are identified, and the alternatives are evaluated resulting in a recommended solution. The recommended solution is then presented to the public, stakeholders, and agencies to solicit input into the selection of the "preferred solution".

4.1 Assessment Criteria

The Project Team considered criteria that represent the broad definition of the environment as described in the EA Act to comparatively evaluate the alternative solutions. The general evaluation criteria used in evaluating the alternative solutions and design concepts are outlined in the table below.

Table 4.1 – Evaluation Criteria

Criteria	Description
Transportation Operations and Safety	How will the alternative serve the existing and future traffic needs with regards to safety, volumes, active transportation, sightlines?
Socio-Economic Environment	What impacts will the alternative have on the local community (e.g., compatibility with area land use, impacts on local businesses, property requirements, access restrictions, etc.)?
Natural Environment and Climate Change	How does the alternative affect existing vegetation, water quality, fisheries/wildlife and habitat? Does the alternative address climate change?
Cultural Heritage Resources	Will the alternative impact archaeological resources, built heritage resources, and cultural heritage landscapes?
Costs	What is the capital cost of the alternative? What is the cost for utility relocations, property acquisitions, maintenance and operation costs?

4.2 Evaluation Methodology and Ranking System

The project team comparatively ranked each alternative solution from least desirable to most desirable, for each of the criteria described in Section 4.1, to determine the preferred

solution(s). Figure 4.1 demonstrates the rating scale used in the evaluation of alternative solutions described below.

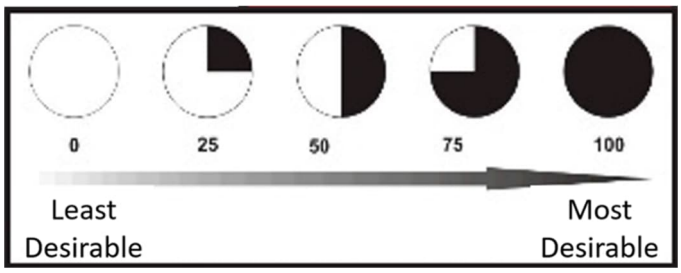

Figure 4.1- Alternative Solution Rating Scale

4.3 Highbury Avenue Alternative Solutions

This section documents the options considered to address traffic operations and safety, active transportation, roadway drainage improvements, stormwater management, and upgrades of underground services needs by widening the Highbury Avenue corridor from Ron McNeil Line south to South Edgeware Road within the Study Area.

4.3.1 Description of Alternative Solutions

The following alternative solutions (Phase 2 Class EA) to improve Highbury Avenue were developed:

Alternative 1: Do Nothing

The portion of Highbury Avenue identified within the Study Area would remain as is, with no improvements undertaken. This alternative does not address the problem statement. It would not address current considerable traffic and industrial truck volumes, nor would it accommodate future planned growth in 2024. This alternative is required to be considered under the Municipal Class EA planning process as a baseline for the comparison of alternative solutions.

Alternative 2: Widen to 4 Lanes (TMP Recommendation)

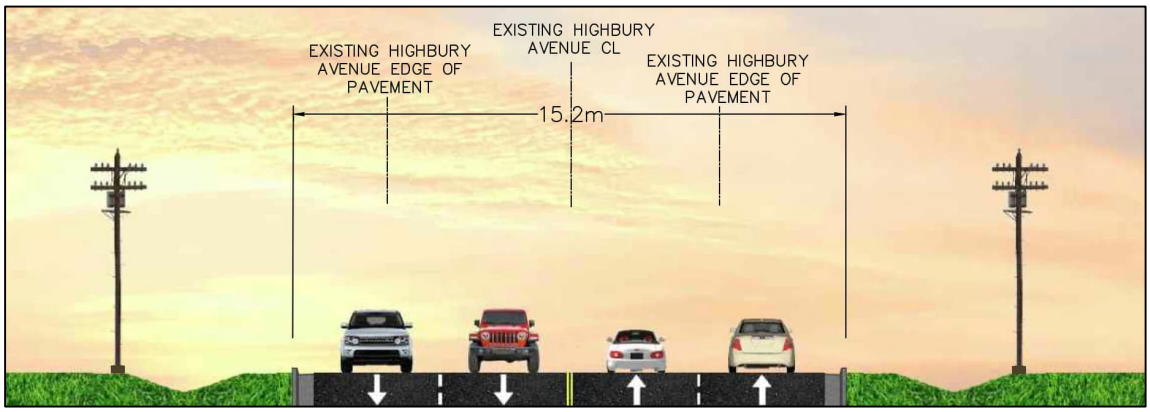

Figure 4.2 Highbury Avenue Widen to 4 Lanes

Highbury Avenue widened to four lanes as per the recommendation outlined in the City's Transportation Master Plan (2021), however this would not efficiently accommodate traffic volumes or adequate provide left lane turning opportunity for additional new developments with entrances along Highbury Avenue.

Alternative 3: Widen to 5 Lanes

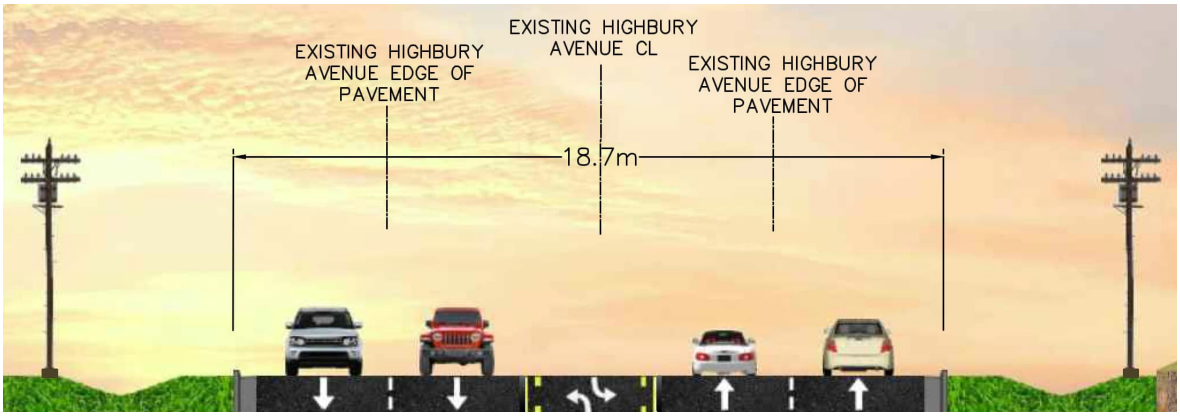

Figure 4.3 Highbury Avenue Widen to 5 Lanes

Highbury Avenue widened to five lanes between Ron McNeil Line and Dennis Road, and between Edgeware Line and South Edgeware Road. This will accommodate additional traffic volumes associated with large industrial development planned along Highbury Avenue and provide improved turning opportunities to additional new developments with entrances along Highbury Avenue.

4.3.2 Evaluation of Alternative Solutions

Table 4.2, Table 4.3, and Table 4.4 summarize the evaluation of alternative solutions for the widening of Highbury Avenue based on criteria presented in Section 4.1 and the evaluation

methodology described in Section 4.2. The evaluation of the Highbury Avenue Widening Design Concepts has been split into three distinct sections as follows:

1. Ron McNeil Line to Dennis Road (Section 1)
2. Dennis Road to Edgeware Line (Section 2)
3. Edgeware Line to South Edgeware Road (Section 3)

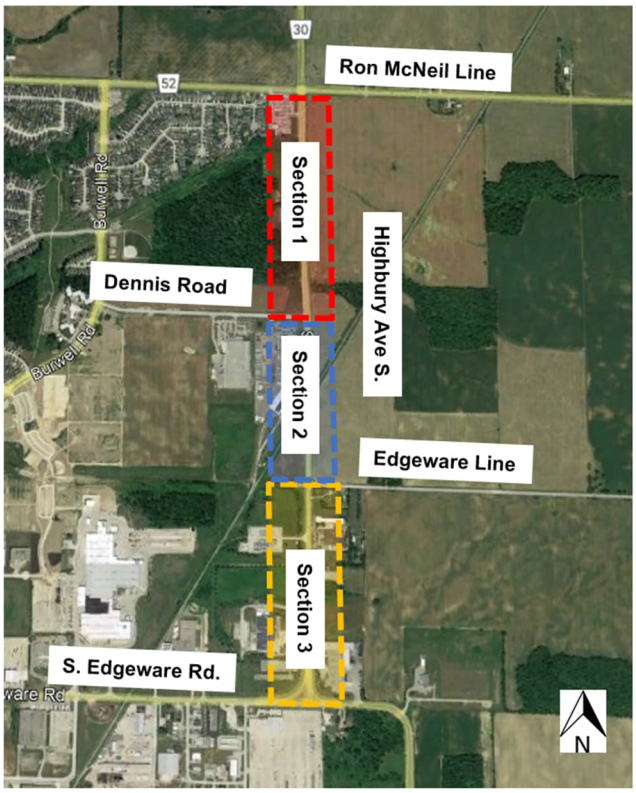

Figure 4.4 Sections of Highbury Avenue

Conducting the evaluation in sections allowed for a refined approach where the roadway sections have a distinct character and recognizes that one alternative may not be appropriate for the entire length of the roadway.

Table 4.2 Highbury Avenue from Ron McNeil Line to Dennis Road (Section 1) Phase 2 Evaluation

Highbury Avenue Alignment - Ron McNeil Line to Dennis Road (Section 1)

EVALUATION CRITERIA	1. Do Nothing		2. Widen to 4 Lanes		3. Widen to 5 Lanes	
TRAFFIC OPERATIONS & SAFETY	○	Does not accommodate projected traffic volumes, with no traffic calming benefits, and no safety improvements	◑	Does not sufficiently accommodate projected traffic volumes, or provide adequate left-turn opportunity	●	Sufficiently accommodates projected traffic volumes, with adequate left-turn opportunity
SOCIAL ENVIRONMENT	◔	Does not accommodate future planned land uses, with increased idling time increasing noise impacts and reducing air quality	◑	Does not sufficiently accommodate future planned land uses, with some property impacts	◕	Sufficiently accommodates future planned land uses, with decreased idling time thus improving air quality. Has some property impacts
NATURAL ENVIRONMENT	◕	No changes to existing vegetation, no mitigation or resilience to climate change impacts, and no impacts or opportunity for improvements to aquatic ecosystems or water quality	◕	Minor impacts to terrestrial wildlife and aquatic ecosystems, with some noise and air quality impacts	◕	Minor impacts to terrestrial wildlife and aquatic ecosystems, with some noise and air quality impacts
HERITAGE / ARCHAEOLOGICAL / CULTURAL IMPACTS	●	No impact to archaeological or built heritage resources along the corridor	●	No impact to Cultural Heritage Resources, with some additional Stage 2 AA required	●	No impact to Cultural Heritage Resources, with some additional Stage 2 AA required
COST	●	No capital cost to implement and no utility relocation costs.	◕	Moderate capital costs, with moderate utility relocation and property impacts	◑	Moderate capital costs, with higher utility relocation and property impacts
OVERALL SCORE	12.0		14.0		16.0	
EVALUATION SUMMARY	Not Recommended		Not Recommended		Recommended to be Carried Forward	

Table 4.3 Highbury Avenue from Dennis Road to Edgeware Line (Section 2) Phase 2 Evaluation

Highbury Avenue Alignment - Dennis Road to Edgeware Line (Section 2)

EVALUATION CRITERIA	1. Do Nothing		2. Widen to 4 Lanes		3. Widen to 5 Lanes	
TRAFFIC OPERATIONS & SAFETY	○	Does not accommodate projected traffic volumes, with no traffic calming benefits, and no safety improvements	●	Sufficiently accommodates projected traffic volumes, with adequate left-turn opportunity	●	Sufficiently accommodates projected traffic volumes, with adequate left-turn opportunity
SOCIAL ENVIRONMENT	◔	Does not accommodate future planned land uses, with increased idling time increasing noise impacts and reducing air quality	◕	Sufficiently accommodates future planned land uses, with decreased idling time thus improving air quality. Has some property impacts	◕	Sufficiently accommodates future planned land uses, with decreased idling time thus improving air quality. Has some property impacts
NATURAL ENVIRONMENT	◕	No changes to existing vegetation, no mitigation or resilience to climate change impacts, and no impacts or opportunity for improvements to aquatic ecosystems or water quality	◕	Minor impacts to terrestrial wildlife and aquatic ecosystems, with some noise and air quality impacts.	◕	Minor impacts to terrestrial wildlife and aquatic ecosystems, with some noise and air quality impacts
HERITAGE / ARCHAEOLOGICAL / CULTURAL IMPACTS	●	No impact to archaeological or built heritage resources along the corridor	●	No impact to Cultural Heritage Resources, with some additional Stage 2 AA required	●	No impact to Cultural Heritage Resources, with some additional Stage 2 AA required
COST	●	No capital cost to implement and no utility relocation costs	◕	Moderate capital costs, with moderate utility relocation and property impacts	◑	Moderate capital costs, with higher utility relocation and property impacts
OVERALL SCORE	12.0		17.0		16.0	
EVALUATION SUMMARY	Not Recommended		Recommended to be Carried Forward		Not Recommended	

Table 4.4 for Highbury Avenue from Edgeware Line to South Edgeware Road (Section 3) Phase 2 Evaluation

Highbury Avenue Alignment - Edgeware Line to South Edgeware Road (Section 3)

EVALUATION CRITERIA	1. Do Nothing		2. Widen to 4 Lanes		3. Widen to 5 Lanes	
TRAFFIC OPERATIONS & SAFETY	○	Does not accommodate projected traffic volumes, with no traffic calming benefits, and no safety improvements	◑	Does not sufficiently accommodate projected traffic volumes, or provide adequate left-turn opportunity	●	Sufficiently accommodates projected traffic volumes, with adequate left-turn opportunity
SOCIAL ENVIRONMENT	◔	Does not accommodate future planned land uses, with increased idling time increasing noise impacts and reducing air quality	◑	Does not sufficiently accommodate future planned land uses, with some property impacts	◕	Sufficiently accommodates future planned land uses, with decreased idling time thus improving air quality. Has some property impacts
NATURAL ENVIRONMENT	◕	No changes to existing vegetation, no mitigation or resilience to climate change impacts, and no impacts or opportunity for improvements to aquactic ecosystems or water quality	◕	Minor impacts to terrestrial wildlife and aquatic ecosystems, with some noise and air quality impacts	◕	Minor impacts to terrestrial wildlife and aquatic ecosystems, with some noise and air quality impacts
HERITAGE / ARCHAEOLOGICAL / CULTURAL IMPACTS	●	No impact to archaeological or built heritage resources along the corridor	●	No impact to Cultural Heritage Resources, with some additional Stage 2 AA required	●	No impact to Cultural Heritage Resources, with some additional Stage 2 AA required
COST	●	No capital cost to implement and no utility relocation costs	◕	Moderate capital costs, with moderate utility relocation and property impacts	◑	Moderate capital costs, with higher utility relocation and property impacts
OVERALL SCORE	12.0		14.0		16.0	
EVALUATION SUMMARY	Not Recommended		Not Recommended		Recommended to be Carried Forward	

4.3.3 Preferred Solution

The Transportation Master Plan (2021) recommendation to widen Highbury Avenue to four lanes was reviewed and updated to widen Highbury Avenue to five lanes based on new information received regarding development along the corridor that was not available in 2021.

Therefore, the preferred solution for Highbury Avenue is a combination of widening it to four lanes and five lanes. It is recommended that Highbury Avenue is widened to five lanes between Ron McNeil Line and Dennis Road (Section 1), and between Edgeware Line and South Edgeware Road (Section 3). It is recommended that Highbury Avenue is widened to four lanes between Dennis Road and Edgeware Line (Section 2). This solution efficiently addresses the problem statement.

4.4 Highway 3 Connectivity Alternative Solutions

Connectivity between the subject corridors and the St. Thomas Expressway (Highway 3) was not previously examined by the City's Transportation Master Plan (2021) so an evaluation was carried out as part of this project.

The following alternative solutions (Phase 2 Class EA) to improve connectivity with Highway 3 were developed:

- Alternative 1: Do Nothing
- Alternative 2: Upgrade Centennial Avenue and Existing Intersections
- Alternative 3: Realign Highbury Avenue with New Traffic Signals at Key Intersections
- Alternative 4: Realign Highbury Avenue with New Roundabout Intersections

4.4.1 Description of Alternative Solutions

The following alternative solutions (Phase 2 Class EA) to improve connectivity with Highway 3 were developed:

Alternative 1: Do Nothing

The current configuration of the road network and intersections remain as is, with no improvements. This alternative is required to be considered under the Municipal Class EA planning process as a baseline for the comparison of alternative solutions.

Alternative 2 – Upgrade Centennial Avenue and Existing Intersections

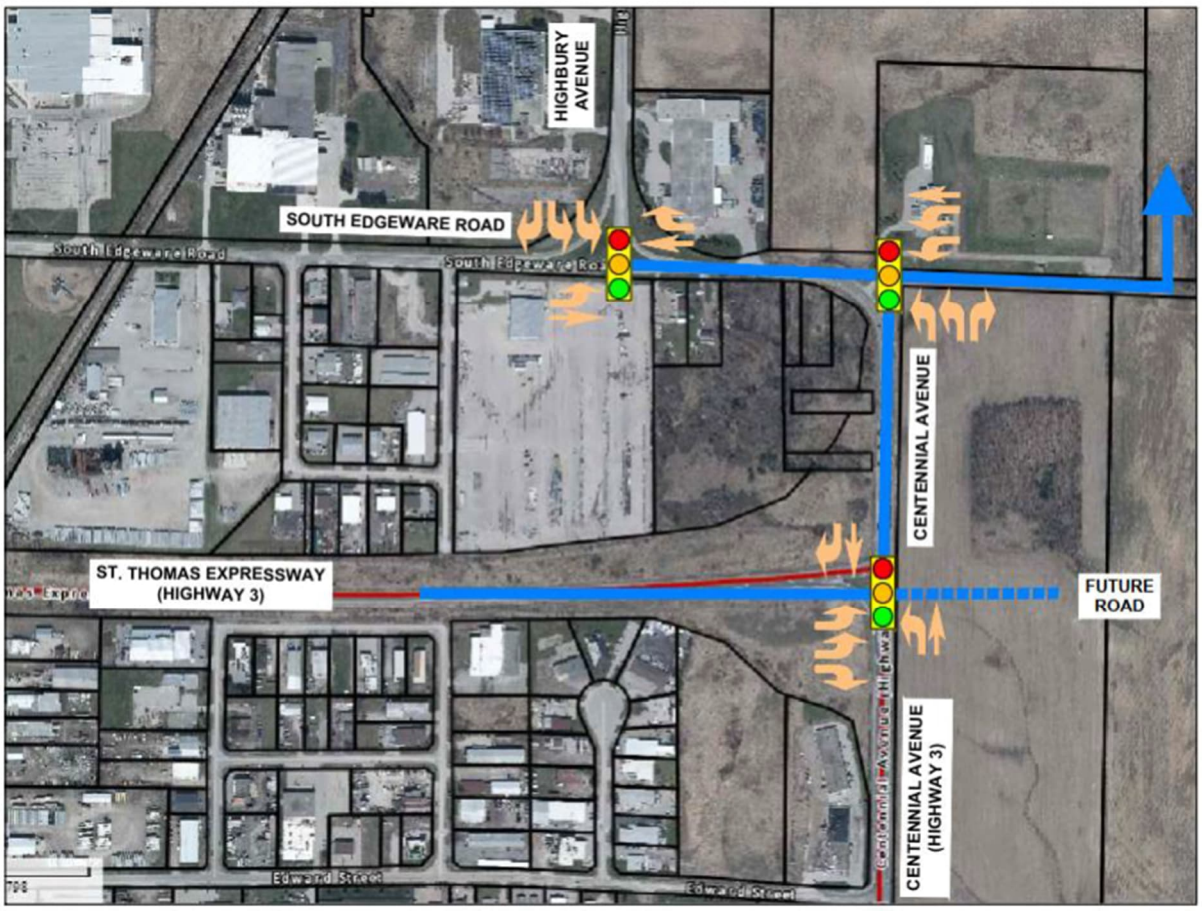

Figure 4.5 Upgrade Centennial Avenue and Existing Intersections

Centennial Avenue and South Edgeware Road east of Highbury Avenue are upgraded, while maintaining the existing roadway configuration. This alternative would not accommodate projected traffic volumes, and slightly improves road network connectivity and multi-modal safety.

Alternative 3 – Realign Highbury Avenue with new Traffic Signals at Key Intersections

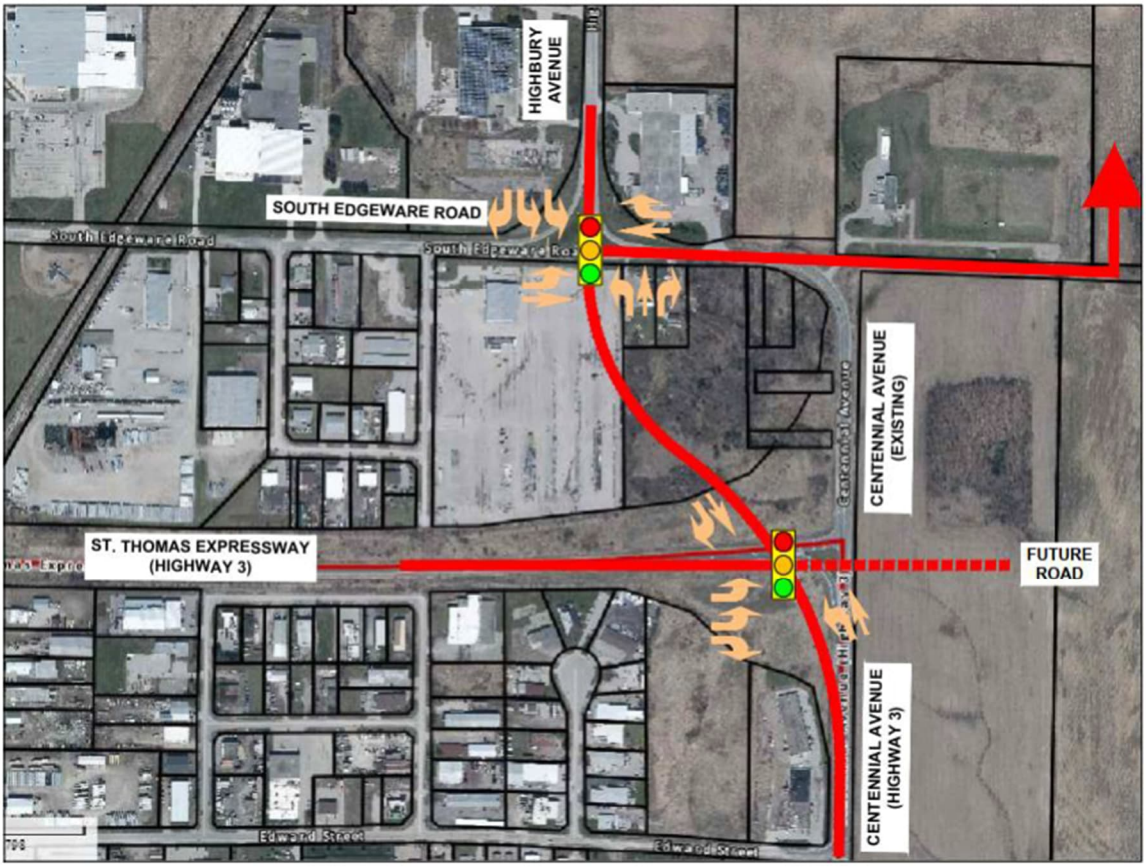

Figure 4.6 Realign Highbury Avenue with New Traffic Signals

This alternative sees Highbury Avenue extended directly south to intersect with Highway 3. New traffic signals will be installed at key intersections. This alternative accommodates projected traffic volumes, improves connectivity in the area's road network and improves multi-modal traffic operations compared to Alternative 2.

Alternative 4 – Realign Highbury Avenue with new Roundabout Intersections

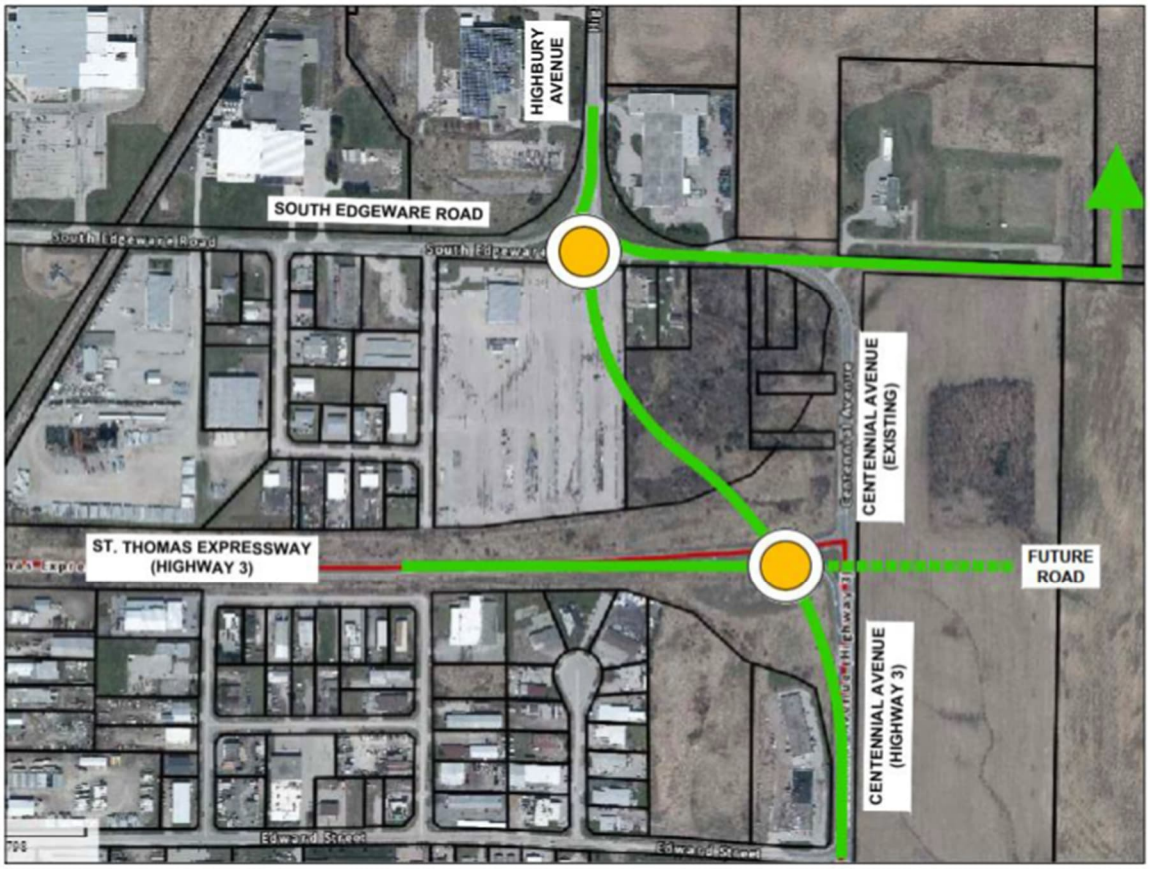

Figure 4.7 Realign Highbury Avenue with New Roundabout Intersections

This alternative sees Highbury Avenue extended directly south to intersect with Highway 3 with roundabouts installed at key intersections. This alternative accommodates projected traffic volumes, improves connectivity in the area's road network, improves multi-modal traffic operations, improves traffic safety and overall traffic flow compared to Alternatives 2 and 3.

4.4.2 Evaluation of Alternative Solutions

Table 4.5 summarizes the evaluation of alternative solutions for Highway 3 Connectivity based on criteria presented in Section 4.1and the evaluation methodology described in Section 4.2.

Table 4.5 Highway 3 Connectivity Phase 2 Evaluation

Highway 3 Connectivity

EVALUATION CRITERIA	1. Do Nothing		2. Upgrade Centennial Avenue and Existing Intersections		3. Realign Highbury Avenue to the south with new Traffic Signals		4. Realign Highbury Avenue to the south with new Roundabout Intersections	
TRAFFIC OPERATIONS & SAFETY	○	Does not accommodate projected traffic volumes, with no traffic calming benefits, no safety improvements, and no accommodation of crossing pedestrians and cyclists.	◑	Partially addresses traffic safety and projected volumes, with improved pedestrian & cyclist accommodation, and no traffic calming benefits.	◕	Mostly acommodates projected traffic volumes, including potential future extension of Highway 3, and South Edgeware Road East. No traffic traffic calming benefits, with minor safety improvements for pedestrians and cyclists.	●	Accommodates projected traffic volumes, including potential future extension of Highway 3, and South Edgeware Road East, with notable traffic calming benefits, overall safety improvements for all road-users, pedestrian crossing facilities, and routing cyclists around the intersections.
SOCIAL ENVIRONMENT	◔	Does not accommodate future planned land uses, with increased idling time increasing noise impacts and reducing air quality.	◑	Partially accommodates future planned land uses, while increased idling time increases noise impacts and decreases air quality. Impacts properties on Centennial Avenue.	◑	Mostly accommodates future planned land uses, while minorly increasing idling time resulting in increased noise impacts and decreased air quality. Significantly impacts properties south of Edgeware.	◕	Accommodates future planned land uses, reduces idling time which mitigates noise impacts and improves air quality. Significant property impacts south of Edgeware.
NATURAL ENVIRONMENT	◕	No changes to existing vegetation, no mitigation or resilience to climate change impacts, and no impacts or opportunity for improvements to aquactic ecosystems or water quality.	◕	Minor loss of successional woodland and meadow communities, provisions for pedestrians and cyclists reduces expected production of GHG emissions, however increased idling time associated with traffic signals increases GHG emissions. Minor impacts to aquatic ecosystems due to construction, with opportunities for enhanced drainage ditches.	◑	Loss of woodland and meadow communities, fragmentation of existing habitats, opportunity for native species landscaping, provisions for pedestrians and cyclists reduces expected production of GHG emissions, however increased idling time associated with traffic signals increases GHG emissions. Potential impacts to aquatic ecosystems due to construction, with opportunities to enhance drainage ditches.	◑	Loss of woodland and meadow communities, fragmentation of existing habitats, opportunity for native species landscaping, reduced idling time and provision for pedestrians and cyclists reduces GHG emissions. Opportunity for plantings in centre of roundabout to mitigate climate change impacts. Increased potential impacts to aquatic ecosystems due to construction, however, there is opportunity to enhance drainage ditches.
HERITAGE / ARCHAEOLOGICAL / CULTURAL IMPACTS	●	No impact to archaeological or built heritage resources along the corridor	●	Archaeological and/or cultural heritage impacts TBD (not anticipated)	●	Archaeological and/or cultural heritage impacts TBD (not anticipated)	●	Archaeological and/or cultural heritage impacts TBD (not anticipated)
COST	●	No capital cost to implement and no utility relocation costs.	◕	Cost for new signal equipment and intersection lighting. Civil costs for asphalt, curb, sidewalk, and other grading/drainage alterations	◑	Cost for new signal equipment and intersection lighting. Civil costs for asphalt, curb, sidewalk, and other grading/drainage alterations	◑	No cost for signals; increased lighting requirements. Additional platform required to accommodate roundabout. Increased traffic staging requirements during construction.
OVERALL SCORE	12.0		14.0		13.0		15.0	
EVALUATION SUMMARY	Not Recommended		Not Recommended		Not Recommended		Recommended to be Carried Forward	

4.4.3 Preferred Solution

The preferred solution is to realign Highbury Avenue to the south with new roundabout intersections. This preferred solution provides improved connectivity with Highway 3, upgrades the South Edgeware Road at Highbury Avenue intersection to a multi-lane roundabout, and upgrades Highway 3 at Centennial Avenue with the new Highbury Avenue extension to a multi-lane roundabout.

4.5 South Edgeware Road Alternative Solutions

South Edgeware Road will be widened to three lanes as recommended in the City's Transportation Master Plan (2021). The Transportation Master Plan (2021) satisfied the requirements of Phase 1 and 2 of the Municipal Class EA process, therefore upon review, it is confirmed that the recommendation to widen South Edgeware Road to three lanes within the study area is the preferred solution.

5.0 ALTERNATIVE DESIGN CONCEPTS FOR THE PREFERRED SOLUTION

Under Phase 3 of the Class EA, a range of design concepts to implement the preferred solution (as identified in Phase 2) are identified and evaluated based on functionality and impacts to the surrounding environment.

Per the MCEA, the potential impact of each alternative design concept identified was assessed in consideration of the detailed inventory of the environment described above, and comparatively evaluated based on these potential impacts to identify the recommended design concepts.

The recommended design concepts are then presented to the public, stakeholders, and agencies to solicit input into the selection of the "preferred design". Similar to the process followed during Phase 2 of the study, the EA Act requires that all reasonable design concepts, including the "Do Nothing" alternative, be considered during the decision-making process.

5.1 Highbury Avenue Alignment Design Concepts

This section documents the design options considered to implement the preferred solution to widen the Highbury Avenue corridor from Ron McNeil Line south to South Edgeware Road within the Study Area.

5.1.1 Description of Alternative Design Concepts

The following alternative design concepts (Phase 3 Class EA) were developed to widen Highbury Avenue:

Alternative 1: Widen about the Centreline

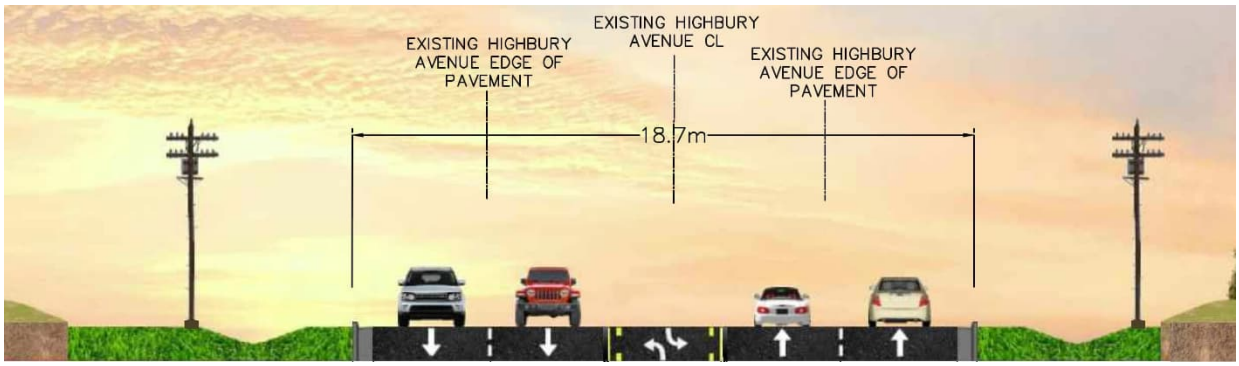

Figure 5.1 Highbury Avenue Widen About the Centreline

Highbury Avenue is widened to include two lanes of traffic in each direction with a centre-left-turn lane where it is required. Drainage is improved via a combination of roadside ditches and curb or gutter where it is appropriate. This alternative impacts properties on either side of the road equally.

Alternative 2: Widen to the East of the Centreline

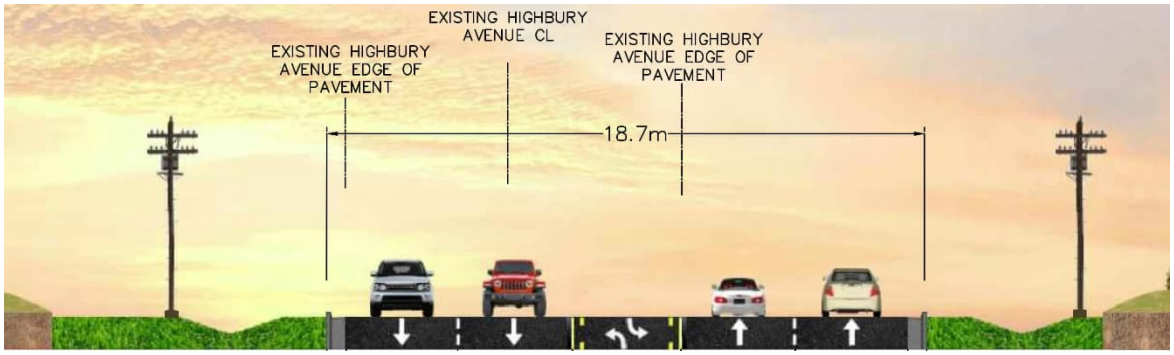

Figure 5.2 Highbury Avenue Widen to the East of the Centreline

Highbury Avenue is widened to include two lanes of traffic in each direction with a centre-left-turn lane where it is required. Drainage is improved via a combination of roadside ditches and a curb or gutter where it is appropriate. This alternative maintains the western edge of pavement, with widening impacts to the east.

Alternative 3: Widen to West of the Centreline

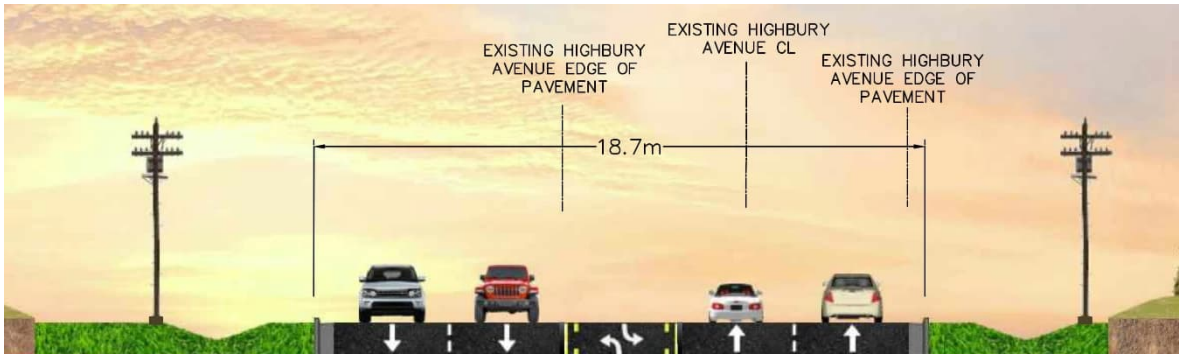

Figure 5.3 Highbury Avenue Widen to the West of the Centreline

Highbury Avenue is widened to include two lanes of traffic in each direction with a centre-left-turn lane where it is required. Drainage is improved via a combination of roadside ditches and curb or gutters where is it appropriate. This alternative maintains the eastern edge of pavement, with widening impacts to the west.

Alternative 4: Do Nothing

The portion of Highbury Avenue identified within the Study Area would remain as is, with no improvements undertaken. This alternative is required to be considered under the Municipal Class EA planning process as a baseline for the comparison of alternative solutions.

5.1.2 Evaluation of Alternative Design Concepts

Table 5.1, Table 5.2, and Table 5.3 summarize the evaluation of alternative design concepts for the widening of Highbury Avenue based on criteria presented in Section 4.1 and the evaluation methodology described in Section 4.2. The evaluation of the Highbury Avenue Widening Design Concepts has been split into three distinct sections as follows:

1. Ron McNeil Line to Dennis Road (Section 1)
2. Dennis Road to Edgeware Line (Section 2)
3. Edgeware Line to South Edgeware Road (Section 3)

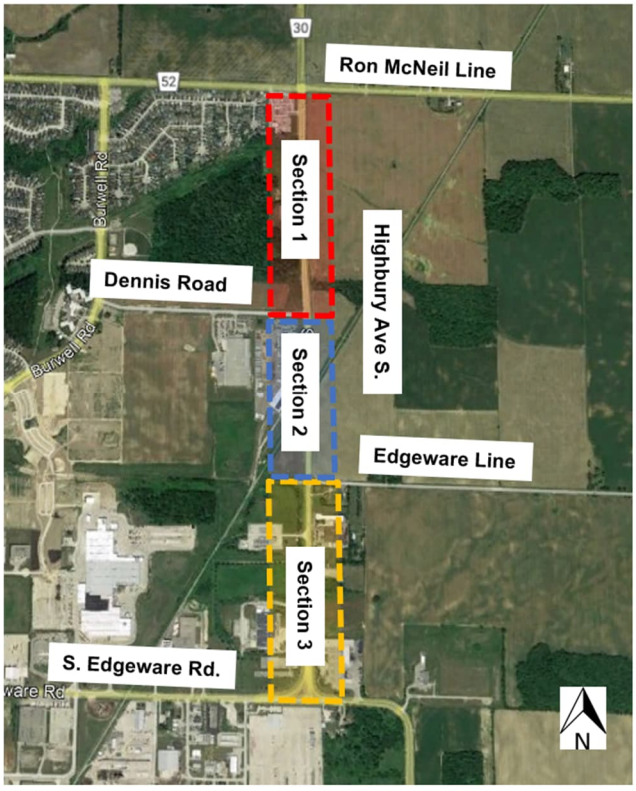

Figure 5.4 Sections of Highbury Avenue

Conducting the evaluation in sections allowed for a refined approach when the roadway sections have a distinct character, and this recognizes that one alternative may not be appropriate for the entire length of the roadway.

After PIC #2 was completed and more information was received, the evaluation for Alternative Design Concepts was modified to accurately reflect this information. However, the recommendations are the same as what was presented to the public in PIC #2.

Table 5.1 Highbury Avenue from Ron McNeil Line to Dennis Road (Section 1) Alternative Design Concepts Evaluation

Highbury Avenue Alignment (Ron McNeil Line to Dennis Road)

EVALUATION CRITERIA	1. Widen About the Centreline		2. Widen to the East (maintain western edge of pavement, widening impacts to the east)		3. Widen to the West (maintain eastern edge of pavement, widening impacts to the west)		4. Do Nothing	
TECHNICAL (TRAFFIC OPERATIONS & SAFETY / ROADWAY DRAINAGE)	●	Fully satisfies future traffic capacity requirements including Good Movements. Satisfies road and adjacent property drainage requirements.	●	Fully satisfies future traffic capacity requirements including Good Movements. Satisfies road and adjacent property drainage requirements.	◕	Fully satisfies future traffic capacity requirements including Good Movements. Satisfies road and adjacent property drainage requirements.	○	Does not satisfy future traffic capacity requirements and has no positive or negative impacts to drainage requirements.
SOCIAL ENVIRONMENT	◕	Supports plan adjacent land uses and is consistent with land designation in OP. Requires partial acquisition of 10 properties, with total of approx. 5000 square meters.	◕	Supports plan adjacent land uses and is consistent with land designation in OP. Requires partial acquisition of 10 properties, with total of approx. 8000 square meters.	◕	Supports plan adjacent land uses and is consistent with land designation in OP. Requires full buy-out of 10 properties, with total of approx. 8000 square meters. Impacts commercial development south of Ron McNeil Line (entrance, large static sign, and parking lot)	◑	No improvements or property impacts
NATURAL ENVIRONMENT	◕	Minor impacts to terrestrial wildlife, with habitat related distrubance and removal, and impacts to cultural woodland community. Impacts to aquatic habitat in culvert replacement & extension areas, enclosing fish habitat at two watercourse crossings up and downstream of the road.	◕	Minor impacts to terrestrial wildlife, with habitat related distrubance and removal, with expansion to the eat impacting primarily agricultural fields rather than treed areas. Impacts to aquatic habitat in culvert replacement and this option encloses upstream habitat at one crossing only.	◑	Impacts to terrestrial wildlife and habitat. Direct impacts to roadside vegetation and trees within the widening limit (west side only). Direct impacts to woodland community. Expanding to the west impacts woodlot and roadside meadow features. Impacts to aquatic habitat in culvert replacement and extension areas, enclosing fish habitat downstream of the road. This option encloses downstream habitat at both watercourse crossings, leaving upstream (some which provide indrect habitats only) intact.	●	No negative or positive impacts on the natural environment.
HERITAGE / ARCHAEOLOGICAL / CULTURAL IMPACTS	◕	Additional Stage 2 AA required (5000m2). No Impact to Cultural Heritage Features	◕	Additional Stage 2 AA required (8000m2). No Impact to Cultural Heritage Features	◕	Additional Stage 2 AA required (8000m2). No Impact to Cultural Heritage Features	●	No impact to archaeological or built heritage resources along the corridor
COST	◑	Highest construction costs; moderate impact on utilities and and least impact on properties	◕	Similar construction costs; moderate impact on utilities and properties	◑	Similar construction costs; least impact on utilities and moderate impact on properties, with standard maintenance costs anticipated.	◕	No capital cost but increased maintenance costs for infrastructure.
OVERALL SCORE	15.0		16.0		14.0		13.0	
EVALUATION SUMMARY	Not Recommended		Recommended to be Carried Forward		Not Recommended		Not Recommended	

Table 5.2 Highbury Avenue from Dennis Road to Edgeware Line (Section 2) Alternative Design Concepts Evaluation

Highbury Avenue Alignment (Dennis Road to Edgeware Line)

EVALUATION CRITERIA	1. Widen About Centreline		2. Widen to the East (maintain western edge of pavement)		3. Widen to the West (maintain eastern edge of pavement)		4. Do Nothing	
TECHNICAL (TRAFFIC OPERATIONS & SAFETY / ROADWAY DRAINAGE)	●	Fully satisfies future traffic capacity requirements including Good Movements. Satisfies road and adjacent property drainage requirements.	●	Fully satisfies future traffic capacity requirements including Good Movements. Satisfies road and adjacent property drainage requirements.	●	Fully satisfies future traffic capacity requirements including Good Movements. Satisfies road and adjacent property drainage requirements.	○	Does not satisfy future traffic capacity requirements, with no positive or negative impacts to drainage requirements.
SOCIAL ENVIRONMENT	●	Supports plan adjacent land uses and is consistent with land designation in OP. Requires full buy-out of 5 properties, with total of approx. 5,900 meters squared.	●	Supports plan adjacent land uses and is consistent with land designation in OP. Requires full buy-out of 2 properties, with total of approx. 6,500 meters squared.	◕	Supports plan adjacent land uses and is consistent with land designation in OP. Requires full buy-out of 3 properties, with total of approx. 6,500 meters squared. Impacts industrial lands south of Dennis Road	◑	No improvements to planned land uses and no property impacts.
NATURAL ENVIRONMENT	◕	Impacts to terrestrial environment limited to roadside vegetation (common and non-native species). System is resilient to impacts and disturbed areas will become revegetated.	●	Impacts to terrestrial environment limited to roadside vegetation (common and non-native species). System is resilient to impacts and disturbed areas will become revegetated.	◕	Impacts to terrestrial environment limited to roadside vegetation (common and non-native species). System is resilient to impacts and disturbed areas will become revegetated.	●	No negative or positive impacts on the natural environment.
HERITAGE / ARCHAEOLOGICAL / CULTURAL IMPACTS	●	No impact to archaeological or built heritage resources along the corridor	●	No impact to archaeological or built heritage resources along the corridor	●	No impact to archaeological or built heritage resources along the corridor	●	No impact to archaeological or built heritage resources along the corridor
COST	◕	Similar construction costs and property costs with highest utility relocation costs	◕	Similar construction costs and property costs with lowest utility relocation costs	◕	Similar construction costs and property costs with lowest utility relocation costs	◕	No capital cost but ongoing costs to maintain infrastructure
OVERALL SCORE	18.0		19.0		17.0		13.0	
EVALUATION SUMMARY	Not Recommended		Recommended to be Carried Forward		Not Recommended		Not Recommended	

Table 5.3 Highbury Avenue from Edgeware Line to South Edgeware Road (Section 3) Alternative Design Concepts Evaluation

Highbury Avenue Alignment (Edgeware Line to South Edgeware Road)

EVALUATION CRITERIA	1. Widen About Centreline with Urban Cross-Section		2. Widen About Centreline with Rural Cross-Section		3. Do Nothing	
TECHNICAL (TRAFFIC OPERATIONS & SAFETY / ROADWAY DRAINAGE)	●	Fully satisfies future traffic capacity requirements including Good Movements. Satisfies road and adjacent property drainage requirements.	●	Fully satisfies future traffic capacity requirements including Good Movements. Satisfies road and adjacent property drainage requirements.	○	Does not satisfy future traffic capacity requirements. No positive or negative impact to drainage requirements.
SOCIAL ENVIRONMENT	●	Supports plan adjacent land uses and is consistent with land designation in OP. Requires full buy-out of 1 properties, with total of approx. 175 meters squared.	◕	Supports plan adjacent land uses and is consistent with land designation in OP. Requires full buy-out of 7 properties, with total of approx. 12000 meters squared.	◑	No improvements to planned land uses and no property impacts.
NATURAL ENVIRONMENT	◕	Minor impacts to terrestrial wildlife and habitat related distrubance and removal, with minor impacts to aquatic ecosystems through culvert extension/replacement.	◕	Minor impacts to terrestrial wildlife and habitat related distrubance and removal. Vegetation communities are similar on both sides of the road. Minor impacts to aquatic ecosystems through culvert extension/replacement.	●	No negative or positive impacts on the natural environment.
HERITAGE / ARCHAEOLOGICAL / CULTURAL IMPACTS	●	Potential archaeological impact of relatively minor property acquisition	◕	Potential archaeological impact of property acquisition	●	Potential archaeological impact of property acquisition
COST	◕	Similar construction cost; less impact on utilities and property.	◑	Similar construction cost; greater impact on utilities and property.	○	N/A
OVERALL SCORE	18.0		15.0		10.0	
EVALUATION SUMMARY	Recommended to be Carried Forward		Not Recommended		Not Recommended	

5.1.3 Preferred Design Concept

The preferred design for Section 1 of Highbury Avenue between Ron McNeil Line and Dennis Road is Alternative 2, to maintain the western edge of pavement and widen to the east to include a 5-lane cross-section.

The preferred design for Section 2 of Highbury Avenue between Dennis Road and Edgeware Line is Alternative 2, to maintain the western edge of pavement and widen to the east to include a 4-lane cross-section, as shown in Figure 5.5.

The preferred design for Section 3 of Highbury Avenue between Edgeware Line and South Edgeware Road is Alternative 1, to widen about the centreline to the east and west to include a 5-lane urban cross-section.

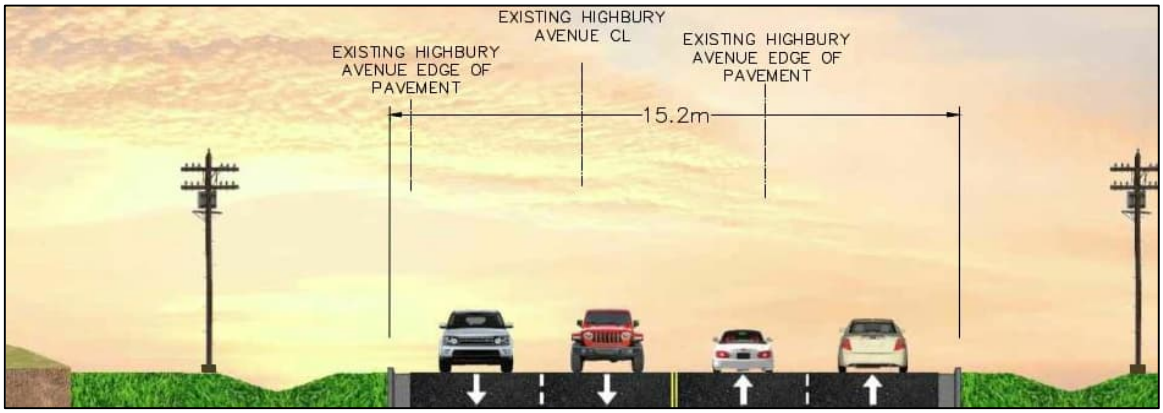

Figure 5.5 Highbury Avenue Widen to the East to 4 Lanes Between Dennis Road & Edgeware Line

5.2 South Edgeware Road Widening Design Concepts

This section documents the design options considered to implement the preferred solution to widen the South Edgeware Road corridor from within the Study Area.

5.2.1 Description of Alternative Design Concepts

The following alternative design concepts (Phase 3 Class EA) were developed to widen South Edgeware Road:

Alternative 1: Widen about the Centreline with an Urban Cross-Section

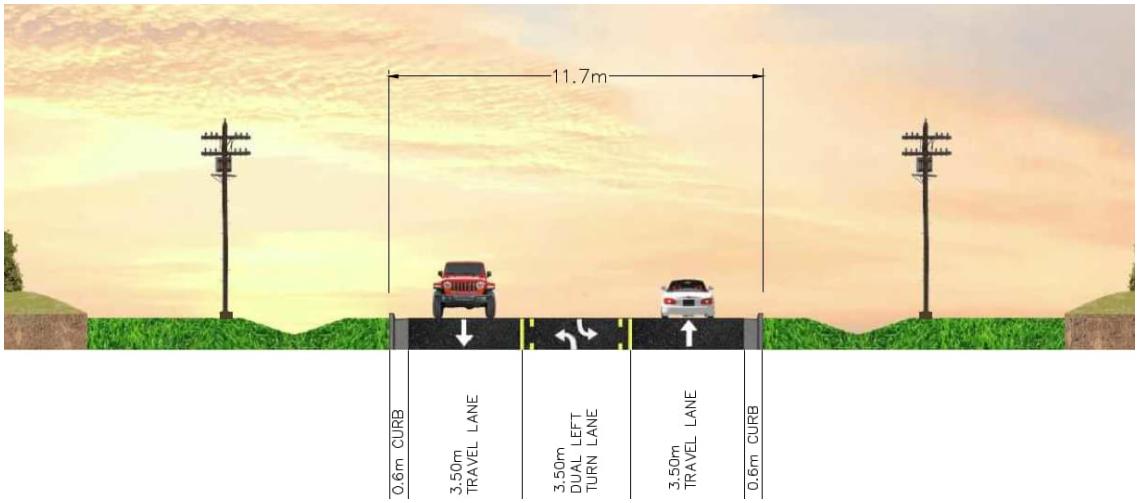

Figure 5.6 Widen about the Centreline with an Urban Cross-Section

South Edgeware Road will have one lane of traffic in each direction with a centre-left-turn lane where required. This alternative equally impacts properties on either side of the road and provides drainage improvements via curb, gutter, and roadside ditches.

Alternative 2: Widen about the Centreline with a Rural Cross-Section

Figure 5.7 Widen About the Centreline with a Rural Cross-Section

South Edgeware Road is widened to have one lane of traffic in each direction with a centre-left-turn lane where required. This alternative equally impacts properties on either side of the road, and provides drainage via roadside ditches only, no curb or gutter.

Alternative 3: Do Nothing

The portion of South Edgeware Road identified within the Study Area would remain as is, with no improvements undertaken. This alternative is required to be considered under the Municipal Class EA planning process as a baseline for the comparison of alternative solutions.

5.2.2 Evaluation of Alternative Design Concepts

Table 5.4 summarizes the evaluation of South Edgeware Road Widening Design Concepts based on criteria presented in Section Assessment Criteria4.1 and the evaluation methodology described in Section 4.2.

After PIC #2 was completed and more information was received, the evaluation for Alternative Design Concepts was modified to accurately reflect this information. However, the recommendations are the same as what was presented to the public in PIC #2.

5.2.3 Preferred Design Concept

The preferred design for the widening of South Edgeware Road between Burwell Road and the eastern terminus is Alternative 1, to widen South Edgeware Road about the centreline to three lanes with an urban cross-section.

Table 5.4 South Edgeware Road Alternative Design Concepts Evaluation

South Edgeware Road Widening (Burwell Road to Centennial Avenue)

EVALUATION CRITERIA	1. Widen About the Centreline with Urban Cross-Section		2. Widen About Centreline with Rural Cross-Section		3. Do Nothing	
TECHNICAL (TRAFFIC OPERATIONS & SAFETY / ROADWAY DRAINAGE)	●	Fully satisfies future traffic capacity requirements, and satisfies drainage requirements.	●	Fully satisfies future traffic capacity requirements, and satisfies drainage requirements.	○	Does not satisfy future traffic capacity requirements.
SOCIAL ENVIRONMENT	●	Supports planned land uses with no property impacts.	◕	Supports planned land uses with some property impacts.	◑	No improvements to planned land uses and no property impacts.
NATURAL ENVIRONMENT	●	Minor impacts to the natural environment	●	Minor impacts to the natural environment	●	No negative or positive impacts on the natural environment.
HERITAGE / ARCHAEOLOGICAL / CULTURAL IMPACTS	●	No impacts to Archeological or Cultural Heritage Features.	◕	No impact to Cultural Heritage Features with some Stage 2 AA required.	●	No impact to archaeological or built heritage resources along the corridor
COST	◕	Similar construction costs with some utility relocation costs, and no property costs.	◔	Similar construction costs with more utility and property impacts.	●	No capital cost but ongoing costs to maintain infrastructure
OVERALL SCORE	19.0		15.0		14.0	
EVALUATION SUMMARY	Recommended		Not Recommended		Not Recommended	

5.3 Connectivity to Highway 3 Design Concepts

This section documents the alternative design concepts considered to address the identified capacity, roadway, safety, and traffic operational requirements for Connectivity to Highway 3. The alternative design concepts considered to address the identified deficiencies are described below.

5.3.1 Ron McNeil Line at Highbury Avenue Intersection

This section documents the design options developed (Phase 3 Class EA) and evaluation process followed to improve the Ron McNeil Line at Highbury Avenue intersection to improve connectivity to Highway 3 within the Study Area.

5.3.1.1 DESCRIPTION OF ALTERNATIVE DESIGN CONCEPTS

The following alternative design concepts (Phase 3 Class EA) were developed for the Ron McNeil Line at Highbury Avenue intersection. Options evaluated for this intersection include signalization and roundabout control. This intersection was not included in the Phase 2 Alternative Solutions for Highway 3 Connectivity evaluation.

Alternative 1: Signalized Intersection

Figure 5.8 Signalized Intersection

The Ron McNeil Line at Highbury Avenue intersection is reconstructed to a standard signalized intersection with two approach lanes and left-turn lanes. This alternative meets future traffic capacity requirements with minimal property impacts, has potential for low

compliance to the signal, and minimal traffic calming benefits. This option has property impacts.

Alternative 2: Multi-Lane Roundabout Intersection

Figure 5.9 Multi-Lane Roundabout Intersection

The Ron McNeil Line at Highbury Avenue intersection is reconstructed to a multi-lane roundabout with two approach lanes per direction. This alternative meets future traffic capacity requirements, with effective traffic features with no enforcement required, serving as a gateway into the City. This option has property impacts.

Alternative 3: Do Nothing

This alternative provides no improvements to existing conditions and does not meet future traffic capacity requirements. The current intersection configuration provides minimal traffic calming benefits and has potential for low compliance to the signal. This alternative is required to be considered under the Municipal Class EA planning process as a baseline for the comparison of alternative solutions.

5.3.1.2 EVALUATION OF ALTERNATIVE DESIGN CONCEPTS

Table 5.5 summarizes the evaluation of alternative design concepts for the Ron McNeil Line at Highbury Avenue intersection to improve connectivity to Highway 3. The evaluation is based on criteria presented in Section 4.1 and the evaluation methodology described in Section 4.2.

After PIC #2 was completed and more information was received, the evaluation for Alternative Design Concepts was modified to accurately reflect this information. However, the recommendations are the same as what was presented to the public in PIC #2.

Table 5.5 Ron McNeil Line at Highbury Avenue Intersection Alternative Design Concepts Evaluation

Ron McNeil and Highbury Avenue Intersection Alignment

EVALUATION CRITERIA	1. Signalized Intersection		2. Multi-lane Roundabout Intersection		3. Do Nothing	
TRAFFIC OPERATIONS & SAFETY	◕	Meets future traffic capacity requirements	●	Meets future traffic capacity requirements and reduces severe collisions within intersection	○	Does not meet future traffic capacity requirements
SOCIAL ENVIRONMENT	●	Supports planned adjacent land uses, requires buy-out of 1 property	◕	Supports planned adjacent land uses, requires buy-out of 3 properties	◑	No improvements to planned adjacent land uses and no property impacts
NATURAL ENVIRONMENT	◕	Minor loss of roadside vegetation and associated wildlife habitat. No impacts to aquatic ecosystems. No improvement to air quality.	●	Minor loss of roadside vegetation and associated wildlife habitat. No impacts to aquatic ecosystems. Improvement to air quality.	◕	No positive or negative impacts to natural environment
HERITAGE / ARCHAEOLOGICAL / CULTURAL IMPACTS	◕	No impacts to Cultural Heritage features with additional Stage 2 AA required.	◕	No impacts to Cultural Heritage features with additional Stage 2 AA required.	●	No impact to archaeological or built heritage resources along the corridor
COST	◑	High capital costs, with lower utility and property impacts.	◔	High capital costs, with moderate utility impacts and significant property impacts.	●	No capital, utility, or property costs.
OVERALL SCORE	15.0		15.0		13.0	
EVALUATION SUMMARY	Not Recommended		Recommended to be Carried Forward		Not Recommended	

5.3.1.3 PREFERRED DESIGN CONCEPT

The preferred design to improve the Ron McNeil Line at Highbury Avenue intersection is Alternative 2 – reconstructing the intersection to a multi-lane roundabout.

5.3.2 South Edgeware Road at Highbury Avenue Intersection

This section documents the design options developed (Phase 3 Class EA) and evaluation process followed to improve the South Edgeware Road at Highbury Avenue intersection to improve connectivity to Highway 3 within the Study Area.

5.3.2.1 DESCRIPTION OF ALTERNATIVE DESIGN CONCEPTS

The recommended solution from Phase 2 Alternative Solutions for Highway 3 Connectivity is for roundabout control at this intersection. The following alternative design concepts (Phase 3 Class EA) were developed for the South Edgeware Road at Highbury Avenue intersection to improve connectivity to Highway 3:

Alternative 1: Roundabout Intersection at Northwest Corner

Figure 5.10 Roundabout Intersection at Northwest Corner

The South Edgeware Road at Highbury Avenue intersection is reconstructed to a multi-lane roundabout with two approach lanes per direction. This alternative meets future traffic capacity requirements and minimizes property impacts.

Alternative 2: Roundabout Intersection Centered

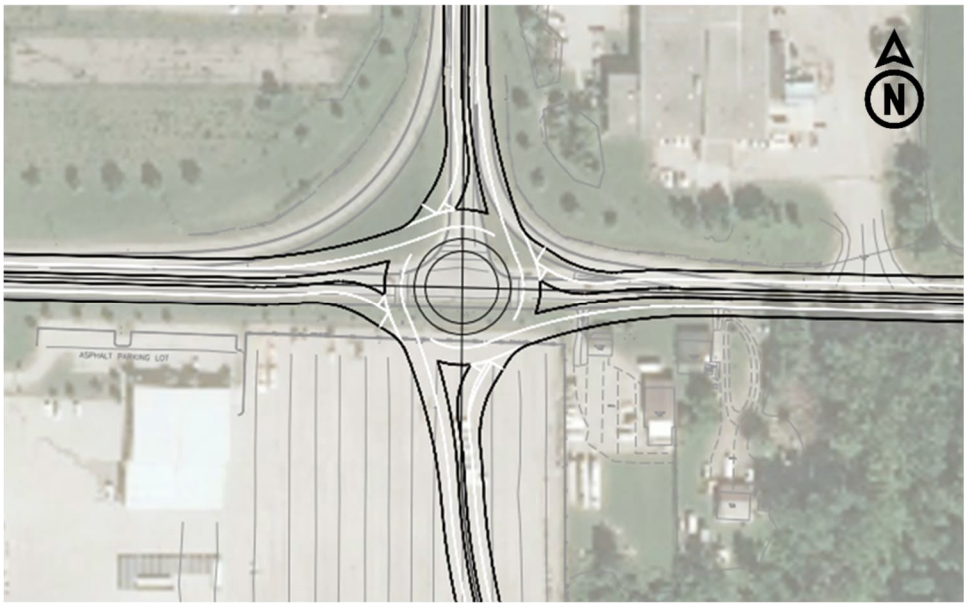

Figure 5.11 Roundabout Intersection Centered

The South Edgeware Road at Highbury Avenue intersection is reconstructed to a multi-lane roundabout with two approach lanes per direction. This alternative meets future traffic capacity requirements, however, has additional property impacts.

Alternative 3: Do Nothing

This alternative provides no improvements to existing conditions and does not meet future traffic capacity requirements. This alternative is required to be considered under the Municipal Class EA planning process as a baseline for the comparison of alternative solutions.

5.3.2.2 EVALUATION OF ALTERNATIVE DESIGN CONCEPTS

Table 5.6 summarizes the evaluation of alternative design concepts for the South Edgeware Road at Highbury Avenue intersection to improve connectivity to Highway 3. The evaluation is based on criteria presented in Section 4.1 and the evaluation methodology described in Section 4.2.

After PIC #2 was completed and more information was received, the evaluation for Alternative Design Concepts was modified to accurately reflect this information. However, the recommendations are the same as what was presented to the public in PIC #2.

Table 5.6 South Edgeware Road and Highbury Avenue Intersection Alternative Design Concepts Evaluation

South Edgeware Road and Highbury Avenue Intersection Alignment

EVALUATION CRITERIA	1. Roundabout Intersection at Northwest Corner		2. Roundabout Intersection Centered		3. Do Nothing	
TRAFFIC OPERATIONS & SAFETY	◕	No adverse conditions to tie-in of South Edgeware Road, but requires full closure of existing intersection during construction	◕	No adverse conditions to tie-in of South Edgeware Road, but requires full closure of existing intersection during construction	○	No improvements to traffic operations and safety
SOCIAL ENVIRONMENT	●	Supports planned adjacent land uses, but requires buy-out of 1 property and avoids impacts to residential properties	◕	Supports planned adjacent land uses, but requires buy-out of 2 properties, and impacts residential properties	◑	No improvements to adjacent property land use plans and no property impacts
NATURAL ENVIRONMENT	●	Minor loss of roadside vegetation and associated wildlife habitat, with no impacts to aquatic ecosystems. No impacts to air quality and minor noise impacts.	●	Minor loss of roadside vegetation and associated wildlife habitat, with no impacts to aquatic ecosystems. No impacts to air quality and minor noise impacts.	●	No positive or negative impacts to the natural environment
HERITAGE / ARCHAEOLOGICAL / CULTURAL IMPACTS	●	No Impact to Cultural Heritage features, with some additional Stage 2 AA required.	●	No Impact to Cultural Heritage features, with some additional Stage 2 AA required.	●	No impact to Archeological or Cultural Heritage Features
COST	◑	High construction costs with high impact to utilities and properties	◔	High construction costs with high impact to utilities and highest impact to properties	◕	No capital, utility relocation or property costs
OVERALL SCORE	17.0		15.0		13.0	
EVALUATION SUMMARY	Recommended to be Carried Forward		Not Recommended		Not Recommended	

5.3.2.3 PREFERRED DESIGN CONCEPT

The preferred design to improve the South Edgeware Road at Highbury Avenue intersection is Alternative 1 – reconstructing the intersection to a multi-lane roundabout at the northwest corner.

5.3.3 Highway 3 at Highbury Avenue Intersection Alternative Design Concepts

This section documents the design options developed (Phase 3 Class EA) and evaluation process followed to improve the Highway 3 at Highbury Avenue intersection to improve connectivity to Highway 3 within the Study Area.

5.3.3.1 DESCRIPTION OF ALTERNATIVE DESIGN CONCEPTS

The recommended solution from Phase 2 Alternative Solutions for Highway 3 Connectivity is for roundabout control at this intersection. The following alternative design concepts (Phase 3 Class EA) were developed for the Highway 3 at Highbury Avenue intersection to improve connectivity to Highway 3:

Alternative 1: Roundabout Intersection to the South

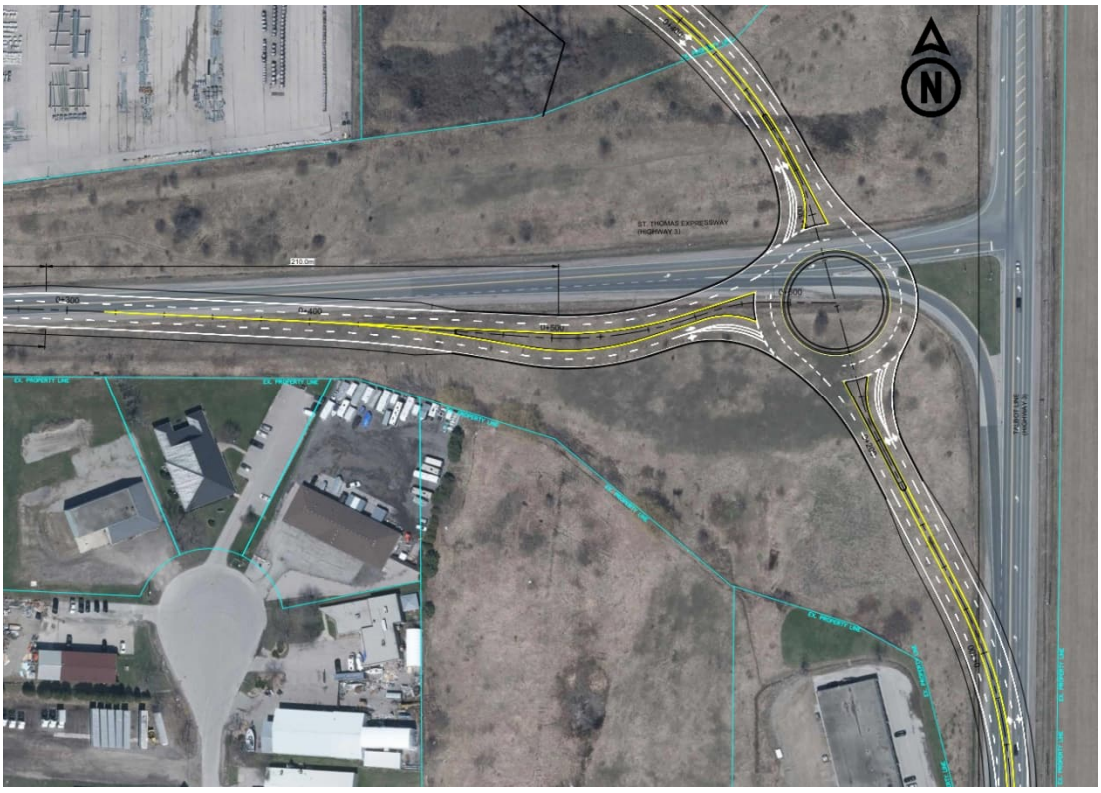

Figure 5.12 Roundabout Intersection to the South

The Highway 3 at Highbury Avenue intersection is reconstructed to a multi-lane roundabout with two approaching lanes in each direction. This alternative meets future traffic capacity requirements and aligns with a future road proposed east of Centennial Avenue. This option also maximizes developable lands.

Alternative 2: Roundabout Intersection to the North

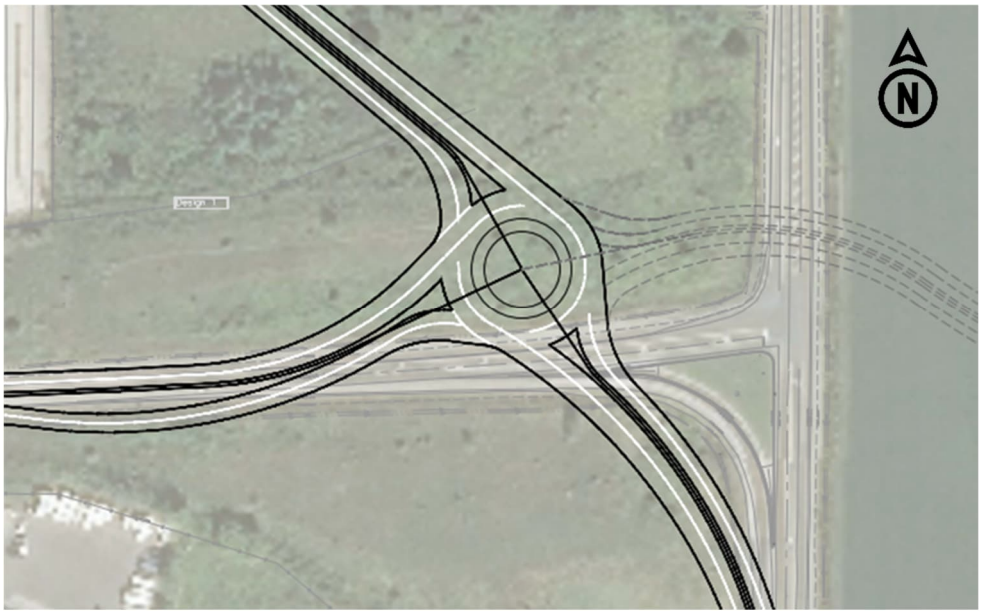

Figure 5.13 Roundabout Intersection to the North

The Highway 3 at Highbury Avenue intersection is reconstructed to a multi-lane roundabout with two approach lanes in each direction. This alternative meets future traffic capacity requirements but does not align well with the future road proposed east of Centennial Avenue.

Alternative 3: Do Nothing

This alternative provides no improvements to existing conditions and does not meet future traffic capacity requirements. This alternative is required to be considered under the Municipal Class EA planning process as a baseline for the comparison of alternative solutions.

5.3.3.2 EVALUATION OF ALTERNATIVE DESIGN CONCEPTS

Table 5.7 summarizes the evaluation of alternative design concepts for the Highway 3 at Highbury Avenue intersection to improve connectivity to Highway 3. The evaluation is based on criteria presented in Section 4.1 and the evaluation methodology described in Section 4.2.

After PIC #2 was completed and more information was received, the evaluation for Alternative Design Concepts was modified to accurately reflect this information. However, the recommendations are the same as what was presented to the public in PIC #2.

5.3.3.3 PREFERRED DESIGN CONCEPT

The preferred design to improve the Highway 3 at Highbury Avenue intersection is Alternative 1 – reconstruct the intersection to a multi-lane roundabout to the south.

Figure 5.14 identifies an interim configuration to meet 2023 traffic demands.

Figure 5.15 identifies a potential configuration to meet 2033 traffic demands and the road needs in accordance with other ongoing studies. This figure is intended to demonstrate the preferred design concept is feasible with the types of design concepts considered by other studies. The timing and form of future intersection improvements are subject to future demand, studies, and approvals.

Figure 5.14 Roundabout – Interim Condition (2023)

Figure 5.15 Roundabout – Ultimate Condition (2033)

Table 5.7 St. Thomas Expressway (Highway 3) and Highbury Avenue Intersection Alternative Design Concepts Evaluation

St. Thomas Expressway and Highbury Avenue Intersection Alignment

EVALUATION CRITERIA	1. Roundabout Intersection to the South		2. Roundabout Intersection to the North		3. Do Nothing	
TRAFFIC OPERATIONS & SAFETY	●	Accommodates alignment of future arterial road	◕	Requires undesirable horizontal curve to accommodate alignment of future arterial road	○	No consideration of future arterial road
SOCIAL ENVIRONMENT	●	Supports planned adjacent land uses and has no property impacts	●	Supports planned adjacent land uses and has no property impacts	◑	Not compatible with adjacent land use and no property impacts
NATURAL ENVIRONMENT	●	Minor loss of roadside vegetation and associated wildlife habitat, with no impacts to aquatic ecosystems or air quality. Minor increase in noise anticipated.	●	Minor loss of roadside vegetation and associated wildlife habitat, with no impacts to aquatic ecosystems or air quality. Minor increase in noise anticipated.	●	No positive or negative impacts to natural environment
HERITAGE / ARCHAEOLOGICAL / CULTURAL IMPACTS	◕	No Impact to Cultural Heritage Features, and additional Stage 2 AA required.	◕	No Impact to Cultural Heritage Features, and additional Stage 2 AA required.	●	No impacts to archeological or cultural heritage features.
COST	◕	Highest overall capital cost due to temporary construction costs required maintain Highway 3 traffic.	◕	Lower overall capital cost due to Highway 3 being maintained on existing lanes.	●	Not applicable
OVERALL SCORE	18.0		17.0		14.0	
EVALUATION SUMMARY	Recommended to be Carried Forward		Not Recommended		Not Recommended	

6.0 DESCRIPTION OF THE RECOMMENDED PLAN

The preliminary preferred design concepts described above were presented to review agencies and the public at Public Information Centre #2 in order to obtain further comment and input prior to confirmation and/or revision of the preferred design. Further details of the consultation completed regarding the preliminary preferred design, and revisions to the preliminary preferred design based on these consultations, are described in Section 9.0.

The finalized recommended design roll plans and profiles are provided in Appendix 8. Key elements of the preferred design are described below.

6.1 Design Criteria

In developing the recommended solution for the study area, various design criteria were developed to ensure consistent design standards were incorporated into the recommended design. The design criteria were developed based on the City of St. Thomas' current policies, plans and design standards; Transportation Association of Canada (TAC), TAC Canadian Roundabout Design Guide, NCHRP Report 1043 on Roundabouts, Ontario Traffic Manual (OTM), MTO Design Supplement for TAC (2017) and MTO Roadside Design Manual and developed further through consultation with the City and project team.

In developing the design criteria, items that were considered included, but were not limited to; design and posted speeds, horizontal and vertical alignments, cross section and ROW widths, existing site constraints, and roadway drainage.

Roundabout design criteria adhered to the NCHRP Report 1043 on Roundabouts and the TAC Canadian Roundabout Design Guide. The roundabout at Highbury Avenue and Highway 3 also meets the requirements of the MTO supplement to TAC and DCSO #2017-05 Implementation of TAC Canadian Roundabout Design Guide. All three roundabouts in the study area will meet the design requirements for a Class 3 roundabout. Class 3 multi-lane roundabouts are intended to accommodate large truck movements within their own lane at the entry point, circulatory road and exit point without encroaching into the adjacent lane. This decision was made based on the anticipated truck volumes and the availability of space to accommodate the roundabout.

A complete list of the design criteria developed to accommodate the study recommendations is provided in Appendix 9.

6.1.1 Agreed Upon Deviations from Design Criteria.

Through discussions with the City and the Design Team, a decision was made to implement a 3.50m two-way center turning lane rather than a 4.00m lane. A wider centre turning lane would lead to further property and utility impacts and create an undesirable aesthetic with an unnecessarily wide asphalt corridor.

6.2 Roadway and Active Transportation

6.2.1 Highbury Avenue

The preferred solution for Highbury Avenue is to widen to four lanes to the east between Dennis Road and Edgeware Line, as shown in Figure 5.5; widen to five lanes to the east between Ron McNeil Line and Dennis Road, as shown in Figure 5.2; and widen to five lanes about the centreline between Edgeware Line and South Edgeware Road as shown in Figure 5.1.

The proposed widening will operate acceptably from a traffic operations perspective to the 2043 horizon year, with minimal disruption to traffic flow along Highbury Avenue and the intersecting roads. The sections with five lanes will accommodate vehicles turning into sideroads and private entrances without impeding through traffic.

In accordance with the 2020 St. Thomas Cycling and Trails Master Plan, there is no accommodation for cyclists or active transportation on South Edgeware Road. With the anticipated increase in truck traffic, it is recommended that alternate corridors be utilized by pedestrians and cyclists. A cycling crossing facility is recommended at the intersection of Highbury Avenue and Dennis Road connecting to off-road multi-use pathways within the proposed new developments.

There are several locations along Highbury Avenue where private entrances on the west side of the road are misaligned with entrances on the east side. These misalignments have the potential to create turning movement conflicts when vehicles attempt to exit onto Highbury Avenue at the same time. It is recommended that discussions be held with the landowners during the detailed design stage to examine the opportunity to align the entrances to minimize conflicts.

6.2.2 South Edgeware Road

The preferred solution for South Edgeware Road is to widen to three lanes with an urban cross-section as shown in Figure 5.6.

The proposed widening will improve traffic operations by removing left turning vehicles from through traffic, thus potentially reducing the amount of rear-end and sideswipe collisions. Removing left turning vehicles from the main flow of traffic is also anticipated to reduce delays, resulting in a slight increase in roadway capacity. Therefore, the road widening for South Edgeware Road to include a centre two-way left turn lane will help address volume capacity concerns.

In accordance with the 2020 St. Thomas Cycling and Trails Master Plan, there is no accommodation for cyclists or active transportation on South Edgeware Road.

6.2.3 Highway 3 Connectivity

The preferred solution to improve connectivity to Highway 3 within the study area includes extending Highbury Avenue directly south from South Edgeware Road with a curvilinear alignment and roundabout intersections.

It is recommended to construct the Highway 3 at Highbury Avenue intersection as a 3-legged roundabout in the interim as part of the Highbury Avenue Widening project. Other ongoing studies referenced in Section 1.3.1 for the twinning of Highway 3 and for the Major Arterial Road east of Highbury Avenue, will determine the timing of construction for the ultimate roundabout configuration.

The Highway 3 at Highbury Avenue intersection upgraded to a multi-lane roundabout is forecasted to operate with reserve capacity and reasonable levels of delay in 2033. However, with significant changes in traffic travel patterns related to industrial developments anticipated beyond 2033 will require this intersection's operation to be monitored beyond 2033.

In accordance with the 2020 St. Thomas Cycling and Trails Master Plan, there is no accommodation for cyclists or active transportation on Highbury Avenue, Highway 3, or Centennial Avenue. Highway 3 is also designated as a controlled access facility and active transportation is prohibited.

6.3 Geotechnical Recommendations

Preliminary geotechnical engineering recommendations for the design and construction of the intersection improvements were developed based on the subsurface soil and groundwater conditions encountered during the preliminary geotechnical assessment. The complete Geotechnical Assessment Report prepared is provided in Appendix 6.

Based on the condition of the asphalt in the study area, the shift in the centerline crown of the road and the urbanization of the cross section, full reconstruction of the roadway asphalt is

recommended. Some existing granular materials under the surface of the road can be salvaged and reused. Widening of the road to accommodate the new traffic lanes will require placement of a new granular base and new asphalt.

6.4 Landscape Plan and Urban Design

A preliminary landscape plan will be developed by RVA during the detailed design phase. The plan will provide for plantings within the central circle of the roundabouts and the outer boulevard areas, consistent with other recent roundabout projects.

In addition, the City is proposing to commission public artwork to be placed within the roundabouts at Highbury Avenue/Ron McNeil Line and Highbury Avenue/South Edgeware Road. A gateway feature is planned for the Ron McNeil intersection.

6.5 Municipal Services

6.5.1 Stormwater

Under proposed conditions Highbury Avenue and Edgeware Road will be urbanized within the study area, with curb and gutters conveying drainage to proposed curb outlets and catchbasins. Ditching will be maintained along Highbury Avenue, which will continue to convey stormwater to the existing outlet locations. The proposed ditches will be used to treat and control the runoff from the proposed roadway and reduce peak flows to existing levels, in line with the City of St. Thomas design criteria. Check dams will be incorporated into the ditches to provide flow attenuation and trap sediment from the roadway under minor storm conditions. Larger berms and weirs will be selectively placed within the ditches with low flow pipes to provide attenuation for larger storms. The specifics of the stormwater strategy will be designed during the detailed design stage of the project.

The proposed roundabouts will modify the existing drainage conditions in the vicinity of Edgeware Road, and Highway 3, and LID features will be incorporated into the roundabout areas to mitigate the impact of the drainage revisions. The LID options that will be considered during detailed design could include underground storage tanks, raingardens, and pipe storage. OGS units are planned to provide treatment for larger particles as part of a treatment train approach in conjunction with the LIDs for drainage discharging to Highway 3. No changes are proposed to the external drainage patterns, and the existing outlets will be maintained.

Minor changes to the Windon municipal drain are proposed as part of the Highbury Avenue widening works. The proposed minor changes will not affect the capacity of the municipal

drain system. The design and schedule of these works will be undertaken separately from this project.

Due to the age and condition of the existing crossing culverts along Highbury Avenue, replacement of the existing culverts is proposed, see Table 6.1 for the proposed sizes and lengths. A hydraulic analysis of the proposed culverts was completed using PCSWMM software. The results of this analysis are summarized in Appendix 10. Based on this analysis the proposed culverts will be able to convey the 50-year design storm without overtopping Highbury Avenue. The 100-year storm was also evaluated to ensure that no over topping would occur under extreme event conditions. Based on the results the proposed culverts meet the design criteria of 1m freeboard from the roadway centreline.

Table 6.1 – Proposed Road Crossing Culverts

Proposed Conditions Road Crossing Culverts								
Culvert ID	Station	Size	Material	Length	Culvert Invert		Culvert Slope	Notes
		(mm)		(m)	U/S	D/S	(%)	
C1	2+582	2x1050	HDPE	28.3	235.26	234.38	3.10	Replace CSP with dual 1050mm HDPE culvert and extend on the upstream side.
C2	2+147	1500	HDPE	34.1	236.81	236.14	1.97	Replace CSP with 1500 HDPE culvert and extend on the upstream side.
C3	1+789	900	HDPE	27.5	238.82	238	2.98	Replace 300 mm and 600 mm CSP culverts with one 900 mm HDPE culvert.
C4	1+384	750	HDPE	27.5	241.42	241.2	0.80	Extend culvert on the upstream side. Relocate ditch inlet structure.
C5	1+073	1050	HDPE	42.1	242.26	242.21	0.12	No changes for this storm sewer.

6.5.2 Watermain

There are no new watermain or water services proposed in conjunction with this study, however there is potential for new services required by the developments in the area. Any development-related watermain work including watermain connections, water service connections and watermain upsizing will be addressed during the development and/or site plan review process and may be included in the proposed work, subject to timing of input and approvals. The design allows for the protection of the existing watermains and private water services. There may be a need for adjustments to existing valves for any changes in grades.

The existing 750mm watermain on the north side of South Edgeware Road is reaching the end of its service life. The portion of the watermain impacted by this undertaking will be replaced in conjunction with the road reconstruction to avoid disturbance in the future. The Study Team conducted a review of the City's water distribution model with consideration of the planned development to determine if a large watermain size would be required. The conclusion of the water modelling review was that the existing 750mm size would be sufficient to meet current and future needs.

6.5.3 Wastewater

Based on other ongoing studies for the adjacent industrial development, a new trunk sanitary sewer to service the area is required. The proposed route for the sewer is along South Edgeware Road with flows directed to the west and ultimately to the City's sewage treatment plant located along Sunset Drive. Design details will be developed during the detailed design phase. No other wastewater work is proposed.

6.6 Illumination and Traffic Signal Recommendations

Preliminary roadway illumination recommendations were developed based on the analysis of the existing illumination levels present within the study area, and the proposed road and intersection improvements.

Based on the analysis completed, illumination is recommended to be provided for the road corridors and the new roundabouts.

Traffic signals are recommended at the intersections of Highbury Avenue at Dennis Road and at Edgeware Line, based on the traffic analysis.

6.7 Rail Crossing

The existing level rail crossing on Highbury Avenue between Dennis Road and Edgeware Line will require modifications to accommodate the road widening. Modifications will include reinstatement of warning flashers, advance signing and gates.

6.8 Preliminary Cost Estimate and Estimated Timing

6.8.1 Preliminary Construction Timeline

Construction is anticipated to commence in 2024, and last two construction seasons. The anticipated timeline for the proposed works is outlined in the table below.

Table 6.1 – Preliminary Timing Summary

Activity	Timing
Detailed Design	2023
Utility Relocations and Property Acquisition	Late 2023 / Early 2024
Construction	2024 / 2025

6.8.2 Preliminary Cost Estimate

A preliminary cost estimate has been prepared for the construction of the recommended design. The preliminary cost estimate to complete the reconstruction of the roadway and intersection is $36,892,000, as shown in the table below.

Table 6.2 – Preliminary Cost Estimate

Item	Cost
Miscellaneous / General (Bonding, Insurance, Traffic Control, Pre-Condition Surveys)	$3,345,000
Roadwork	$19,184,000
Storm Sewers and Culverts	$500,000
Watermain	$750,000
Sanitary Servicing	$1,000,000
Streetlighting and Traffic Signals	$1,325,000
Temporary Works	$500,000
Subtotal	**$26,604,000**

Item	Cost
Engineering & Construction Administration (15%)	$3,998,000
Contingency (15%)	$3,998,000
Utility Relocation and Property Acquisition	$2,292,000
Total	**$36,892,000**

7.0 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The text below summarizes the key impacts associated with the implementation of the recommended solution(s) and general mitigation required. In addition to the mitigation measures identified in the report, additional work will be required to be completed following the Class EA, prior to construction. During detailed design, findings from the Class EA will be confirmed through additional investigations, planning and consultation with the public and technical agencies.

7.1 Transportation Environment

With the implementation of the recommended alternatives, minor disruption to the transportation environment will be caused. Construction will be staged in a way that at least one lane of traffic will be open at all times on Highbury Avenue and on South Edgeware Road. It is anticipated that there may be short to mid term durations of full closure required at the roundabout locations for specific construction operations such as concrete curb work, paving and sewer work. For any full closures required, alternate detour routes on City streets will be provided.

7.2 Socio-Economic Environment

The recommended works and necessary road closures or lane restrictions have the potential to impact local homeowners, area businesses, and area commuters negatively.

A communications plan and public notices in advance of the start of construction to minimize impacts to adjacent businesses along the corridor is recommended. To this end, every effort will be made to keep access and private entrances open during construction. The City and contractor will work with the owners to ensure construction activities and schedules are identified well in advance of any disruption so that this information can be passed on. During the detail design phase of the study, the project team will meet with specific property owners to further discuss their concerns.

7.2.1 Property Requirements

The avoidance of significant property requirements was a key criterion in the identification and evaluation of the alternative solutions by the project team.

There are several properties that are impacted by all the alternatives.

As part of this study, it is recommended that the City acquire sufficient frontage from the properties noted.

Preliminary discussions are ongoing with property owners, and they are aware of the proposed improvements and impacts to the property. Further discussions will continue through the detailed design phase.

Table 7.1 Property Impacts and Requirements

Property Address	Estimated Area	Description
11157 Highbury Avenue	765 m ^{2}	Fee simple property acquisition, required to accommodate construction of roundabout.
44072 Ron McNeil Line	1,554 m ^{2}	Fee simple property acquisition, required to accommodate construction of roundabout.
CON NER RANGE 2 W PT LOT 9 RP 11R4963 PARTS 7 TO 10	4,301 m ^{2}	Fee simple property acquisition, required to accommodate construction of roundabout and widen Highbury Avenue.
425 South Edgeware Road	11,300 m ^{2}	Fee simple property acquisition required to accommodate new Highbury Avenue connection to Highway 3.
TOTAL	**17,920 m ^{2}**	**FEE SIMPLE PROPERTY ACQUISITION**

Although anticipated preliminary property requirements to implement the study recommendations have been identified, actual requirements are to be confirmed during the detailed design phase of the project.

7.2.2 Noise and Air Quality Impacts During Construction

Although no long-term air quality impacts from the proposed works are anticipated, dust and/or emissions during construction have the potential to degrade air quality in the short term. Measures to minimize these impacts should include best management practices such as regular cleaning of construction sites and access roads; covering fine-grained material loads; prompt cleaning of paved streets where tracking of soil or dust has occurred; and reduced speeds when travelling on sites with unpaved surfaces.

Construction may also result in temporary noise impacts. Measures to minimize noise-related impacts during construction include:

- Explicit indication that Contractors comply with applicable requirements of the contract and local noise by-laws;
- Maintenance of construction equipment to limit unnecessary noise (muffling systems);
- Monitor and maintain haul routes to avoid travelling over rough ground and potholes which generate noise;
- Keep equipment in good working order to avoid deterioration which may increase equipment sound levels;
- Follow and enforce on-site speed limits for vehicles;
- Keep idling of equipment to a minimum; and
- Investigate all noise complaints to verify noise control measures are in effect. Subject to the results of a field investigation, alternative noise control measures may be required.

7.3 Environmental Issues and Commitments

The following section describes the impacts and mitigation measures developed to avoid or minimize the potential impacts to the natural environment associated with the proposed improvements. These measures should be considered and elaborated on, as required, during detailed design. The woodland near the Highbury Avenue and Ron McNiel Line intersection, designated as a Natural Heritage Feature in the City of St. Thomas Official Plan (2018) is a comparatively large woodland that is connected via a utility corridor (electricity) to Kettle Creek and its riparian habitats. As a result, it is the most significant natural heritage feature within the Study Area. Second in importance to this feature is the prairie restoration area north of South Edgeware Road. Though not a remnant natural community, it was observed to be a good example of a creation of this community type and appears to have had significant efforts over the years to ensure it remained a high-quality community with limited invasive plant species.

The complete Environmental Impact Study Report which discusses the potential impacts associated with this project as well as recommendations with regard to measures to avoid and or reduce impacts are provided in Appendix 3.

7.3.1 Soil Disturbance and Potential for Erosion

Soil disturbance within the study area will be limited mainly due to the highly urban nature of the area. Impacts resulting from any excavating or cut and fill operations will be temporary in nature. Erosion and sedimentation mitigation measures will be implemented prior to and during the construction phase.

An Erosion and Sediment Control (ESC) Plan will be prepared during detail design. These control measures will include:

- Limiting the geographical extent and duration that soils are exposed to the elements;
- Implementing standard erosion and sedimentation control measures in accordance with Ontario Provincial Standard Specification (OPSS) 805 Construction Specification for Temporary Erosion and Sediment Control Measures. These standard measures include: silt fence placed along the margins of areas of soil disturbance; applying conventional seed and mulch and/or erosion control blanket in areas of soil disturbance to provide adequate slope protection and long term slope stabilization; and
- Managing surface water outside of work areas to prevent water from coming in contact with exposed soils.

The ESC drawings will be supported with standard notes, inspection, monitoring and reporting and sealed and dated by P.Eng. when submitted with the final design.

Monitoring of these erosion and sedimentation control measures during will be undertaken to confirm measures are functioning and effective. These environmental measures will greatly reduce/minimize adverse environmental impacts.

7.3.2 Aquatic Habitats and Communities

Dewatering/unwatering of surface water will be required to allow work to proceed in the dry during culvert removals/installations/extensions and may be required to facilitate road construction. The resulting effluent will ultimately re-enter the system and have potential to cause sedimentation and erosion in the receiving tributary.

Indirect fish habitat will be permanently altered in areas of culvert extensions and new culvert installations. The alterations themselves (i.e., new area enclosed) are not anticipated to affect the quantity or quality of water inputs to the downstream direct fish habitats. The most significant timing of potential impacts to fish habitat as a result of the Project are during construction, when sedimentation and spills could happen. There is also the potential for effects associated with riparian vegetation removal as vegetation clearing exposes soils and increases the likelihood of erosion and release of sediments into nearby water feature. As such, an erosion and sediment control plan shall be developed during detailed design to limit the impacts of vegetation clearing during construction as described above.

7.3.3 Terrestrial Vegetation

Potential direct impacts to terrestrial vegetation as a component of road widening and roundabout construction include complete removal through construction and grading

activities, as well as vegetation clearing to support surveying and construction equipment access. Indirect impacts to woody vegetation along the periphery of construction areas may occur due to damage to roots, stems, and branches through interaction with construction equipment. Temporary impacts to Cultural Meadow habitats within the ROW may occur if areas are required for laydown and staging. Dust raised by construction activities may also negatively impact vegetation.

The proposed works for the Highbury Avenue and South Edgeware Road widening will directly impact existing anthropogenic vegetation communities. This includes mainly Mineral Cultural Meadow (CUM1-1) within roadsides/road right-of ways as well as mowed/landscaped areas within existing residential properties, which includes 0.08 ha of Mineral Cultural Thicket and 0.5 ha of Mineral Cultural Woodland habitat southeast of the Highbury Avenue and Edgeware Line intersection. These areas are occupied by pioneering native and exotic species. No other communities are proposed to be impacted by this alternative, including wetlands.

7.3.4 Source Water Protection

Under the MECP 2006 Clean Water Act, municipalities are required to conform to Source Protection Plans (SPPs) to protect surface and groundwater sources to municipal drinking water systems. The study area for this project is under the jurisdiction of the Thames-Sydenham and Region Source Protection Plan (SPR). The SPR identifies where there is potential for significant threat to the quality and quantity of groundwater through delineation of Wellhead Protection Areas (WHPAs), Highly Vulnerable Aquifers (HVAs), Significant Groundwater Recharge Areas (SGRAs), and Intake Protection Zones (IPZs).

There are no wellhead protection areas, significant groundwater recharge areas, highly vulnerable aquifers, or intake protection zones within the study area.

7.3.5 Wildlife and Wildlife Habitat

Potential impacts to wildlife and their habitats during construction can occur through direct injury and habitat loss as well as indirect impacts such as avoidance of areas of active construction and resulting modification to established daily movement patterns.

The following measures are recommended to reduce these impacts.

- To prevent incidental impacts to nesting birds and bat maternity colonies, woody vegetation clearing should be restricted to outside of the bat maternity and migratory bird nesting seasons, generally April 1 through September 30. If vegetation clearing must occur within this window, a qualified ecological professional should be retained to ensure no birds or bats are incidentally harmed by vegetation removals.

- As construction schedule allows, grading activities should be limited to the active season for wildlife, typically May 1 through September 30 to prevent entombment within burrows, tunnels, or other subterranean features.
- Limiting construction activities to daylight hours will reduce the impacts to behaviour changes (avoidance) of local wildlife in response to the project.

7.4 Climate Change

Project impacts and resiliency to climate change were taken into consideration during the EA study and will be carried forward into design. Considering how a project contributes to climate change, through its greenhouse gas emissions or its effects on the natural environment, is important to the planning process as it allows proponents to consider climate mitigation measures that will avoid and/or minimize such effects. In addition, considering how climate change may affect a project, such as through changes in precipitation intensity and frequency, is also critical to the planning process through enabling proponents to make informed design decisions to increase infrastructure resilience and adapt to changing environmental conditions.

This project is also a key component for the development of adjacent industrial lands and a commitment has been made by major industries such as Volkswagen to construct an electric vehicle battery plant. Electric vehicles are a major initiative to reduce societies reliance on gasoline powered vehicles which are known to be a significant producer of carbon emissions.

Approaches for considering and addressing climate change in project planning are through 1) Reducing a project's contribution to known climate change drivers; and 2) Increasing the project's resilience to climate change.

For this Class EA study, key elements such as air quality, stormwater management, and ecology were factored into the road widening and intersection improvements to reduce the project's contribution to known climate change drivers. One of the main climate change considerations was reduction of ecological impacts through design, as was practical. Diverse ecosystems are an important component of climate change management as they sequester large amounts of carbon through the life and death of biota and subsequent sequestration in soils. Ecosystem and soil disturbance disrupt natural carbon sequestration processes and result in the release of sequestered carbon.

As noted previously, LID options to be further developed during detailed design could include underground storage tanks, raingardens, and pipe storage. OGS units are planned to provide treatment for larger particles as part of a treatment train approach in conjunction with the

LIDs for drainage discharging to Highway 3. Improvements to stormwater management infrastructure will help to mitigate the impacts of increased severity and frequency of storms due to climate change.

The use of roundabouts also generally produces fewer greenhouse gas emissions as vehicles are continuously moving, reducing vehicle delay times, idling, and the associated emissions. From a carbon-release perspective, the undertaking of this Project will result in improved movement of traffic, resulting in less idling time and potentially reducing the amount of greenhouse gas emissions from traffic.

Further opportunities to incorporate ecosystem services into landscaping and stormwater elements/components will continue into detail design. This could range from thoughtful incorporation of existing wetland or water features into secondary stormwater management roles, managing stormwater away from non-wetted areas to reduced unintentional impacts, as well as selecting appropriate native plants for boulevards, right of ways, roundabouts and engineered stormwater facilities. Initial geotechnical investigations have noted that traditional LID facilities will face functional challenges due to local soil conditions, however, additional methods of at-source stormwater management will be considered through detail design.

7.5 Cultural Heritage Resources

Section 7.5 describes impacts to the cultural heritage component of the environment. Cultural heritage resources include archaeological resources, built heritage resources, and cultural heritage landscapes.

7.5.1 Impacts to Built Heritage and Resources Cultural Heritage Landscapes

The following reports were prepared within the study area to identify known (previously recognized) and potential built heritage resources and cultural heritage landscapes (BHR/CHL):

- Cultural Heritage Evaluation Report, Proposed Industrial Development, Edgeware Line, City of St. Thomas, and Municipality of Central Elgin, ON. (dated January 25, 2023, by TMHC Inc.,) incorporate the lands east of Highbury Avenue, north of Edgeware Line to approximately Dennis Road. Two Properties (44592 Edgeware Line and 10343 Yarmouth Centre Road) were determined to meet the criteria for cultural heritage value or interest but are not within the study are for this current undertaking. The CHER is included in Appendix 4.
- Cultural Heritage Evaluation Report (CHER): Proposed Industrial Development, Yarmouth Centre Road, City of St. Thomas, Ontario (dated April 18, 2023, by TMHC

Inc.), incorporates the lands south of Edgeware Line and east of Centennial Road. The CHER did not identify any properties of cultural heritage value or interest. The CHER is included in Appendix 4.

The screening checklist, Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes, developed by the Ministry of Citizenship and Multiculturalism, was completed for lands west of Highbury Avenue and north and south of South Edgeware Road (see Appendix 4). The area was determined to have low potential for built heritage resources and cultural heritage landscapes. Therefore, there are no impacts to built heritage resources and cultural heritage landscapes.

7.5.2 Impacts to Archaeological Resources

Stage 2 (and any further recommended archaeological assessment) will be completed as soon as possible during detailed design and prior to any ground disturbing activities. The archaeological assessment report will be submitted by the licensed archaeologist to the Ministry of Citizenship and Multiculturalism (MCM) for review in accordance with the Ontario Heritage Act.

Recommendations from the Stage 1 archaeological assessment and from any subsequent recommended assessments (e.g., Stage 2,3,4) will be incorporated into the detail design.

Should previously undocumented archaeological resources be discovered, they may indicate a new archaeological site and therefore subject to Section 48 (1) of the Ontario Heritage Act. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological assessment, in compliance with Section 48 (1) of the Ontario Heritage Act.

The Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33 requires that any person discovering human remains must cease all activities immediately and notify the police or coroner. If the coroner does not suspect foul play in the disposition of the remains, in accordance with Ontario Regulation 30/11, the coroner shall notify the Registrar, Ontario Ministry of Public and Business Service Delivery, which administers provisions of that Act related to burial sites. In situations where human remains are associated with archaeological resources, the Ministry of Citizenship and Multiculturalism (MCM) should also be notified (at archaeology@ontario.ca) to ensure that the archaeological site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act.

More information is provided in the complete Stage 1 Archaeological Assessment report in Appendix 5.

7.6 Municipal Infrastructure and Utilities

7.6.1 Utility Poles

Based on the EA and recommended improvements, utility pole conflicts are expected and will require relocations to implement the preferred solution as described in the table below. All utility impacts, including location, depths, and relocation requirements are to be confirmed prior to construction, in direct consultation with the affected utility companies. New utility installations will be coordinated as required.

Table 7.2 - Utility Impact Summary

Road Segment	Utility type	Description
Highbury Avenue Ron McNeil to Dennis Road	Utility Poles	Certain poles on East side of road in conflict with the proposed work will require relocation. Remaining poles on East side of road will require grade adjustments.
Highbury Avenue Dennis Road to Edgeware Line	Utility Poles	Certain poles on East side of road in conflict with the proposed work will require relocation. Remaining poles on East side of road will require grade adjustments. No impact anticipated to utility poles on West side of road.
Highbury Avenue Edgeware Line to South Edgeware Road	Utility Poles	Relocate poles on East side of road in conflict with the proposed work. Various poles on West side of road will require grade adjustments.
Highbury Avenue South Edgeware Road to Centennial Avenue	Utility Poles	No utility poles.
South Edgeware Road Burwell Road to Highbury Avenue	Utility Poles	No anticipated impact to utility poles.
South Edgeware Road Highbury Avenue to East of Centennial Avenue	Utility Poles	Poles on North side of road require grade adjustments.

7.6.2 Municipal Infrastructure Impacts

Existing watermain chambers and valves and existing sanitary manholes are required to be adjusted to new grade elevations. Existing storm sewer within the east boulevard of Highbury Avenue north of South Edgeware Road is anticipated to be maintained.

8.0 MONITORING

Following the completion of Detail Design, contract drawings and specifications will be developed to allow the project to be tendered for construction. During construction, the on-site Contract Administrator will confirm that implementation of environmental mitigation measures and key design features are consistent with the contract and that commitments made in this EA document as well as conditions outlined in environmental permits and approvals are adhered to. In addition, the effectiveness of the environmental mitigation measures shall be assessed to confirm that the measures are providing the expected control and/or protection. Regular inspection of measures shall be undertaken to confirm they are maintained, functioning and effective and that any necessary repairs are completed expeditiously. For any unanticipated environmental issues that may arise during construction, the Contract Administrator will confirm that additional mitigation measures are provided, as required.

An Environmental Inspector will also visit the site on a regular basis to confirm that the environmental protection measures are functioning and effective, that timing windows and permits and approvals are adhered to and to provide recommendations for additional environmental mitigation measures, as necessary. In the event problems develop, appropriate City and external representatives will be contacted to provide additional input and to address specific notification requirements as may be required.

9.0 CONSULTATION PROCESS

Schedule 'C' EA projects are subject to the full five phase planning progress, in accordance with the Municipal Class Environmental Assessment (October 2000, amended in 2007, 2011, 2015, 2023). As such, extensive public and technical agency consultation plays a key role in developing the study recommendations.

Per the MCEA, notification to the public, stakeholders, and Indigenous Communities was provided in advance of key consultation opportunities.

9.1 Key Stakeholders, Interest Groups & Technical Agencies

Various government agencies, authorities, utility companies, local developers and stakeholder / interest groups were informed of the Class EA Study commencement, as well as the public information packages, through direct e-mails. A complete list of stakeholders who were contacted is provided in Appendix 1-2. During the course of the EA study, correspondence was received from various technical agencies, as outlined in Table 9.1 and included in Appendix 1-4.

Table 9.1 – Comments Received from Technical Agencies

Agency / Group	Comment Summary	Date Received	Response and Consideration of Comments in Class EA
Ministry of Citizenship and Multiculturalism (MCM)	MCM provided information to support the project team in identifying and documenting the project's potential impact on cultural heritage resources including: • Cultural Heritage Resources; • Archaeological Resources; and • Built Heritage Resources and Cultural Heritage Landscapes. MCM shared two archaeological assessments that were undertaken adjacent to the eastern edge of the study area. MCM requested the project team advise whether any technical cultural heritage studies are being completed as part of the study (e.g. Cultural Heritage Assessment Report, Cultural Heritage Evaluation Report, Heritage Impact Assessment), and that any technical cultural heritage studies completed be sent to the Ministry for review before issuing the Notice of Completion, and to make it available to local organizations or individuals who have expressed interest in review.	April 3, 2023	The Project Team reviewed the need for assessments in consideration of MCM's comments. The Team concluded that an assessment was not required to be completed.
	Upon review of the draft ESR, MCM indicated that if the entire study area has not been assessed for known and potential BHR/CHL, then a screening process should be conducted for sections of the study areas where no cultural heritage assessment was conducted. MCM suggested providing a map to indicate which areas were assessed and which areas were screened.	October 23, 2023	The Project Team reviewed completed the Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes developed by MCM. The results of this screening process indicated that there was lot potential for areas with cultural heritage value, therefore an additional cultural heritage assessment was not completed. A map has been included in the final ESR to showcase which study areas were assessed and which study areas were screened.
	Upon review of the draft ESR, MCM provided detailed suggestions for revisions for content in sections 2.5 and 7.5 of the ESR to ensure consistency with current legislation and terminology	October 23, 2023	MCM's suggestions for revisions were incorporated into the final ESR.
Ministry of Transportation (MTO)	Upon review of the draft ESR, MTO provided some minor revisions to the content and copy of the ESR. This included: - Additional details for relevant projects in section 1.3.1. - Mentioning that some of the project work is on MTO lands and project will satisfy MTO Class EA requirements. MTO also provided general comments for project requirements, including: - Any utility relocations and/or any works/investigations within MTO property limits shall require MTO review, approval and Encroachment permits. - Private and/or Commercial Access shall be reviewed and evaluated as per MTO Access management standards. Any entrance removals and/or modifications identified for modification / relocation / removal shall be incorporated into the contract documentation (including, but	October 23, 2023	MTO's comments on minor revisions to the content and copy were incorporated into the final ESR. The Project Team noted MTO's general comments for project requirements and will consider them in detailed design.

	not limited to, removal drawings, new construction drawings, quantities, etc.). - Any development affected by the proposed realignment may be subject to MTO setbacks and require additional MTO review approval and permits. - Additional works within the ROW may require Legal Agreements and/or cost share.		
	MTO provided initial comments from a traffic perspective as follows: - Confirm design standards for Centennial Avenue once the road terminates in a cul-de-sac. - Confirm whether the rail crossing on Hwy 3/Centennial Avenue south of Edward Street will be impacted by the proposed works. - Confirm whether overhead approach signage is required for advance roundabout guide signs. -	October 27, 2023	The Project Team noted MTO's traffic comments for consideration in detailed design. The rail crossing of Highway 3 / Centennial Avenue is not anticipated to be impacted by the proposed work.
Ministry of the Environment Conservation and Parks (MECP)	In response to the MECP Species at Risk (SAR) Screening and Information Request, including an initial species at risk screening distributed to MECP November 16, 2022, MECP SAR Staff identified additional SAR with potential to occur within the study area. MECP SAR Staff noted that complying with the Endangered Species Act (ESA) as it relates to potential SAR, is proponent led and it remains the clients' responsibility to: - Carry out preliminary screening for their project, - Obtain the best available information for all applicable information sources, - Conduct necessary field studies or inventories to identify and confirm the presence of absence of species at risk or their habitat, - Consider any potential impacts to species at risk that a proposed activity might cause, and - Comply with the Endangered Species Act (ESA).	December 21, 2022	MECP requirements for SAR were incorporated into Environmental Impact Study (EIS) provided in **Appendix 3**.
	In response to the Project Information Form, distributed by the project team to MECP staff December 6, 2022, MECP confirmed receipt of the form, and noted distribution of project information amongst ministry staff as appropriate so that they are aware of the project. MECP noted the Notice of Commencement should be sent to the Regional EA mailbox, once available.	December 19, 2023	On March 10, 2023, project team notified MECP staff that since the original submission to the MECP, an extension to the Study Area for the proposed works has been brought forward, providing a map of the limits of this extension. Additionally, the project team requested MECP staff to provide a list of Indigenous communities that are expected to be engaged through the E.
	MECP staff identified the following Indigenous communities as potentially affected by the projected project to be engaged: - Aamjiwnaang First Nation - Bkejwanong (Walpole Island) - Caldwell First Nation - Chippewas of Kettle and Stony Point	March 20, 2023	The project team incorporated the input into the study as required. The project team initiated consultation with all the Indigenous communities identified by MECP. Notice of Study Commencement was distributed to MECP staff March 23, 2020.

	- Chippewas of the Thames First Nation - Oneida Nation of the Thames MECP staff noted the list will be confirmed via letter, once the formal Notice of Study Commencement is received.		
	In response to the Notice of Study Commencement distributed by the project team to MECP staff on March 23, 2023, MECP staff requested the project team to distribute the Project Information Form to the MECP regional email address.	March 23, 2023	Project team confirmed to MECP staff that the Project Information Form was distributed to the MECP regional email address on December 6, 2022
	In response to the Notice of Study Commencement distributed by the project team to MECP staff on March 23, 2023, MECP staff noted that prior to issuing the ministry's acknowledgement letter, they would like to clarify some information including: - Confirmation whether the City is intending to fulfill the requirements of both the Municipal Class EA and the MTO Class EA for this undertaking as the proponent for both EA processes; - Details on how the City of St. Thomas intends to satisfy the MTO Class EA requirements in coordination with the Municipal Class EA process; and - How the City of St. Thomas will fulfill requirements to document Detail Design in the final EA report(s)	April 3, 2023	On April 26, 2023, the project team confirmed to the MECP that the City will be completing the requirements of the MTO Class EA and the Municipal Class EA as part of this project, noting that the project team has actively consulting with MTO to make sure that this MCEA process meets their requirements as part of their Class EA process such as having our ESR have the similar characteristics of their TESR. On May 18, 2023, further to the correspondence noted above on April 26, 2023, the project team notified that a preliminary coordination meeting with MTO EA Planning staff to coordinate meeting the MTO Class EA requirements with the Municipal Class EA process was held, and that it was concluded that the mandatory notices, Indigenous engagement, and impact assessment work will meet requirements of both processes simultaneously. Additionally the project team confirmed to MECP staff that the documentation of detailed design will be provided within the Environmental Study Report, in order to meet MTO Group B Projects reporting requirements, and that the project team will continue to consult closely with the Ministry of Transportation over all stages of the Class EA process and would also be happy to provide additional information, or meet with the MECP, as required.
	MECP provided a letter of acknowledgement and supporting attachments in response to the Notice of Commencement. The letter contained general information provided on the Class EA process, MECP technical review issues and Indigenous communities to be engaged. The MECP requested to receive a draft copy the EA report prior to filing of the Notice of Addendum, as well as to send the Notice of Completion to the ministry's Regional EA notification email account after the draft report is reviewed and finalized.	April 27, 2023	MECP staff to be provided the draft ESR for review and comment prior to issuing the Notice of Completion.
	In response to the project team's email May 18, 2023, the MECP acknowledged that the proponent is consulting closely with MTO, and that the proponent intends for the Environmental Study Report to be completed through the Municipal Class EA process to also meet the Group B project requirements of the MTO Class EA including documentation of Detail Design, which would otherwise normally be included in a Transportation Environmental Study Report or Design and Construction Report.	May 23, 2023	MECP staff to be provided the draft ESR for review and comment prior to issuing the Notice of Completion. Notice of Completion and final ESR to be forwarded to MECP as requested.
		October 27, 2023	
Ministry of Natural Resources and Forestry (MNRF)	In response to the project team's information request letter submitted to KCCA November 16, 2023, MNRF staff noted that the Ministry cannot provide a definitive statement on the presence, absence or condition of natural heritage features in all parts of Ontario.	December 6, 2023	On March 10, 2023, project team notified MNRF staff that since the original submission to the MNRF, an extension to the Study Area for the proposed works has been brought forward, providing a map of the limits of this extension.

	MNRF staff also noted that at this time, the Ministry would recommend the following timing windows for work associated with the various watercourses and drains in your project location. Restricted in-water timing window: March 15th to July 15th		
	In response to notification of the extended study area, MNRF staff confirmed that MNRF does not have any additional natural heritage information for the study area.	March 23, 2023	Schedule in-water work to when in-water work is permitted, per MNRF recommendations.
Kettle Creek Conservation Authority (KCCA)	In response to the project team's information request letter submitted to KCCA November 16, 2023, KCCA staff confirmed that the project area is within the Kettle Creek watershed and noted that KCCA has no jurisdiction to provide technical advisory services for member municipalities on natural heritage policies, including the development of Environmental Impact Studies (EIS). KCCA staff provided Regulation Limit mapping for this area regarding KCCA's regulatory jurisdiction enacted under the Conservation Authorities Act, noting that the current regulation for the Kettle Creek watershed is "Ontario Regulation 181/06: Development, Interference with Wetlands and Alterations to Shorelines and Watercourses."	November 17, 2022	On March 10, 2023, project team notified KCCA staff that since the original submission to the KCCA, an extension to the Study Area for the proposed works has been brought forward, providing a map of the limits of this extension.
	In response to notification of the extended study area, KCCA staff confirmed that KCCA does not have any additional environmental information for the study area.	March 30, 2023	Works which bisect the KCCA regulated lands, will require an KCCA Work Permit under Ontario Regulation 181/06.
Entegrus Powerlines Inc.	Entegrus Powerlines Inc. provided a drawing with their plant in the environmental assessment area, noting that they have assets which will be in conflict with the proposed plans. Entegrus Powerlines Inc noted that they will need to remove the existing assets and construct a new line to accommodate the road widening, and that itt is their preference to have our construction completed a year prior to the road construction commencing.	April 19, 2023	The project team considered the locations of Entegrus Powerlines Inc.'s infrastructure during design. Conflicts with Entegrus Powerlines Inc. plant was identified, and distributed via a conflict plan on September 13, 2023
Aylmer Area Secondary Water Supply System Joint Board of Management (AASWSS)	The AASWSS, requested to be included as a contact agency for the EA Study. The AASWSS noted that they will have interests with the potential impacts of the proposed work in proximity to the existing transmission water main, which include but are not limited to potential disruption or damages to the existing watermain, access for future maintenance and potential economic burden to the users of the water system relating to these items.	July 31, 2023	AASWSS contacts added to the Technical Agency Stakeholder List for the project. No impacts to the existing transmission water main as a result of this project are anticipated. Measures to protect the transmission main during construction will be confirmed with AASWSS during detailed design.

9.2 Indigenous Communities Engagement

Various Indigenous communities were notified of the study, in order to identify any potential issues or concerns regarding possible impacts to Aboriginal and Treaty Rights, or any other interests or questions that the community may have with regard to this study. The following Indigenous Communities were notified of the study:

- Aamjiwnaang First Nation
- Bkejwanong Territory (Walpole Island)
- Caldwell First Nation
- Chippewas of Kettle and Stony Point
- Chippewas of the Thames First Nation
- Oneida of the Thames First Nation

In response to the Notice of Commencement & PIC #1, Chippewas of the Thames First Nation staff requested that engagement requests be sent through the NationsConnect portal. Future engagement requests were sent to Chippewas of the Thames First Nation through the NationsConnect portal.

At this time, no additional correspondence has been received from any of the communities. The complete list of Indigenous communities engaged is provided in Appendix 1-2, while copies of the correspondence is provided in Appendix 1-5.

9.3 Residents and General Public

Residents within and adjacent to the study area received direct mailings of all notices, while members of the general public were invited to participate in the study through the City of St. Thomas municipal website and notices advertised on the City's social media platforms. Key opportunities for resident and general public input to the study included two online information packages, as well as the ongoing project website as described below.

9.3.1 Online Information Packages

Two Online Information Packages were distributed during the EA study, at the conclusion of Phase 2 and 3 of the MCEA process respectively. The Information Packages City invited residents to learn about the study by reviewing the information package, and provide feedback by completing an online comment form, or providing comments directly to the project team.

9.3.1.1 ONLINE INFORMATION PACKAGE #1

The first Online Information Package, held during Phase 2 of the Municipal Class EA Process, invited residents to learn more about the study, including the need and justification, key constraints and considerations, as well as the Phase 2 Class EA recommendations developed for the study area. The information package display materials were posted to the City's project webpage on March 23, 2023, and were available for comment until March 23, 2023. Refer to Appendix 1-3 for copies of the materials made available for comment. A single comment was received during the commenting period as summarized Table 9.2 and included in Appendix 1-6.

9.3.1.2 ONLINE INFORMATION PACKAGE #2

The second Online Information Package, held during Phase 3 of the Municipal Class EA Process, invited residents to learn more about the study, including the evaluation and selection of preliminary Phase 3 Class EA design recommendations developed for the study area. The information package display materials were posted to the City's project webpage on July 20, 2023, and were available for comment until August 3, 2023. Refer to Appendix 10-3 for copies of the materials made available for comment. A total of two comments were received during the commenting period as summarized Table 9.2 and included in Appendix 1-6.

9.3.2 Project Website and Additional Comments

In addition to the formal consultation descried above, contact information of the Project Manager, including email, telephone and mailing address were available to the public on the City's Project Web Page, and was included all public notices distributed throughout the study. This provided an ongoing opportunity for members of the public to provide their questions, concerns, and/or comments regarding the study to the project team at any time during the study. General comments and questions received during the study, and how these comments and questions were incorporated into the study are summarized in Table 9.2.

Table 9.2 – Comments Received from Residents and General Public

Group / Medium	Comment Summary	Date Received	Response and Consideration of Comments in Class EA
Resident (Email)	In response to the Public Information Package #1, resident noted that they are very supportive of realigning Highbury Avenue with new roundabout intersections, noting that the current layout is not very good, let alone with the addition of the new northeast industrial lands. The resident also inquired whether the intersection of Centennial Avenue (St. Thomas Expressway (Highway 3)) and Edward Street would be addressed by the province, or is there consideration for upgrades during this project as well?	March 30, 2023 (Public Information Package #1)	Improvements to the intersection of Centennial Avenue / St. Thomas Expressway (Highway 3) and Edward Street are not within the City's scope of work for the Highbury widening project. Any improvements to this intersection would be confirmed as part of MTO's works related to the potential future expansion of Highway 3.
Resident (Email)	In response to the Public Information Package #1, resident noted that they are supportive of the City's recommended alternative to carry forward as part of the class environmental assessment, noting that the proposed roundabout with road realignment will improve traffic flow, minimize emissions from idling vehicles and will limit risk of commuter collisions with this intersection design. Resident also requested the project team to consider a roundabout control at the intersection of Highbury Avenue and Ron McNeil Line.	May 19, 2023 (Public Information Package #1)	Roundabout control at the intersection of Highbury Avenue at Ron McNeil Line was considered and recommended during Phase 3 of the Class EA.
Resident & Farmer (Comment Sheet)	In response to the Public Information Package #2, resident noted the need for safe transportation for farm equipment through the study area, noting concerns regarding the impact of increased traffic, operation of farm equipment through the proposed roundabout at Highbury Avenue and Ron McNeil Line, and expressing a desire for improved road signage and/or a potential alternative route for farm vehicle traffic to maintain operations. Farmer expressed interest in being involved in the process / design and being updated on the project moving forward.	July 20, 2023 (Public Information Package #2)	The project team provided response to the individual, noting that regarding the concerns related to the impact of increased traffic on safe transportation for farm equipment through the study area, as part of the study, a detailed traffic study was completed to ensure that the future traffic volumes, including heavy truck and farm vehicle traffic will be accommodated throughout the study roadways and intersections. The widened roadway with the addition of centre-left-turn lanes where required will better accommodate heavy truck and farm vehicle traffic turning onto and operating along Highbury Avenue. Regarding the concerns related to the operation of farm equipment through the proposed roundabout at Highbury Avenue and Ron McNeil Line, the proposed multi-lane roundabout is designed to accommodate large vehicles including trucks and is anticipated to better accommodate farm vehicle traffic safer and more efficiently than the current intersection, or a traffic signal. More specifically, the roundabout will slow all vehicles in the intersection down and provide priority to the tractor/wagons once they've entered the circle. Regarding the concern for the need for roadway signage, placement of signs will be reviewed during the detailed design stage in accordance with guidance in the Ontario Traffic Manuals and the City.
Resident (Email)	In response to the Public Information Package #2, resident noted that they can currently hear truck traffic on Highway #3 from their home, expressing concern that the recommended Highbury Avenue improvements will increase truck noise in the neighbourhood. The resident inquired of the measures being taken into the planning and design of this project to mitigate the impact of traffic noise on the surrounding residential neighbourhoods?	July 22, 2023 (Public Information Package #2)	The project team provided response to the individual, noting that as part of the Class EA, an environmental noise assessment was completed to predict operational sound levels as it relates to the project and provide mitigation measures to minimize the potential for noise impact, as required. As described in Section, 7.2.2 no noise mitigation measures are recommended based on the design. It is also noted that the receptor noted by the resident is some distance away from the Study Area and as such, is shielded from the receptor by a number of large intervening facilities.

10.0 ADDITIONAL WORK AND APPROVALS

10.1 Permits & Approvals

The following approvals have been identified as potentially being required prior to the implementation of the proposed works.

- Works which bisect the Kettle Creek regulated lands, will require a KCCA Work Permit under O. Reg. 157/06.
- An Environmental Compliance Approval could be required prior to construction to ensure that the proposed works comply with MECP guidelines for the design of sanitary sewage systems, storm sewer systems and/or water systems.
- Although not anticipated, if the project requires positive groundwater control with a removal rate of 50,000 liters to <400,000 liters per day, an Environmental Activity and Sector Registry (EASR) will be required.
- Permit to take water (PTTW) will be required for removal rates of >400,000 liters per day and will need to be approved by the MECP per Sections 34 and 98 of the Ontario Water Resources Act R.S.O. 1990 and the Water Taking and Transfer Regulation O. Reg. 387/04.

10.2 Distribution of Notice of Study Completion and Environmental Study Report

In accordance with the requirements of the Municipal Class Environmental Assessment (MCEA) – Schedule 'C', a Notice of Study Completion is anticipated to be issued in October. Through issuance of the Notice of Study Completion, this Environmental Study Report (ESR), documenting the planning process undertaken, details of the study recommendations as well as potential impacts and mitigation measures identified through EA study, will be placed on the public record for the mandatory 30-day review period.

The Notice of Study Completion will also advise the public that during the 30-day review period, a request may be made to the Ministry of the Environment, Conservation and Parks (MECP) for an order requiring a higher level of study (i.e. requiring an individual/comprehensive EA approval before being able to proceed), or that conditions be imposed (e.g. require further studies), on the grounds that the requested order may prevent, mitigate or remedy adverse impacts on constitutionally protected Aboriginal and treaty rights.

Following the close of the 30-day public review period, the MECP has an additional 30 days to consider the project and review any potential Section 16 Order requests submitted during the 30-day public review period. The City may not proceed with the project for at least these 30 days following the end of the public review period.

Following this 30-day MECP review period, the project may proceed to detailed design and construction, provided the ministry is not reviewing Section 16 Order requests related to the project, and subject to any other permits and approvals that may be required.