Garner Road Municipal Class Environmental Assessment

Environmental Study Report

Stantec

Prepared for:
City of Hamilton

September 2025

Prepared by:
Stantec Consulting Ltd.

Project/File:
165001196

Stantec Consulting Ltd.

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Prepared by

Digitally signed by Stauffer, Carissa
Date: 2025.11.14 13:28:53 -05'00'

Signature

Carissa Stauffer

Reviewed by

Digitally signed by Hohner, Paula
Date: 2025.11.14 16:17:37 -05'00'

Signature

Paula Hohner

Approved by

Digitally signed by Bartlett, Isaac
Date: 2025.11.14 13:22:56 -05'00'

Signature

Isaac Bartlett, P. Eng.

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Introduction

The City of Hamilton has undertaken a Schedule 'C' Municipal Class Environmental Assessment (MCEA) to assess and plan improvements along Garner Road, from Wilson Street to the Highway 403 off-ramp. This major arterial corridor separates urban and rural Hamilton and plays a critical role in supporting transportation needs, including full-time truck traffic and emergency detour routing. The project responds to forecasted growth, particularly within the Airport Employment Growth District (AEGD), and aligns with City plans and policies aimed at enhancing multi-modal transportation, safety, and mobility. The Environmental Study Report (ESR) documents the planning process, design options, technical evaluations, and consultation activities that led to the preferred design solution.

Existing Transportation Conditions

The existing Garner Road corridor consists of two travel lanes, lacks consistent active transportation infrastructure, and operates at or near capacity during peak hours. Safety concerns have been identified at several intersections, including delays and high collision rates. There are limited sidewalks and no designated cycling facilities, creating barriers to pedestrian and cyclist travel. The corridor is serviced by Hamilton Street Railway transit routes and is designated as a full-time truck route, reinforcing its importance for goods movement. A Multi-Modal Level of Service (MMLOS) assessment confirmed the need for improvements to better serve all users, including pedestrians, cyclists, transit riders, and drivers.

Alternative Solutions

The study reviewed various options to address the corridor’s deficiencies. Initial alternatives focused on the need for capacity improvements, safety enhancements, and multi-modal integration. The alternatives considered included maintaining the existing corridor, expanding transit service, implementing travel demand management strategies, and widening the road to accommodate future traffic and active transportation demand. The preferred solution involved widening the road to improve traffic operations while integrating active transportation and stormwater management elements.

Alternative Design Concepts

Several road design options were evaluated to determine the best way to implement the preferred solution. Design alternatives were assessed using criteria such as transportation performance, natural and cultural environment impacts, property needs, cost, and public input. Active transportation alternatives included various combinations of sidewalks, multi-use paths, and on-road cycling lanes. The intersection at Garner

Road and Wilson Street was also studied for potential improvements, including a roundabout or protected intersection.

Recommended Design Concept

The recommended design includes the widening of Garner Road to four lanes, with two eastbound and two westbound travel lanes, and dedicated left-turn lanes at intersections where warranted. Active transportation improvements include continuous sidewalks, multi-use paths, and protected cycling lanes. Key intersections, such as those at Wilson Street and Shaver Road, are proposed to be improved with roundabouts or upgraded signals. The design also incorporates enhanced drainage features and preserves space for future transit priority infrastructure. These improvements aim to support all road users while accommodating planned residential and employment growth.

Project Description

The project will include new road alignments, enhanced intersection geometry, improved stormwater management infrastructure, and coordination with utility upgrades. The right-of-way will be expanded where necessary to accommodate sidewalks, cycling lanes, and transit infrastructure. Construction phasing will be considered during detailed design to minimize disruption. The preliminary cost estimate has been developed, and property impacts are being assessed to identify any acquisition needs.

Summary of Consultation

Engagement with the public, agencies, and Indigenous communities has been integral to the study. Two Public Information Centres (PICs) were held to share information and collect feedback. Stakeholder and agency meetings helped refine the design, while Indigenous communities were consulted in accordance with the Environmental Assessment Act. Feedback highlighted the importance of safety, continuous sidewalks and bike lanes, and environmental protection. The final design reflects input received and demonstrates responsiveness to local concerns.

Impacts and Mitigation

Potential impacts from the project include vegetation loss, disturbance to wildlife habitat, and temporary construction effects such as noise and dust. No significant impacts to archaeological or cultural heritage features are expected, though some heritage sites may require monitoring due to vibration sensitivity. Mitigation measures include erosion and sediment controls, wildlife timing restrictions, replanting strategies, and groundwater protection. A monitoring plan will be developed to ensure mitigation is effective throughout construction.

Next Steps

The Environmental Study Report will be available for a 30-day public review period. Following this, the City will advance the project to detailed design and property

acquisition phases. Construction timelines will be confirmed based on funding and approvals. Members of the public may submit comments during the review period or request a higher level of environmental assessment on the grounds of potential adverse impacts to constitutionally protected Indigenous or treaty rights.

Once the 30-day public review period ends, there is a mandatory waiting period before any construction or project activities can begin. During this time, the project proponent must wait at least 30 additional days to allow for final processing and consideration of all comments received.

If a request for a Section 16 order was submitted during the review period the project cannot proceed until that request is fully resolved and any conditions are met. This waiting period ensures that all public input has been properly considered and that any outstanding environmental concerns are addressed before the project moves forward. Only after this waiting period is complete, and provided no unresolved Section 16 orders exist, can the City begin implementing the project (i.e., detailed design and construction).

Abbreviations

AA	Archaeological Assessment
AEGD	Airport Employment Growth District
ANSI	Areas of Natural and Scientific Interest
APEC	Areas of Potential Environmental Concern
BGS	Below ground surface
BHR	Built Heritage Resources
CHL	Cultural Heritage Landscapes
CHR	Cultural Heritage Report
CHVI	Cultural Heritage Value or Interest
City	City of Hamilton
CLB	Complete-Livable-Better
CMP	Cycling Master Plan
DBH	Diameter at breast height
DFO	Fisheries and Oceans Canada
E&S	Erosion and sediment
EA	Environmental Assessment
EA Act	*Ontario Environmental Assessment Act*
ECCC	Environment and Climate Change Canada
ELC	Ecological Land Classification
ERIS	Environmental Resource Information Services
ESA	Environmental Site Assessment
ESR	Environmental Study Report
GRCA	Grand River Conservation Authority
GRIDS	Growth-Related Integrated Development Strategy
HCA	Hamilton Conservation Authority
HCM	Highway Capacity Manual
HDF	Headwater Drainage Feature
HTMP	City of Hamilton Transportation Master Plan

IPZ	Intake Protection Zone
LID	Low Impact Development
LOS	Level of Service
MBCA	*Migratory Birds Convention Act, 1994*
MCEA	Municipal Class Environmental Assessment
MECP	Ministry of the Environment, Conservation and Parks
MMLOS	Multi-Modal Level of Service
MNR	Ministry of Natural Resources
MTO	Ministry of Transportation of Ontario
NHIC	Natural Heritage Information Centre
NSA	Noise Sensitive Area
O. Reg.	Ontario Regulation
OTM	Ontario Traffic Manual
PCA	Potentially Contaminating Activities
PIC	Public Information Centre
PPS	Provincial Policy Statement
RHOP	Rural Hamilton Official Plan
ROW	Right-of-Way
SAR	Species at Risk
SARA	*Species at Risk Act*
SGRA	Significant Groundwater Recharge Area
SOCC	Species of Conservation Concern
SPA	Source Protection Area
Stantec	Stantec Consulting Ltd.
SWH	Significant Wildlife Habitat
SWM	Stormwater Management
TAC	Technical Advisory Committee
TMP	Transportation Master Plan
UHOP	Urban Hamilton Official Plan
V/C	Vehicle/Capacity
WHPA	Wellhead Protection Area

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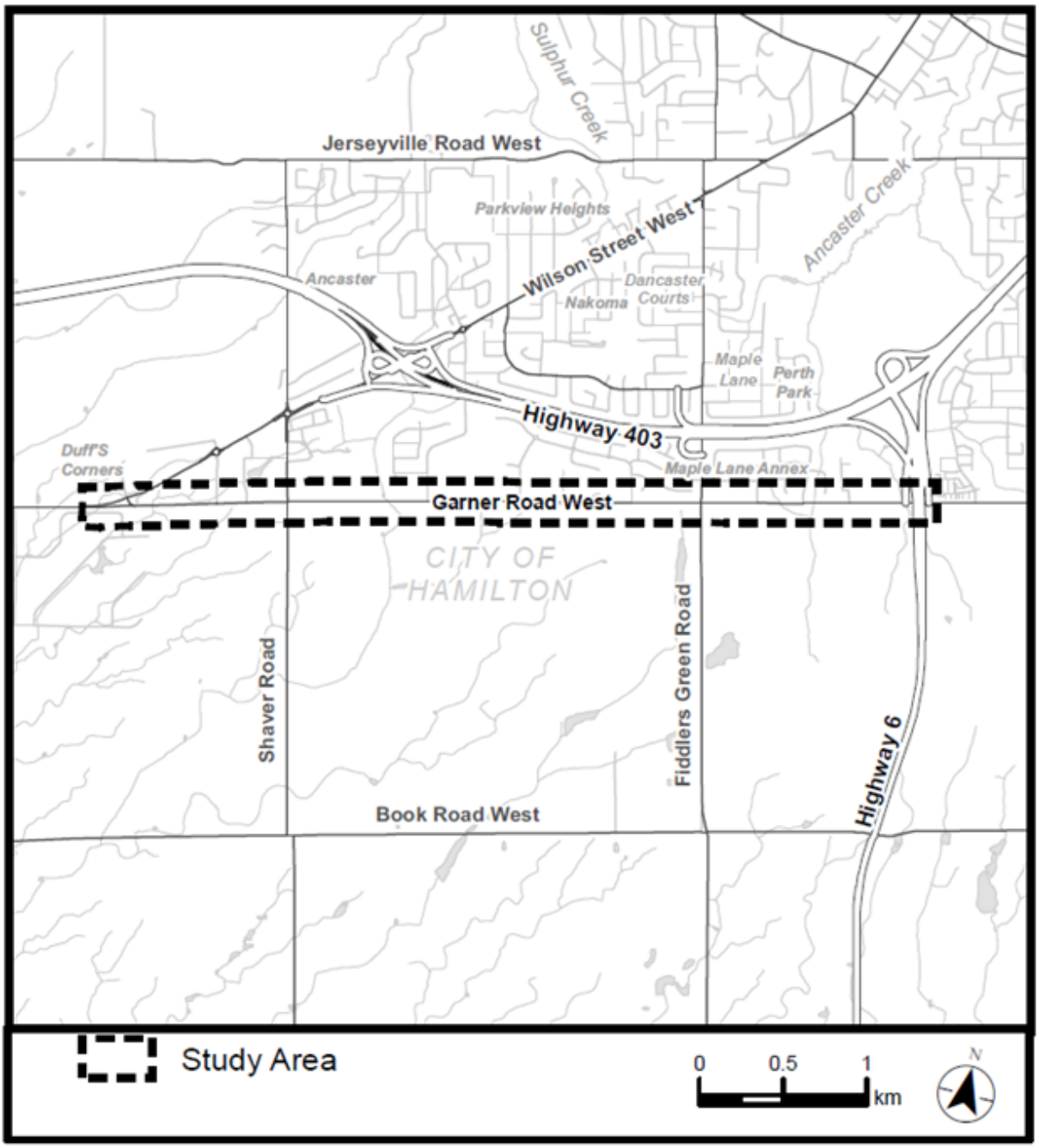
1 Introduction

A Schedule ‘C’ Municipal Class Environmental Assessment (MCEA) study was undertaken by the City of Hamilton (the City) to develop and assess alternative solutions to improve transportation along Garner Road from Wilson Street to the Highway 403 off-ramp. Garner Road is a Major Arterial Road which divides Urban Hamilton from Rural Hamilton. The study includes the assessment of options to improve traffic, active transportation, and stormwater management throughout the corridor. The improvements are required to support future growth within Hamilton, specifically within the Airport Employment Growth District (AEGD).

1.1 Study Area

The study area includes Garner Road from Wilson Street to the Highway 403 off-ramp (**Figure 1**). The corridor includes several intersections, with residential, commercial, and institutional land uses along the road. Within the study area, Garner Road is generally one lane in each direction, with turning lanes at some intersections, a 60 kilometre per hour speed limit, and narrow gravel shoulders. Garner Road is a designated as a full-time truck route through the study area and serves as a component of the Ministry of Transportation of Ontario (MTO) Emergency Detour Route. Discontinuous sidewalks are present on the north side of Garner Road between James Smith Park and Silver Maple Drive. There are no additional active transportation facilities within the study area.

Figure 1: Study Area



1.2 Background and Purpose

The 2011 AEGD Transportation Master Plan (TMP) was developed to prepare a transportation strategy that would accommodate an increase of over 28,000 people/employees by the year 2031 within the AEGD. The AEGD TMP recommends road widening, rapid transit, cycling infrastructure, and transportation demand management measures along Garner Road.

In addition to the AEGD TMP, the 2011 Ancaster TMP identified improvements to support mobility to the year 2031 and outlined a plan to implement the improvements in a phased manner consistent with approved City of Hamilton planning documents and master plans. Improvements to the Garner Road corridor were identified to support the AEGD, implement facilities per the Cycling Master Plan Review and Recreational Trails Master Plan, and accommodate the future BLAST Network, Hamilton's planned rapid transit network, while maintaining the corridor's designation as a full-time truck route.

Phases 1 and 2 of the MCEA process were completed during the development and approval of the Ancaster TMP. Stantec Consulting Ltd. (Stantec) was retained by the City of Hamilton to complete Phases 3 and 4 of the MCEA process for the assessment of transportation improvements options for Garner Road between Wilson Street and the Highway 403 off-ramp.

The purpose of the proposed improvements is to implement the recommendations of the approved planning documents to accommodate existing and future travel demands for all modes of transportation (i.e., pedestrian, cyclists, transit, truck and auto users) in the study area.

1.3 Municipal Class Environmental Assessment Process

The Ontario Environmental Assessment Act (EA Act) provides for the protection, conservation, and management of the environment in Ontario. The EA Act applies to municipalities and to activities including municipal road projects. Activities with common characteristics and common potential effects may be assessed as part of a "class" and are therefore approved subject to compliance with the pre-approved MCEA process. The Ministry of the Environment, Conservation and Parks (MECP) is responsible for administration of the EA Act.

The Municipal Class Environmental Assessment (MCEA) is an approved MCEA process that applies to municipal infrastructure projects including roads, water, and wastewater. This process provides a comprehensive planning approach to consider alternative solutions and evaluate their impacts on a set of criteria (e.g., transportation, environmental, social, engineering considerations) and determine mitigating measures to arrive at a preferred alternative for addressing the problem (or opportunity). The MCEA process involves a rigorous public consultation component that includes various

provincial and municipal agencies, Indigenous communities, and the public, at each of the project stages.

This study follows the Municipal Engineers Association MCEA process for a Schedule 'C' project, as outlined in the MCEA 2024 document (October 2000, as amended in February 2024), due to the type of project, anticipation for potential effects, and estimated capital cost. A Schedule 'C' project involves either the construction of new facilities or major modifications to existing facilities. Modifications to existing facilities could include road widening, intersection improvements, and/or other operational improvements.

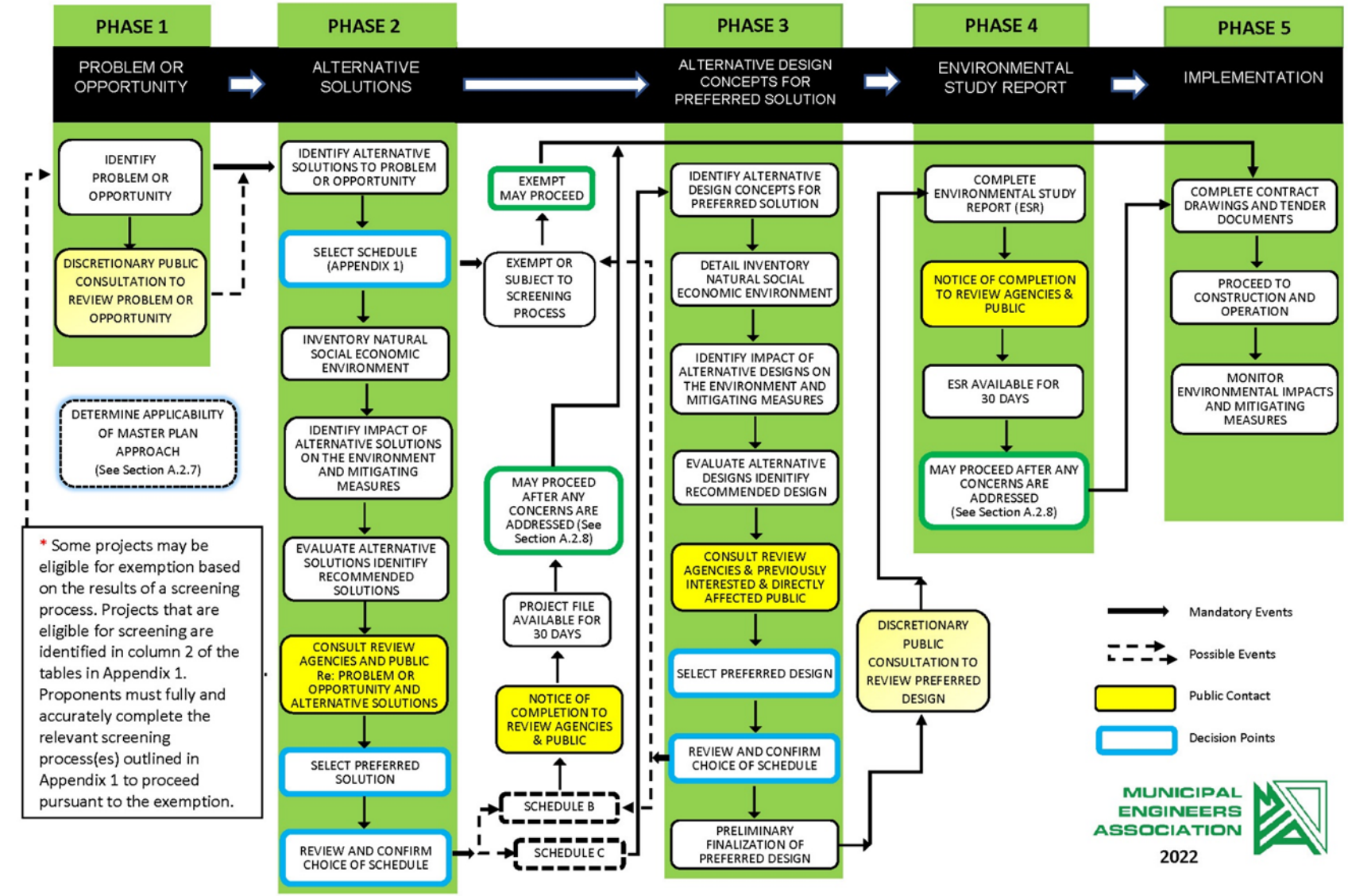
Schedule 'C' projects have the potential for significant environmental impacts and must follow the full planning process specified in the MCEA document, including Phases 1 through 4. The project is documented in an Environmental Study Report (ESR), which is then filed for review by the public, review agencies, and Indigenous communities.

Figure 2 illustrates the MCEA planning process and identifies the steps considered mandatory for compliance with the requirements of the EA Act. The following provides an overview of the five-phase planning process:

- Phase 1 – identify the Problem and Opportunity statement
- Phase 2 – identify and evaluate alternative solutions
- Phase 3 – identify and evaluate alternative design concepts for the preferred solution
- Phase 4 – prepare design plans and Environmental Study Report (ESR) for a minimum 30-day public review period
- Phase 5 –This phase involves detailed design and the preparation of contract/tender documents followed by construction, operation, and monitoring.

Phases 1 and 2 of the MCEA were completed during the development and approval of the 2011 Ancaster TMP.

Figure 2: Municipal Class Environmental Assessment Process



1.3.1 Section 16 Order Requests

Interested persons may provide written comments to the City of Hamilton for a response using the following contact information:

Megan Salvucci
Project Manager – Capital Infrastructure Planning
Public Works, Engineering Services
City of Hamilton
71 Main Street West, Hamilton, ON L8P 4Y5
Phone: 905-546-2424 extension 2732
Email: megan.salvucci@hamilton.ca

In addition, a request may be made to 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), 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 (i.e., 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 by mail 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 Hamilton by mail or by email:

Megan Salvucci, Project Manager – Capital Infrastructure Planning
Public Works, Engineering Services
City of Hamilton
71 Main Street West
Hamilton, ON, L8P 4Y5
megan.salvucci@hamilton.ca

2 Planning and Policy Context

2.1 Provincial Planning Statement

The Provincial Planning Statement (PPS) 2024, is a streamlined province-wide land use planning policy framework that replaces both the *Provincial Policy Statement* (2020) and *A Place to Grow: Growth Plan for the Greater Golden Horseshoe* (2019), while building upon housing-supportive policies from both documents. The PPS is a policy statement issued under the authority of Section 3 of the *Planning Act* and came into effect on October 20, 2024. Section 3 of the *Planning Act* requires that decisions affecting planning matters be consistent with policy statements issued under the *Planning Act*.

The PPS provides direction on matters of provincial interest related to land use planning and development, including transportation infrastructure, while protecting the environment and resources, and ensuring opportunities for employment and residential development. Adherence to the numerous policies in the PPS are considered while planning for transportation infrastructure.

This ESR meets the objectives of the PPS by adhering to the MCEA process, and local and provincial land use considerations.

2.2 City of Hamilton Official Plans

The City of Hamilton is divided into two Official Plans: the Urban Hamilton Official Plan, 2013 (UHOP) and the Rural Hamilton Official Plan, 2012 (RHOP). An Official Plan is a guiding document which outlines goals and policies to move the City towards achieving its visions for the future. They provide a long-term vision for the physical development of the City to achieve social, economic, and environmental objections. The Official Plan is one of the key implementation mechanisms for the City's Growth-Related Integrated Development Strategy (GRIDS) and other corporate initiatives including Master Plans, and the Social Development Strategy. The framework of the Official Plan focuses on creating a compact and healthy urban community with a balanced transportation network that offers choice so people can walk, cycle, take transit or drive, and recognize the importance of goods movement to the local economy. GRIDS focuses on integrated growth management for land use and community services to achieve the City's Vision

through the long-term development of land uses and services based on environmental priorities, social issues, economic opportunities and population studies.

The UHOP applies to lands within Hamilton's urban area, focusing on accommodating growth with major roads, transit, and full municipal services. In contrast, the RHOP covers the rural areas, emphasizing the preservation of agricultural activities and resource-related uses. Together, these plans guide sustainable development and resource protection in both urban and rural Hamilton.

Garner Road is a major arterial road separating Urban Hamilton from Rural Hamilton. The study area, primarily designated under the UHOP, includes lands west of Shaver Road, north of Garner Road between Wilson Street and the Highway 403 off-ramp, and south around the Highway 403 off-ramp. The RHOP designates most lands south of Garner Road between Shaver Road and Fiddlers Green Road, as well as lands between Fiddlers Green Road and the Highway 403 off-ramp not covered by the UHOP.

2.3 City of Hamilton Transportation Master Plan

The City of Hamilton's 2018 *City in Motion Transportation Master Plan* (HTMP) provides the framework which guides future transportation-related studies, projects, initiatives, and decisions. The HTMP considers population and employment growth with current and projected transportation trends for the 2031 planning horizon and beyond. The key objective of the HTMP is to provide a comprehensive and attainable transportation blueprint for Hamilton, that balances all modes of transportation to become a healthier city. Three desired outcomes were established to form the foundation and framework of the HTMP:

1. Sustainable and Balanced Transportation System: a balanced system characterized by connectivity, accessibility, choice, and equitable accommodation for all modes of transportation, and for users regardless of age, ability, or income.

2. Healthy and Safe Communities: a transportation system that encourages active lifestyles, provides safe movement of people, and reduces dependence on single occupancy vehicles to achieve a safe and supported, healthy city with a high quality of life.

3. Economic Prosperity and Growth: enabled by a transportation system providing efficient access for industries and businesses to markets, employees, suppliers, and customers. Provide high quality multi-modal choices, enabling households to reduce overall transportation costs.

Land use designations surrounding the corridor identify “Neighbourhoods” north of Garner Road, and “Employment Areas” and “Rural Areas” south of Garner Road. Road Network Improvements in the HTMP identify road widening for Garner Road, specifically from Fiddlers Green Road to Glancaster Road, and note that these improvements have

been previously identified and approved as part of Secondary Plans and supporting transportation plans and EAs.

2.4 City of Hamilton Cycling Master Plan

The City of Hamilton's 2009 *Cycling Master Plan: Shifting Gears* (CMP) highlights improvements to the cycling network supported by the HTMP to implement a multi-modal shift in how Hamiltonians move through the City. The CMP outlines a transportation network that provides a connected, balanced and sustainable system, focused on moving people through active transportation and transit, to reduce the use of single-occupancy vehicles. The City of Hamilton strives to provide the safest roadways for all users, to create a healthy lifestyle for the community. Per the HTMP, Planned Bike Lanes are proposed along the Garner Road corridor. The CMP further identifies the need for the widening of Garner Road to include Bike Lanes.

The CMP was reviewed and updated in 2017 as part of the review and update of the HTMP. The CMP Review and Update document indicated that the 2009 CMP was well received by the community; therefore, the review determined that the direction and extent of the network established in 2009 is still relevant with appropriate enhancements and refinements. The CMP Review and Update also identified the recommendation for reconstruction with a bike lane on Garner Road from Wilson Street to Glancaster Road.

2.5 Complete-Livable-Better Streets

Complete Streets is an approach to right-of-way design that balances the needs of all users regardless of age, ability, or mode of transportation in an equitable manner. It represents a shift from traditional street design approaches with their primary focus on moving vehicular traffic. The Complete-Livable-Better (CLB) Streets approach recognizes that no one-size-fits-all solution is appropriate for the right-of-way, and provides a range of design solutions, and a toolkit of options to be applied in various ways to meet the needs of all users.

Garner Road can be considered a Connector Road per the CLB Street approach, as it is located adjacent to a residential area, and links residential neighbourhoods to each other and to other areas of the City. It accommodates a higher vehicle capacity and goods movement. Since Garner Road passes through residential areas, the roadway should support active transportation with wide sidewalks and multi-use paths, or dedicated cycling facilities. The maximum right-of-way width for a Connector corridor in a rural area is 36 metres. Additional details for improvements to a Connector corridor can be found in the City of Hamilton's CLB Streets Report.

2.6 Ancaster Transportation Master Plan

The 2011 Ancaster TMP was undertaken to identify improvements to the existing transportation system that would support the mobility needs of Ancaster's residents,

businesses and visitors to 2031, and result in a more liveable community. The Ancaster TMP reviewed recommendations from the 2001 *Ancaster Comprehensive Transportation Study* and 2007 *Hamilton Transportation Master Plan* (HTMP), compared them against existing conditions, and either adopted, rejected, or modified them to support Ancaster's transportation network. During the development of the Ancaster TMP, provincial and municipal planning strategies, policies, and plans, as well as previous studies were also considered.

In the Ancaster TMP, Garner Road is identified as a Major Arterial Road and a full-time truck route and identified two projects for improvements to Garner Road.

1. Widening Garner Road to three lanes with a two-way left-turn lane, where feasible, depending on the right-of-way, from Wilson Street to 50 m west of Shaver Road.
2. Widening Garner Road to four lanes with bike lanes from 50 m west of Shaver Road to 50 m east of Miller Drive.

2.7 Hamilton Airport Employment Growth District

The Hamilton AEGD is located in the southwest of the City of Hamilton Urban Area. Preparation of an AEGD TMP was undertaken to produce a transportation strategy that would suitably accommodate future employment projections. The AEGD TMP identifies a long-term vision for a strong, healthy, sustainable future shared by local government, citizens, business, groups and organizations.

The AEGD is bounded by Garner Road and Twenty Road West in the north, Upper James Street in the east, White Church Road and Carluke Road in the south, and Fiddler's Green Road in the west. Industrial lands are located east of Southcote, between Garner Road and Dickenson Road. Permitted uses on light industrial lands include manufacturing, warehousing, and communication and high technology activities. Garner Road/Rymal Road is the primary east-west connection within the area, which connects Centennial Parkway with the AEGD. The AEGD supports the recommendations of the TMP to:

- Widen Garner Road from Fiddler's Green Road to Glancaster Road
- Implement rapid transit, specifically the S-Line (a Centennial Parkway/Rymal Route)
- Provide cycling infrastructure along Garner Road with Bike Lanes
- Encourage Transportation Demand Management (TDM) strategies

Following a relatively minor implementation update to the TMP in 2016, the City of Hamilton has undertaken a comprehensive review and update of the AEGD TMP to re-evaluate the approved transportation network, integrate the approved Complete Street Design Guidelines, reassess road alignments to address potential impacts to natural

and cultural heritage elements, and to ensure a sustainable, resilient network that is responsive to climate change, the movement of people and goods, and development industry needs. The main drivers for the comprehensive review and update of the AEGD TMP were a number of new policy influences, land use development needs and pattern changes, and concerns from Transport Canada related to a future collector road that was in alignment with a runway at the John C. Munro Hamilton International Airport. The AEGD TMP Update was published by the City of Hamilton in 2023.

Consistent with the EA process, the proposed network links were evaluated both individually and holistically according to the number of criteria related to transportation service and engineering, as well as cost, socio-economic, and cultural and natural environment factors. Through consultation, the transportation network was further refined to address concerns and to meet the development industry needs. As part of the AEGD TMP Update network modification recommendations were provided.

The AEGD TMP Update did not provide updated recommendations for Garner Road but did reinforce the recommendation for protection of the right-of-way for future Priority Transit Use and use of the corridor as a full-time truck route.

2.8 Review of Phases 1 and 2

The Ancaster TMP was completed in 2011 and documents Phases 1 and 2 of the MCEA process for this project. The Ancaster TMP identified the preferred solution for Garner Road as being two separate projects.

1. A Schedule B project under the MCEA for widening Garner Road to three lanes with a two-way left-turn lane from Wilson Street to 50 m west of Shaver Road.
2. A Schedule C project under the MCEA for widening Garner Road to four lanes with bike lanes from 50 m west of Shaver Road to 50 m east of Miller Drive.

Phases 1 and 2 of the MCEA study were reviewed and confirmed prior to commencing Phases 3 and 4. Given the projects were combined, it was determined that this study should be undertaken following the Schedule C process, as it provides more opportunities for public consultation.

3 Existing Conditions

3.1 Transportation

As part of the Garner Road MCEA, a transportation assessment was completed to review the existing and future transportation operations, needs and requirements for all transportation modes (i.e., pedestrians, bicycles, public transit, trucks and automobiles) along the study corridor. The Transportation Assessment is available within **Appendix A**.

3.1.1 Road Network

In addition to Garner Road, the study area includes 12 roads and intersections part of the existing road network, as described below.

Garner Road is an east-west two-lane major arterial road under the jurisdiction of the City with a posted speed limit of 60 km/h across the study area. At the intersection with Wilson Street/Mason Drive, two channelized right turn lanes provide access between Garner Road and Wilson Street eastbound and provide extra capacity at this intersection. At all signalized intersections, dedicated left-turning lanes are provided.

Wilson Street is an east-west major arterial road under the jurisdiction of the City with posted speed limits in the range of 60 km/h. At the intersection with Garner Road, dedicated left-turning lanes are installed at the east and west approaches. A channelized right turn lane is provided to Wilson Street eastbound from Garner Road. The vehicles that exit from Wilson Street westbound, merge onto Garner Road through the connecting ramp.

McClure Road is a two-lane local roadway under the jurisdiction of the City with a regulatory speed limit of 50 km/h. It is southerly connected to Garner Road without any dedicated turning lane.

SmartCentres Access Road is the private entrance to SmartCentres with a two-lane cross-section with a posted speed limit of 15 km/h.

Shaver Road is a north-south two-lane collector under the jurisdiction of the City with a posted speed limit of 60 km/h. At the intersection with Garner Road, the dedicated left-turning lanes are installed at the north and south approaches.

Hamilton Drive is a local roadway with a two-lane cross-section under the jurisdiction of the City with a posted speed limit of 40 km/h.

Panabaker Drive is a two-lane local roadway under the jurisdiction of the City with a regulatory speed limit of 40 km/h. At the intersection with Garner Road, there is a dedicated left-turning lane at the north approach.

Braithwaite Avenue is a local roadway with a two-lane cross-section under the jurisdiction of the City with a posted speed limit of 40 km/h.

Fiddlers Green Road is a north-south two-lane minor arterial road under the jurisdiction of the City with a posted speed limit of 50 km/h. At the intersection with Garner Road, the dedicated left-turning lanes are installed at the north and south approaches.

Anson Drive is a local roadway with a two-lane cross-section under the jurisdiction of the City with a posted speed limit of 40 km/h.

Miller Drive is a local roadway under the jurisdiction of the City with a two-lane cross-section with a posted speed limit of 40 km/h.

Woodmount Avenue/Sliver Maple Drive is a local roadway with a two-lane cross-section under the jurisdiction of the City with a posted speed limit of 40 km/h.

Highway 403 is a provincial highway in Ontario under the jurisdiction of MTO with a posted speed limit of 100 km/h. It connects to Garner Road with an off-ramp and an on-ramp. The intersection of Highway 403 off-ramp and Garner Road is controlled by a stop sign. A dedicated left-turning lane is provided at the intersection of Garner Road and Highway 403 on-ramp for the eastbound left-turning traffic.

3.1.2 Intersections

There are four signalized intersections along Garner Road within the study area:

- Wilson Street West/ Garner Road West
- Shaver Road/ Garner Road West
- Panabaker Drive/ Garner Road West
- Fiddlers Green Road/ Garner Road West

There are nine unsignalized intersections along Garner Road within the study area:

- McClure Road/ Garner Road West
- Hamilton Drive/ Garner Road West
- Braithwaite Avenue/ Garner Road West
- Anson Drive/ Garner Road East
- Miller Drive/ Garner Road East
- Woodmount Avenue/ Garner Road East
- Highway 6 Ramp/ Garner Road East
- Highway 403 eastbound off-ramp/ Garner Road East
- Highway 403 eastbound on-ramp/ Garner Road East

3.1.3 Road Safety

Historical collision data for the study area, from Wilson Street to the Highway 403 on-ramp, was provided by the City from 2015 to 2019. This data encompasses collisions occurring at both intersections and mid-block locations within the study area. Through this review, a total of 140 recorded collisions were found. Of these collisions, 29 occurred at intersections, 34 collisions occurred at mid-block locations, and 77 have no records on accident location.

Collision data also indicates that rates at intersections within the study area are generally low, and that no collisions involved cyclists or pedestrians. However, it is important to note that the lack of infrastructure for active transportation likely contributes to the absence of reported cyclist and pedestrian collisions, as these modes may be underrepresented due to safety concerns. As part of the evaluation process, safety considerations for pedestrians and cyclists will be assessed for each design alternative to ensure they are appropriately addressed in the final recommended design. This is discussed further in **Section 5, Alternative Design Concepts**. Of the intersections and mid-block collision reports reviewed, the highest collision rates were noted at the intersection and mid-block (east ramp) of Garner Road and Shaver Road, the intersection of Garner Road and Fiddlers Green Road, the mid-block of Garner Road from Hamilton Drive to Fiddlers Green Road, and the mid-block from Fiddlers Green Road to Woodmount Avenue.

3.1.4 Truck Routes

Garner Road serves as a designated truck route and serves as a vital east-west corridor link across Hamilton. This section of Garner Road is also a part of the Emergency Detour Route. This route can be implemented when an emergency occurs on the adjacent highway system, allowing police, fire, and EMS to manage the scene and safety of those involved by redirecting traffic.

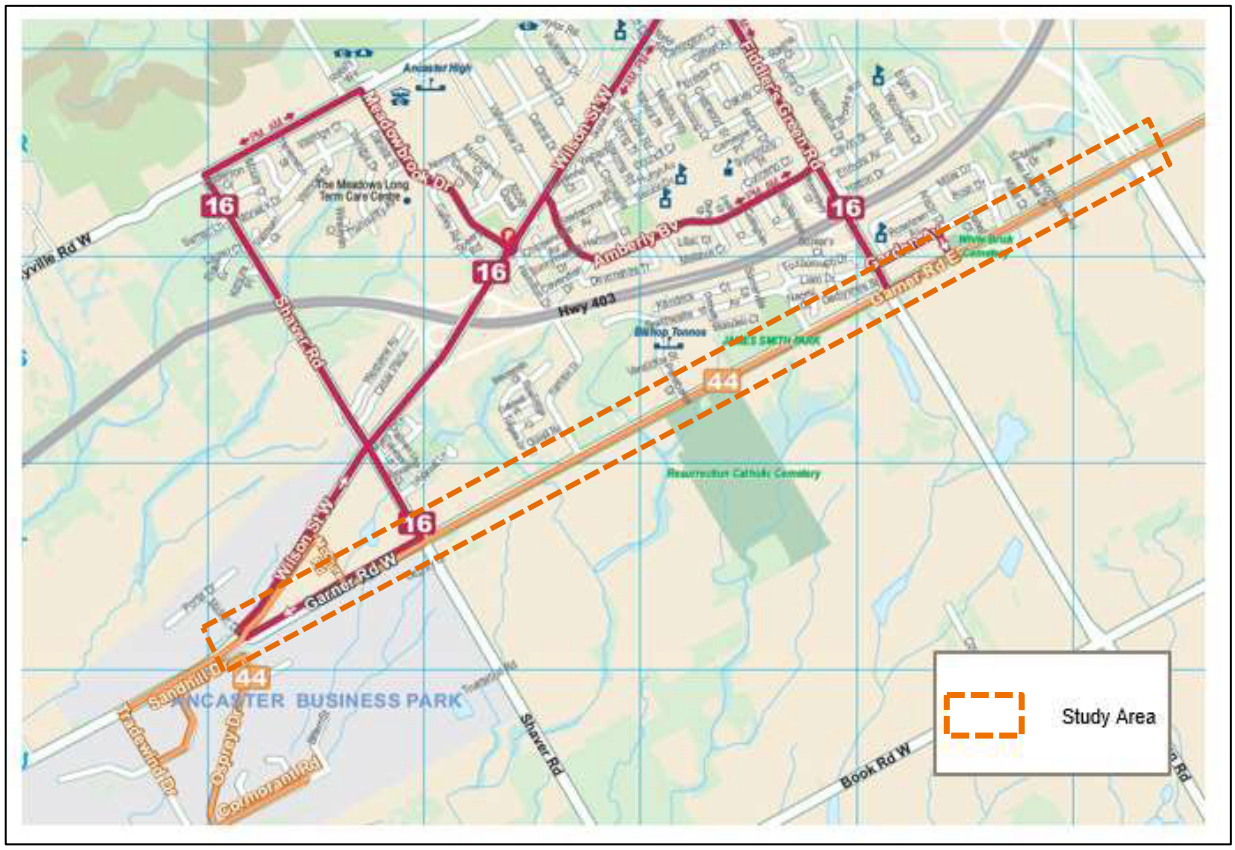
3.1.5 Transit Network

Transit services within the study area are currently provided by the City's transit agency, Hamilton Street Railway, which operates two bus routes along Garner Road (See **Figure 3**).

Route 44: Provides east-west service along Garner Road and Rymal Road, connecting Upper Centennial Parkway with Redeemer University and Wilson Street. It links with the B-Line at Eastgate Terminal and will support the future S-Line. The route serves the developed portion of Ancaster Business Park.

Route 16: Operates primarily along Wilson Street between Duff's Corner and Meadowlands, with additional morning eastbound and afternoon westbound service connecting Wilson Street to Garner Road via Fiddlers Green Road and Amberly Boulevard.

Figure 3: Existing Transit Services in the Study Area

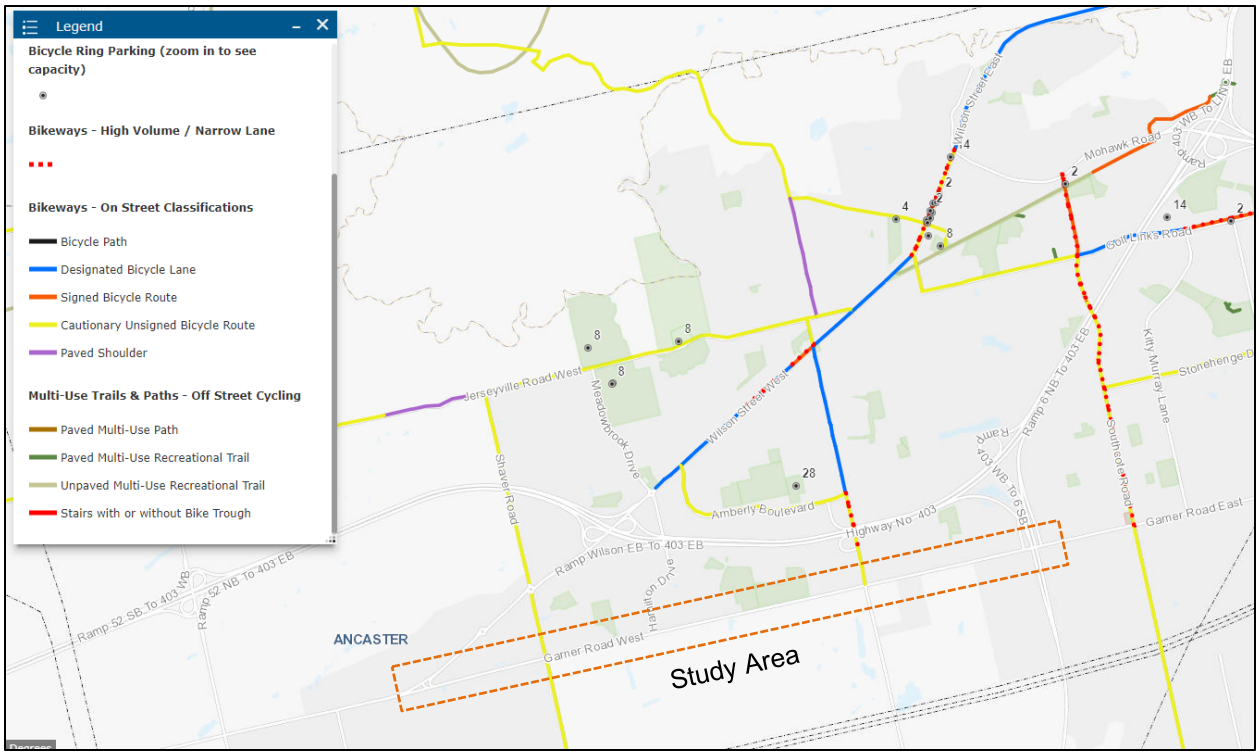


3.1.6 Active Transportation

Active Transportation facilities are meant to provide a connected, balanced, and sustainable system to move people and vehicles in an area, as identified in the City's CMP and CLB Streets approach (see **Section 2.4** and **Section 2.5**). Within the study area, there is insufficient or a discontinuity of active transportation (i.e., walking and cycling) facilities available.

As shown in Figure 4, there are no designated cycling facilities within the study area. There are two cautionary unsigned bike routes installed along Shaver Road and on Fiddlers Green Road. The Fiddlers Green Road route eventually connects to a designated bike lane further down the road.

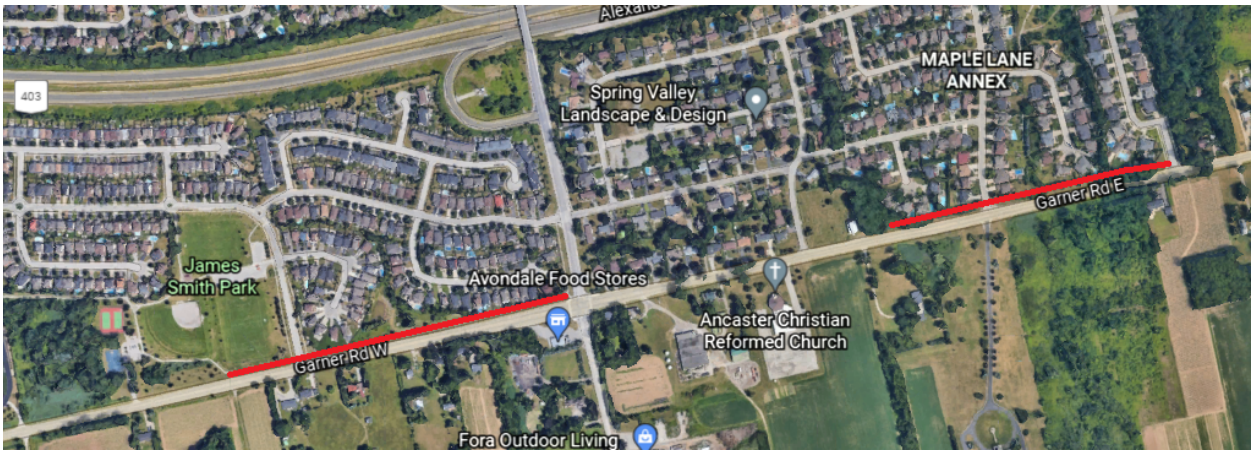
Figure 4: Existing Cycling Facilities



Source: www.hamilton.ca/home-neighbourhood/getting-around/biking-cyclists/cycling-routes-map [Accessed February 2023]

As noted from site inspections and the Google Earth imagery review (see **Figure 5**), there are two existing sidewalk segments that serve the residential areas on the north side of Garner Road. One section is from approximately 100 meters west of Braithwaite Avenue to Fiddlers Green Road. The other section is from approximately 100 meters west of Miller Drive to Woodmount Avenue.

Figure 5: Existing Sidewalk in Study Area



Aside from the unsigned bike routes and sidewalk segments, there are no further active transportation facilities within the study area.

3.1.7 Existing Traffic Volumes

An analysis of existing traffic conditions was completed to assess the existing and future traffic volumes in the study area. Garner Road was identified to currently operate with high vehicle traffic, especially during peak hours (AM and PM).

The balanced existing traffic volumes for the AM and PM peak hours are illustrated in **Figure 6** and **Figure 7**, respectively.

Figure 6: Existing Traffic Volumes (2021) – AM Peak Hours

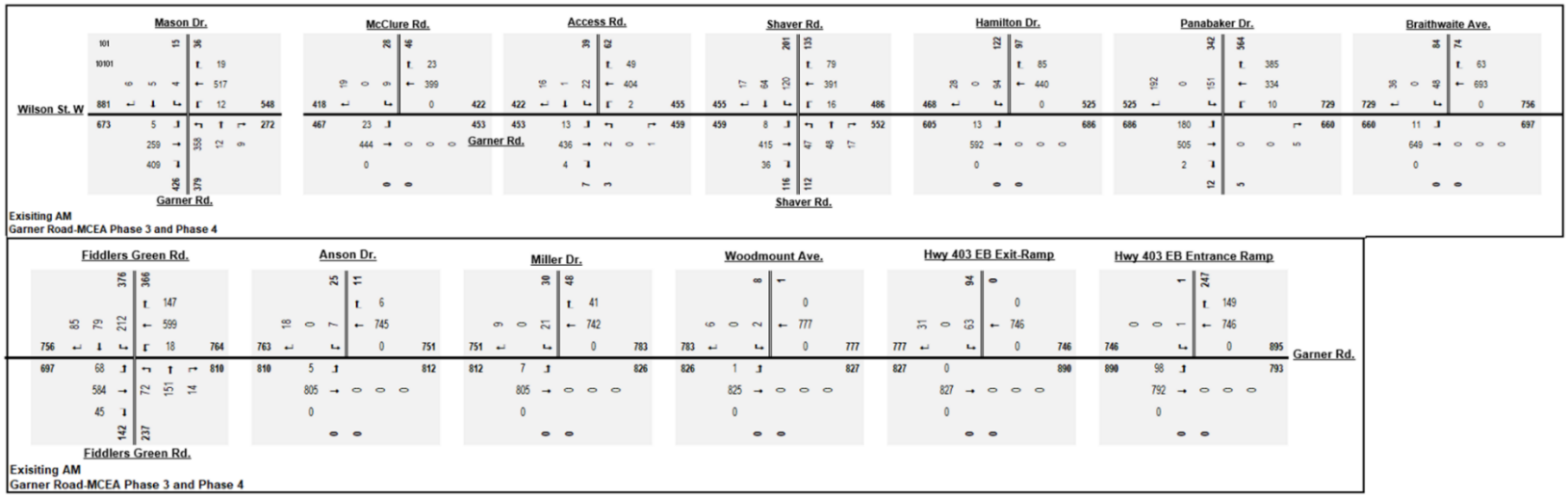
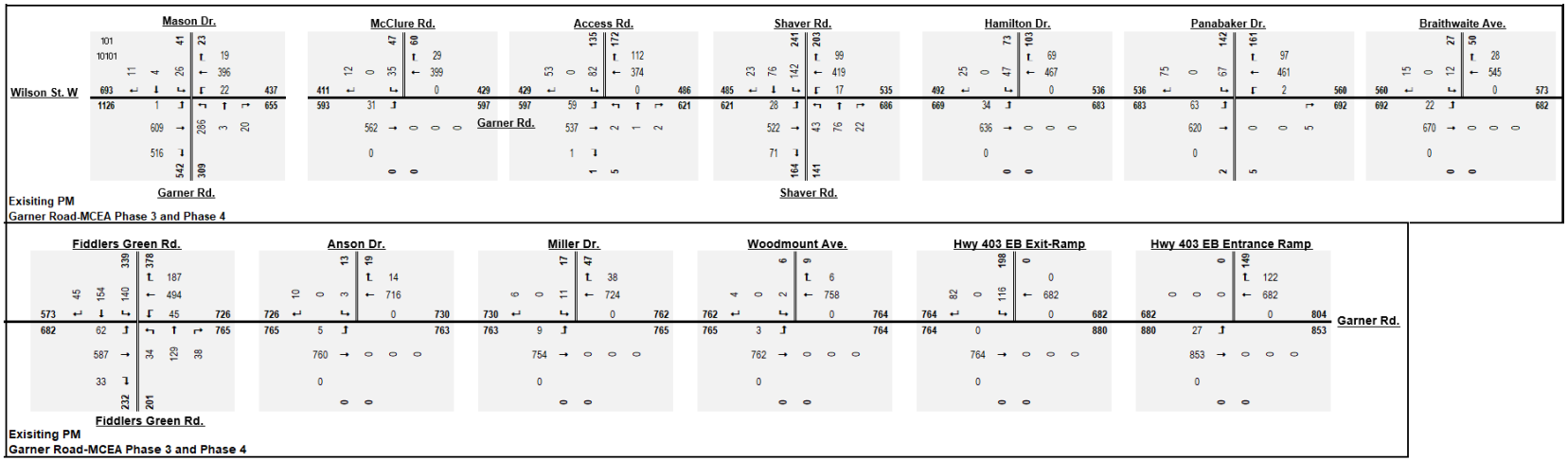


Figure 7: Existing Traffic Volumes (2021) – PM Peak Hours



3.1.8 Intersection Operations

The following section evaluates intersection operations within the study area using applicable municipal and technical guidelines.

3.1.8.1 Intersection Level of Service (LOS) Analysis

Intersection operations at signalized and unsignalized intersections in the study area were evaluated using the Highway Capacity Manual, 2000 (HCM). Critical movements were identified based on the City's traffic impact study guidelines. For signalized intersections, LOS ranges from LOS A (for 10 seconds or less average delay) to LOS F (for average delay greater than 80 seconds). For unsignalized intersections, the LOS ranges from LOS A (for 10 seconds or less average delay) to LOS F (for average delay greater than 50 seconds) (see **Table 1**).

Table 1: Intersection Level of Service Delay Criteria

Level of Service (LOS)	Signalized Intersections	Unsignalized Intersections
A	≤10s	≤10s
B	>10s and ≤20s	>10s and ≤15s
C	>20s and ≤35s	>15s and ≤25s
D	>35s and ≤55s	>25s and ≤35s
E	>55s and ≤80s	>35s and ≤50s
F	>80s	>50s

The results indicate that all study area intersections currently operate with acceptable LOS and vehicle/capacity (V/C) ratios during AM and PM peak hours, except for specific movements. During the AM peak hour, issues were noted at several intersections:

- **Fiddlers Green Road & Garner Road West (signalized):** Southbound left and northbound left 95th percentile queuing exceeds available storage lengths.
- **Garner Road West & Braithwaite Avenue (unsignalized):** Southbound left/right movements operate at LOS F with an estimated delay of 105.7 seconds (V/C ratio is 0.84).
- **Garner Road West & Anson Drive (unsignalized):** Southbound left/right movements operate at LOS F with a delay of 95.5 seconds (V/C ratio is 0.46).
- **Garner Road West & Miller Drive (unsignalized):** Southbound left/right movements operate at LOS F with an estimated delay of 77.4 seconds (V/C ratio is 0.45).
- **Garner Road West & 403 EB off-ramp (unsignalized):** Southbound left/right movements operate at LOS F with a delay of 219.2 seconds (V/C ratio is 1.16).

During the PM peak hour, issues were noted at:

- **Fiddlers Green Road & Garner Road West (signalized):** Northbound left 95th percentile queuing exceeds available storage length.
- **Garner Road West & 403 EB off-ramp (unsignalized):** Southbound left/right movements operate at LOS F with an estimated delay of 148.1 seconds (V/C ratio is 1.10).

These findings highlight specific movements that require further attention to improve traffic operations within the study area. A summary of the existing vehicle operations from the LOS analysis are included **Table 2** and **Table 3** below.

Table 2: Existing (2021) Level of Service Analysis (Signalized)

Signalized Intersection	Movement	AM Peak Hour				PM Peak Hour			
		LOS	Delay (s)	V/C	Queue (m) 95th	LOS	Delay (s)	V/C	Queue (m) 95th
Garner Rd/ Mason Dr & Wilson St	EBL	A	6.1	0.01	1.9	A	5.3	0.00	0.7
	EBT	A	7.7	0.30	20.5	A	9.2	0.56	61.5
	WBL	A	6.3	0.03	3.6	A	7.1	0.13	5.8
	WBT	A	7.5	0.28	34.9	A	6.4	0.22	24.5
	NBL	C	31.1	0.69	42.7	C	30.9	0.66	37.0
	NBT	C	31.9	0.70	42.5	C	30.1	0.64	35.5
	SBL	C	21.7	0.02	2.2	C	23.6	0.12	8.3
	SBT	C	21.7	0.02	3.7	C	23.1	0.02	4.5
	Overall	**B**	**13.3**	**0.41**	**-**	**B**	**12.3**	**0.58**	**-**
Shaver Rd & Garner Rd W	EBL	A	4.9	0.02	2.2	A	5.2	0.05	5.2
	EBT	A	7.8	0.44	53.2	A	8.3	0.47	71.0
	EBR	A	4.8	0.03	2.9	A	5.2	0.06	6.8
	WBL	A	5.0	0.04	3.4	A	5.2	0.04	3.7
	WBT	A	7.3	0.40	48.4	A	7.4	0.38	53.5
	WBR	A	5.0	0.06	5.3	A	5.2	0.07	6.6
	NBL	C	25.6	0.23	13.3	C	25.0	0.19	12.4
	NBT	C	25.2	0.20	14.1	C	25.3	0.25	20.1
	SBL	C	30.6	0.59	29.1	C	30.9	0.61	33.5
	SBT	C	25.7	0.26	17.3	C	25.4	0.26	20.2
	Overall	**B**	**12.2**	**0.47**	**-**	**B**	**12.4**	**0.50**	**-**
Panabaker Dr & Garner Rd W	EBL	A	8.8	0.53	28.4	A	4.2	0.19	7.2
	EBT	B	11.5	0.71	70.3	A	9.0	0.74	68.0
	WBL	A	6.0	0.04	2.6	A	3.6	0.01	0.7
	WBT	A	7.9	0.47	41.0	A	5.8	0.55	43.1

Signalized Intersection	Movement	AM Peak Hour				PM Peak Hour			
		LOS	Delay (s)	V/C	Queue (m) 95th	LOS	Delay (s)	V/C	Queue (m) 95th
	WBR	A	7.2	0.34	4.5	A	3.8	0.09	3.1
	SBL	C	22.6	0.66	31.0	C	22.4	0.49	15.6
	SBR	B	16.5	0.17	7.4	C	20.4	0.07	6.5
	Overall	**B**	**11.1**	**0.69**	**-**	**A**	**8.6**	**0.69**	**-**
Fiddlers Green Rd & Garner Rd W	EBL	B	12.8	0.36	11.6	B	10.3	0.19	10.0
	EBT	B	12.8	0.47	48.8	B	11.4	0.38	43.2
	WBL	B	14.9	0.10	6.6	B	14.9	0.17	12.5
	WBT	C	21.3	0.71	74.0	B	17.8	0.55	58.9
	NBL	C	28.0	0.40	23.7	C	25.2	0.18	11.8
	NBT	C	30.2	0.58	45.7	C	28.2	0.53	38.8
	SBL	C	29.8	0.75	47.6	B	18.4	0.39	26.0
	SBT	B	19.8	0.32	31.9	B	19.1	0.36	37.3
	Overall	**C**	**20.1**	**0.75**	**-**	**B**	**16.6**	**0.51**	**-**

Table 3: Existing (2021) Level of Service Analysis (Unsignalized)

Unsignalized Intersection	Movement	AM Peak Hour				PM Peak Hour			
		LOS	Delay (s)	V/C	Queue (m) 95th	LOS	Delay (s)	V/C	Queue (m) 95th
Garner Rd W & McClure Rd	EBL	A	8.4	0.02	0.6	A	8.5	0.03	0.8
	SBLR	B	14.4	0.08	1.9	C	24.2	0.22	6.4
Garner Rd W & Access Rd	EBL	A	8.5	0.01	0.3	A	8.7	0.06	1.5
	SBLR	C	16.3	0.12	3.0	D	30.2	0.51	20.8
Garner Rd W & Hamilton Dr	EBL	A	8.9	0.01	0.3	A	9.0	0.04	0.9
	SBLR	D	34.8	0.53	21.6	D	28.6	0.34	10.9
Garner Rd W & Braithwaite Ave	EBL	B	10.2	0.02	0.5	A	8.9	0.03	0.6
	SBLR	F	105.7	0.84	39.8	C	21.3	0.12	3.0
Garner Rd W & Anson Dr	EBL	A	0.3	0.01	0.2	A	0.2	0.01	0.1
	SBLR	F	95.5	0.46	14.0	C	21.8	0.06	1.4
Garner Rd W & Miller Dr	EBL	B	10.6	0.01	0.3	A	9.5	0.01	0.3
	SBLR	F	77.4	0.45	14.0	D	31.7	0.12	3.0
Garner Rd W & Woodmount Ave	EBL	A	0.0	0.00	0.0	A	0.1	0.00	0.1
	SBLR	D	26.4	0.05	1.2	C	22.5	0.03	0.7
Garner Rd W & 403 EB off-ramp	SBLR	F	219.2	1.16	58.0	F	148.1	1.10	76.6
Garner Rd W & 403 EB on-ramp	EBL	B	12.0	0.19	5.1	B	10.1	0.04	0.9

3.1.8.2 Multi-Modal Level of Service Assessment

A Multi-Modal Level of Service (MMLOS) assessment was completed as part of this study to evaluate the quality and performance of transportation modes along the Garner Road corridor and the identified signalized intersections, including motor vehicles, pedestrians, cyclists, and public transit. The MMLOS was conducted in accordance with the Ontario Traffic Council Multi-Modal Level of Service Guidelines (February 2022). This assessment will help identify necessary improvements to accommodate growing populations and sustainability goals by assessing the impacts of future roadway configurations on all users, not just vehicles.

Similar to the Intersection LOS analysis, the MMLOS assessment ranges from a LOS A to LOS F, with LOS A representing the best score in terms of factors such as comfort, safety, delay, and reliability, depending on the transportation mode being assessed. Key factors influencing the LOS for each transportation mode and the associated scoring weight are shown in **Table 4**.

Table 4: Multi-Modal Level of Service Criteria

Intersections		
Pedestrians	Enhanced Pedestrian Measures	25%
	Average Effective Turning Radius	25%
	Signal Cycle Length	25%
	Number of Uncontrolled Conflicts	25%
Bikes	Enhanced Bicycle Measures	25%
	Average Effective Turning Radius (m)	25%
	Signal Cycle Length	25%
	Number of Uncontrolled Conflicts	25%
Buses	Transit Priority Measures	33%
	Transit Movement Delay	33%
	Pedestrian Level of Service	33%
Trucks	Average Effective Turning Radius	50%
	Car Level of Service	50%
Cars	Percentage of Turning Movements with Dedicated Lanes	50%
	Intersection Delay	50%

It should be noted that the City-Wide TMP indicates that the City is developing its own MMLOS guidelines, which will be included in future traffic impact study guidelines. For now, typical MMLOS targets for urban/suburban areas were used: pedestrian LOS C, bicycle LOS D, transit LOS D, truck LOS D, and car LOS D.

Multi-modal operations within the study area were assessed using the MMLOS criteria above, including road segments along the Garner Road corridor, and signalized and unsignalized intersections identified in **Section 3.1.2**. The assessment found the following for multi-modal transportation within the study area:

- **Pedestrian and Bicycle Facilities -** Pedestrian and bicycle facilities along Garner Road are limited, with most intersections failing active transportation design checks. The only exceptions are the signalized intersections at Garner Road West/Shaver Road, and Garner Road West /Fiddlers Green Road where the intersections pass the pedestrian design check.
- **Transit Services -** Transit service at unsignalized intersections meets the target LOS C, but signalized intersections and segments fall short due to poor pedestrian conditions and lack of transit priority measures in the existing conditions.
- **Truck Routes -** Truck services generally meet the target LOS D, with intersections scoring LOS B and segments ranging from B to D.
- **Car Services -** Car service show low delays at intersections (LOS A to B) but varies in segments (LOS A to D) due to curb lane conflicts.

A complete summary of the MMLOS evaluation results can be found in **Appendix A**.

3.2 Socio-Economic Environment

3.2.1 Existing Land Use

The study area along Garner Road, from Wilson Street to the Highway 403 off-ramp, features a diverse mix of land uses. As described in **Section 2.2**, the study area includes lands designated under the UHOP and RHOP.

For lands within the study area designated under the UHOP, there is a mix of commercial, institutional, and neighbourhood land use designations. The lands to the north of Garner Road, between Shaver Road and the Highway 403 off-ramp are predominantly low-density residential neighbourhoods, characterized by single-family homes and townhouses. This also includes several areas designated as open space in the City's UHOP. To the west of Shaver Road and south near the Highway 403 off-ramp, the land use transitions into a combination of commercial and institutional zones, including retail stores, restaurants, schools, and community centers.

The lands south of Garner Road, mainly between Shaver Road and Fiddlers Green Road, are designated under the RHOP and are predominantly mineral aggregate resource extraction areas and rural areas.

3.2.3 Future Land Use

As further described in **Section 2,** while there are currently no active developments within the study area, future land uses envisioned as part of Hamilton's urban and rural planning and transportation planning strategies include additional residential developments, commercial expansions, improved public transit services and active transportation, and enhanced public spaces to support balanced growth and community engagement.

3.2.4 Demographic Equity Considerations

The Garner Road corridor serves diverse communities with varying socioeconomic characteristics and marginalization levels. Using the Ontario Marginalization Index (ON-Marg), four key dimensions were assessed across local Dissemination Areas on a scale from Low Marginalization (1) to High Marginalization (5) to ensure the widening project addresses community needs equitably.

Key Findings:

- **Households and Dwellings:** Western areas between Shaver Road and Hamilton Drive show moderate to high marginalization (levels 1-4), indicating diverse housing situations and family structures that may be sensitive to traffic and construction impacts.
- **Material Resources:** Northern corridor areas have lower marginalization (levels 1-2), while southern areas show moderate marginalization (level 3), suggesting varying economic resilience to potential project disruptions.
- **Age and Labour Force:** Moderate marginalization levels (1-3) exist throughout the corridor. Bishop Tonnos Secondary School's proximity means youth cross and travel along Garner Road daily, making safe pedestrian and cycling infrastructure essential.
- **Racialized and Newcomer Populations:** Moderate marginalization (levels 2-3) indicates significant immigrant and visible minority populations who may face language barriers or have different transportation needs.

These findings informed design features (see **Section 6**) that serve all community members, particularly vulnerable populations including youth, newcomers, and households with limited resources.

3.2.5 Noise

As part of the Garner Road MCEA Study, a noise assessment was completed to assess the potential noise impact at nearby noise sensitive areas and investigate noise mitigation where needed. The Noise Impact Assessment report is provided in **Appendix B** and is discussed in **Section 8.2**.

3.2.6 Pedestrian and Cycling Facilities

As discussed in **Section 3.1.6,** there are limited facilities for pedestrians and cyclists in the Garner Road corridor. These facilities include two cautionary unsigned bike routes installed along Shaver Road and on Fiddlers Green Road, and two existing segments of sidewalk which serve the residential areas on the north side of Garner Road.

3.3 Cultural Environment

3.3.1 Archaeological Resources

A Stage 1 Archaeological Assessment (Stage 1 AA) was completed for this MCEA in accordance with the *Standards and Guidelines for Archaeological Assessments* (2011) and the *Ontario Heritage Act* (1990). The purpose of a Stage 1 AA is to determine the potential for the presence of known and/or potential archaeological resources within the study area based on a review of relevant background information and through visual site inspections.

A property site inspection was conducted on October 22, 2021, for the Stage 1 AA, focusing on the current Garner Road ROW and adjacent properties. The Stage 1 AA found that approximately 40% of the study area retains potential for the identification, documentation, and recovery of archaeological resources and requires a Stage 2 AA for any portion that will be impacted by the project. The remaining 60% of the project retains low to no archaeological potential for the identification, documentation, and recovery of archaeological resources due to previous archaeological assessments being completed, previous disturbance, and low and permanently wet areas. No further assessment is required for these areas.

The Stage 1 AA was accepted into the Ontario Public Register of Archaeological Records in May 2025. A copy of the Stage 1 AA report is included in **Appendix C.**

3.3.2 Built Heritage Resources and Cultural Heritage Landscapes

A Cultural Heritage Report (CHR) – Existing Conditions and Preliminary Impact Assessment, was completed as part of this study to assess the potential presence of built heritage resources (BHR) and/or cultural heritage landscapes (CHL) within the study area and identify areas of potential cultural heritage value or interest (CHVI) using the criteria prescribed under the *Ontario Heritage Act* (OHA). This assessment was completed through a background review of historical information, municipal and agency consultation and data requests, and field investigations. The CHR assessed a 50-metre boundary surrounding the study area.

Historical information and field investigations identified that historical properties are scattered throughout the Garner Road corridor, situated between a mixture of commercial properties and plazas with large parking lots, agricultural/rural properties, and residential communities. Through an initial application of the screening criteria, 19 BHRs and 5 CHRs were identified within the CHR assessment area which identified as having been previously identified or have the potential for CHVI.

An assessment of potential impacts was completed to focus on properties that might be impacted by the proposed project. Based on the findings of the CHR screening and potential impact assessment, 13 BHRs were identified, along with the following 3 CHLs were determined to be at risk of indirect impacts associated with vibrational effects:

- 584 Garner Road West (CHL-2), Bethesda United Church Cemetery
- 254 Garner Road West (CHL-3), Roman Catholic Cemetery and Church
- 99 Garner Road East (CHL-5), White Brick Church and Cemetery

No direct impacts were identified for the BHR and CHL sites that were carried forward in the assessment. Sites that were not carried forward were determined to have no anticipated impacts from the proposed project. Details regarding avoiding and mitigating impacts to the identified BHRs and CHLs is provided in **Section 8.4.2**. A copy of the CHR is included in **Appendix D.**

3.4 Physical Environment

3.4.1 Physiology, Geology and Soils

The regional surface of the study area was observed to be generally flat and slopping towards the south. Through a review of records from the Ministry of Natural Resources (MNR), native surficial soils in the study area were shown to have a predominantly sand, silt to silty clay consistency. Surficial and bedrock geology maps published by the Ontario Geological Survey further showed that the study area was made up of shale, limestone, dolostone, and/or siltstone of the Queenston Formation. As indicated in the Environmental Resource Information Services (ERIS) used to support the Phase One

studies, bedrock was encountered approximately 27 m to 33 m below ground surface (BGS) during drilling investigations in boreholes and monitoring wells.

3.4.2 Groundwater and Drainage

Based on watershed mapping provided through the MNR, the study area is located within two local watersheds. The west portion of Garner Road between Wilson Street to Fiddlers Green Road is located in the Big Creek watershed, and the portion east from Fiddlers Green Road to the Highway 403 off-ramp is located in the Burlington Canal – Hamilton Harbour watershed. As discussed in **Section 3.4.1**, the study area is mainly comprised of sandy, silt to silty clay soils and generally slopes towards the south.

The regional surface drainage or inferred groundwater flow was observed to have two directions, generally associated with the two watersheds. The west site of the study area appears to flow south-west towards various tributaries of the Grand River, and the east side (particularly near the Highway 403 off-ramp) appears to drain northerly toward the Ancaster Creek tributary. In addition, a review of well records through the MNR and ERIS reports shows that the ground water table ranged from approximately 2.8 m to 32 m BGS.

3.4.3 Potential for Contamination

A Phase One Environmental Site Assessment (ESA) was completed to determine if Areas of Potential Environmental Concern (APECs) existed within the right-of-way (ROW) of Garner Road between Wilson Street and the Highway 403 off-ramp. The Phase One ESA included a review of historical records, reports and data, as well as site reconnaissance completed in April 2021 and September 2021 to assess any current or past potentially contaminating activities (PCA) that may contribute to APECs.

Based on the findings of the Phase One ESA, approximately ten PCAs were identified and contributed to six APECs located within or near the study area. Of these, only two were identified within the study area or on-site. This included fill of unknown quality, likely imported during the original construction of the roadways and paved surfaces covering the entire study area, and gasoline spill records that were reported between 1994 and 1997, associated with a gasoline service station that was operational at the time.

Historical records of the study area indicated that the surrounding area was predominantly used for agricultural purposes prior to development in 1945. This included two orchards that operated from the mid-1940s to early 2000’s and contributed to two of the APECs for the application of pesticides. Several other properties off-site contributed to APECs including several gasoline service stations, commercial dry cleaning and auto body properties, and the operation of a maintenance yard that was associated with the fuelling and repair of buses.

No observations during the two site visits reported the presence of any Aboveground Storage Tanks (ASTs), Underground Storage Tanks (USTs), or bulk fuel storage within the study area.

Additional information, including the location of properties of potential environmental concern is available within the Phase One ESA report provided in **Appendix E.**

3.5 Source Water Protection

A review of the Provincial Source Protection Information Atlas mapping tool was undertaken to determine the presence/absence of vulnerable areas within the study area, such as surface water Intake Protection Zones (IPZs), Highly Vulnerable Aquifers (HVAs), Significant Groundwater Recharge Areas (SGRAs), Event-Based Modelling Areas (EBAs) and Issues Contributing Areas (ICAs).

The study area extends across portions of two Source Protection Areas (SPAs). The western portion, extending from Garner Road/Wilson Street to just east of Fiddlers Green Road, lies within the Grand River SPA. The remaining section, from east of Fiddlers Green Road to the Highway 403 off-ramp, is situated within the Hamilton Region SPA.

Within the Grand River SPA, parts of the study area fall under IPZ Zone 3, indicating potential vulnerability to contamination during major storm events. No IPZs were identified in the Hamilton Region SPA.

Part of the study area between Hamilton Drive and Panabaker Drive within the Grand River SPA, as well as the entire portion within the Hamilton Region SPA, is classified as an HVA, indicating susceptibility to surface contamination due to a shallow water table. Impacts to HVAs are anticipated as part of the project. Several SGRA were also identified within both SPAs. These areas are considered significant when they help maintain aquifer levels that supply drinking water to the community.

No EBAs or ICAs were identified within the study area using the Provincial Source Protection Atlas.

Based on a review of MECP water well records and data from the Phase One ESA (**Appendix E**), approximately 135 wells were identified within 500m of the study area. Of these, approximately 44 were located within or near the study area. The purpose and status of these wells are reported to be as follows:

- 17 were recorded for domestic use
- 2 were recorded for commercial use
- 1 was recorded for industrial use
- 3 were recorded for livestock/irrigation use

- 10 were recorded as monitoring and test holes
- 11 were recorded as abandoned or unknown use

No environmental concerns were identified for the water wells located within the study area. It should be noted that some of these well records represent potable water wells, and if still present would be considered potable for application of Site Condition Standards, as identified in the Phase One ESA.

3.6 Natural Environment

A preliminary review of natural environmental features was undertaken through a background review of available secondary sources to assess the existing environmental conditions within the study area. This included applicable municipal and provincial policies and documentation (see **Section 2**), satellite imagery, and other relevant mapping and existing records. Information gathered during the background review was used to identify potentially significant natural heritage features within the study area.

Additionally, the study team conducted field investigations through the spring, summer, and fall 2021 (see **Table 5**) to confirm the findings of the background review, assess existing conditions, establish a better understanding of potential impacts to natural environment features in the study area, and help determine appropriate mitigation measures.

Table 5: Summary of Natural Environment Field Investigations

Type of Field Work	Date(s) of Field Work
Vegetation Surveys	
Spring Botanical	May 18, 2021
Summer Botanical and Ecological Land Classification	July 15, 2021
Fall Botanical	September 29, 2021
Wildlife Surveys	
Amphibian Call Surveys	April 23, 2021
	May 18, 2021
	June 9, 2021
Breeding Bird Surveys	June 9, 2021
	June 17, 2021
Bat Roost Tree Assessment	May 4, 2021
Significant Wildlife Habitat Assessment	May 18, 2021
Incidental Wildlife Observations	During all field visits
Headwater Drainage Feature Surveys	
Visit #1	March 30, 2021
Visit #2	May 4, 2021
Visit #3	July 15, 2021
Fish and Fish Habitat Surveys	
Aquatic Habitat Assessment	May 4, 2021
Fish Community Sampling	May 4, 2021

A summary of the background review and field investigation findings are included herein. Additional information is available within the full Natural Environment Existing Conditions report provided in **Appendix F.**

3.6.1 Physical Geography and Landscape Ecology

The study area is located within Ecoregion 7E: Lake Erie-Lake Ontario, more specifically in the Niagara Ecodistrict (7E-5). This Ecodistrict is characterized predominantly of fine-textured, calcareous, glaciolacustrine deposits. Approximately 75% of the area within the Ecodistrict has been converted to pasture and cropland, and about 22% supports relatively natural cover in the form of deciduous forests, mixed and coniferous forests, marshes, bogs, and fens. Land use is largely developed/active agriculture, pastures or abandoned fields, as well as settlements and associated infrastructure throughout.

3.6.2 Significant Natural Areas

Significant natural areas include Provincially Significant Wetlands, Areas of Natural and Scientific Interest (ANSIs), Provincial Parks, Conservation Reserves, or known areas of Significant Wildlife Habitat (SWH) that overlap with the study area.

According to information provided in the MNR's Ontario GeoHub Land Information Ontario (LIO) database there are unevaluated wetlands and wooded areas within the study area. No Provincially Significant Wetlands, ANSIs, Provincial Parks, Conservation Reserves, or known areas of SWH occur within the study area; Dundas Valley Earth Science ANSI and Dundas Valley Forests Life Science ANSI are located approximately 2 km north of the road alignment. Deer overwintering areas which are SWH occur north and immediately south of the study area.

The UHOP and RHOP designate the following Key Natural Heritage and Hydrological Features in the study area:

- Schedule B-2 in both the UHOP and RHOP plans identify woodlands within the study area as "Key Natural Heritage Feature Significant Woodlands".
- Schedule B-4 in both plans identify wetlands within the study area as "Key Natural Heritage / Hydrologic Feature Wetlands".
- Schedule B-8 in both plans identify streams within the study area as "Key Hydrologic Feature Streams".

3.6.3 Species at Risk and Species of Conservation Concern

Through the background review completed for this study, Species at Risk (SAR) and Species of Conservation Concern (SOCC) were identified through reviewing both federal and provincial government databases and registries, Ontario atlases focusing on specific species groups, and citizen science platforms such as iNaturalist and eBird.

The results of this review identified 22 SAR and 33 SOCC records within the study area. The list of these species is presented in **Table 6** and **Table 7** respectively.

Further details on the findings of SAR and SOCC identified in the study area, including habitat descriptions and assessment results can be found in the Natural Environment Existing Conditions report provided in **Appendix F**.

Table 6: Background Review of Species at Risk in the Study Area[1]

Group	Common Name	Scientific Name	SARO Status	COSEWIC	SARA Status	Provincial S-RANK	Source(s)
Vascular Plants	American Chestnut	*Castanea dentata*	END	END	END	S1S2	NHIC
Vascular Plants	Butternut	*Juglans cinerea*	END	END	END	S2?	NHIC, iNaturalist
Vascular Plants	Spotted Wintergreen	*Chimaphila maculata*	THR	THR	THR	S2	NHIC
Molluscs	Round Pigtoe	*Pleurobema sintoxia*	END	END	END	S1	iNaturalist
Amphibians	Jefferson Salamander	*Ambystoma jeffersonianum*	END	END	END	S2	ORAA
Birds	Acadian Flycatcher	*Empidonax virescens*	END	END	END	S1B	OBBA
Birds	Bank Swallow	*Riparia riparia*	THR	THR	THR	S4B	OBBA, eBird
Birds	Barn Owl	*Tyto alba*	END	END		S1	NHIC, OBBA
Birds	Bobolink	*Dolichonyx oryzivorus*	THR	THR	THR	S4B	OBBA
Birds	Cerulean Warbler	*Setophaga cerulea*	THR	END	END	S2B	OBBA

[1] COSEWIC = Committee on the Status of Endangered Wildlife in Canada; SARO = Species at Risk in Ontario; SARA = Species at Risk Act; END = endangered, THR = threatened; SC = special concern; NAR = not at risk; DD = data deficient.
Provincial S-rank = a conservation status ranking system used to assess the rarity and conservation status of species or plant communities. S1 (Critically Imperiled/Extremely Rare), S2 (Imperiled/Very Rare), S3 (Vulnerable/Rare to Uncommon), S4 (Apparently Secure), S5 (Secure). In Ontario, the Natural Heritage Information Centre (NHIC) assigns S-ranks using the best available information.

Group	Common Name	Scientific Name	SARO Status	COSEWIC	SARA Status	Provincial S-RANK	Source(s)
Birds	Chimney Swift	*Chaetura pelagica*	THR	THR	THR	S3B	OBBA
Birds	Eastern Meadowlark	*Sturnella magna*	THR	THR	THR	S4B,S3N	NHIC, OBBA
Birds	Golden-winged Warbler	*Vermivora chrysoptera*	SC	THR	THR	S3B	OBBA
Birds	Louisiana Waterthrush	*Parkesia motacilla*	THR	THR	THR	S2B	OBBA
Birds	Northern Bobwhite	*Colinus virginianus*	END	END	END	S1?	NHIC
Birds	Yellow-breasted Chat	*Icteria virens*	END	END		S1B	NHIC, OBBA
Mammals	American Badger (Southwestern Ontario population)	*Taxidea taxus jacksoni*	END	END	END	S1	AMO
Mammals	Eastern Small-footed Myotis	Myotis leibii	END			S2S3	AMO
Mammals	Gray Fox	Urocyon cinereoargenteus	THR	THR	THR	S1	AMO
Mammals	Little Brown Myotis	*Myotis lucifugus*	END	END	END	S3	AMO
Mammals	Northern Myotis	*Myotis septentrionalis*	END	END	END	S3	AMO
Mammals	Tricolored Bat	Perimyotis subflavus	END	END	END	S3?	AMO
Mammals	Eastern Red Bat	Lasiurus borealis	END			S4	AMO
Mammals	Hoary Bat	Lasiurus cinereus	END			S4	AMO
Mammals	Silver-haired Bat	Lasionycteris noctivagans	END			S4	AMO

Table 7: Background Review of Species of Conservation Concern in the Study Area[2]

Group	Common Name	Scientific Name	SARO Status	COSEWIC	SARA Status	Provincial S-RANK	Source(s)
Vascular Plants	Perfoliate Bellwort	*Uvularia perfoliata*				S1S2	NHIC
Vascular Plants	Virginia Bluebells	*Mertensia virginica*				S3	iNaturalist
Insects	Carolina Sphinx Moth	*Manduca sexta*				S2	OMA
Insects	Clymene Moth	*Haploa clymene*				S3S4	OMA
Insects	Giant Leopard Moth	*Hypercompe scribonia*				S3S4	OMA
Insects	Monarch	*Danaus plexippus*	SC	END	SC	S2N,S4B	iNaturalist, OBA
Insects	Penitent Underwing Moth	*Catocala piatrix*				S3	OMA
Insects	Pronghorn Clubtail	*Phanogomphus graslinellus*				S3	OOA
Insects	Swamp Darner	*Epiaeschna heros*				S3S4	OOA
Insects	Tawny Emperor	*Asterocampa clyton*				S3	OOA
Insects	Unicorn Clubtail	*Arigomphus villosipes*				S3	OOA
Insects	Walnut Caterpillar Moth	*Datana integerrima*				S3S4	OMA
Reptiles	Eastern Milksnake	*Lampropeltis triangulum*	NAR	SC	SC	S4	NHIC, iNaturalist
Reptiles	Midland Painted Turtle	*Chrysemys picta marginata*		SC	SC	S4	NHIC, ORAA
Reptiles	Northern Map Turtle	*Graptemys geographica*	SC	SC	SC	S3	ORAA
Reptiles	Snapping Turtle	*Chelydra serpentina*	SC	SC	SC	S4	NHIC, ORAA

[2] COSEWIC = Committee on the Status of Endangered Wildlife in Canada; SARO = Species at Risk in Ontario; SARA = Species at Risk Act; END = endangered, THR = threatened; SC = special concern; NAR = not at risk; DD = data deficient.
Provincial S-rank = a conservation status ranking system used to assess the rarity and conservation status of species or plant communities. S1 (Critically Imperiled/Extremely Rare), S2 (Imperiled/Very Rare), S3 (Vulnerable/Rare to Uncommon), S4 (Apparently Secure), S5 (Secure). In Ontario, the Natural Heritage Information Centre (NHIC) assigns S-ranks using the best available information.

Group	Common Name	Scientific Name	SARO Status	COSEWIC	SARA Status	Provincial S-RANK	Source(s)
Birds	Barn Swallow	*Hirundo rustica*	SC	THR	THR	S4B	OBBA, eBird
Birds	Caspian Tern	*Hydroprogne caspia*	NAR	NAR		S3B,S5M	eBird
Birds	Common Nighthawk	*Chordeiles minor*	SC	SC	THR	S4B	eBird
Birds	Eastern Wood-pewee	*Contopus virens*	SC	SC	SC	S4B	OBBA, eBird
Birds	Forster's Tern	*Sterna forsteri*	DD	DD		S3B	eBird
Birds	Grasshopper Sparrow	*Ammodramus savannarum*	SC	SC		S4B	OBBA
Birds	Great Egret	*Ardea alba*				S2B,S3M	eBird
Birds	Horned Grebe	*Podiceps auritus*	SC	SC		S1B,S3N,S4M	eBird
Birds	Kentucky Warbler	*Geothlypis formosa*				S1M	OBBA
Birds	Peregrine Falcon	*Falco peregrinus*	SC	NAR		S4	iNaturalist, eBird
Birds	Red-necked Grebe	*Podiceps grisegena*	NAR	NAR		S3	eBird
Birds	Rusty Blackbird	*Euphagus carolinus*	NAR	SC	SC	S4B,S3N	eBird
Birds	Semipalmated Sandpiper	*Calidris pusilla*				S2B,S4M	eBird
Birds	Tufted Titmouse	*Baeolophus bicolor*				S3	OBBA
Birds	Tundra Swan	*Cygnus columbianus*				S2B,S4N,S3M	eBird
Birds	Upland Sandpiper	*Bartramia longicauda*				S2B	OBBA
Birds	Wood Thrush	*Hylocichla mustelina*	SC	THR	THR	S4B	OBBA

3.6.3.1 Habitat for Species at Risk

During the field investigations, habitat data was collected to assess the potential habitat for SAR to occur in the study area. Through this assessment, the following habitat was identified for SAR in the study area:

- **Butternut:** One Butternut (endangered) was observed in the FOM community east of Shaver Road and south of Garner Road East, during field investigations. (Figure 4, Appendix A). The regulated habitat for Butternut includes the area within 30m from the trunk, which overlaps with the study area.
- **Bat SAR:** Forty-one (41) potential bat maternity roost trees were identified in the ROW and may be directly impacted by the Project. These trees and treed habitat beyond the ROW have the potential to support bat SAR.

Potential habitat was identified within the study area during the SAR habitat assessment for six (6) additional SAR identified during the background review. The SAR habitat assessment and potential presence of each species is discussed in the Natural Environment Existing Conditions report in **Appendix F.**

3.6.3.2 Habitat for Species of Conservation Concern

During the field investigations, habitat data was collected to assess the potential habitat for SOCC to occur in the study area. Through this assessment, the following candidate habitat was identified for SOCC in the study area:

- **Marsh breeding bird habitat:** The MAMM1-12, SWDM4-1, and SWTM3 communities may provide candidate breeding habitat for Green Heron (*Butorides virescens*) within the study area.
- **Monarch:** Observed within the ROW and the MAMM1-12 community in the study area during field investigations. Common milkweed, Monarch's larval host plant was also observed in the ROW.

Potential habitat was identified within the study area during the SOCC habitat assessment for 12 SOCC identified in the background review. The SOCC habitat assessment and potential presence of each species is discussed in the Natural Environment Existing Conditions report in **Appendix F**.

3.6.4 Vegetation Communities and Vascular Plants

The study area is located within the Niagara Forest Section of the Deciduous Forest Region and Ecoregion 7E: Lake Erie-Lake Ontario (MNRF 2023a). Forest communities in the Niagara Forest Section of the Deciduous Forest Region are dominated by broadleaved trees such as beech, sugar maple, basswood, red maple, red oak, white oak, and bur oak. The Niagara Forest Section of the Deciduous Forest Region contains the main distribution in Canada of black walnut, sycamore, swamp white oak, and

shagbark hickory, as well as more widely distributed butternut, bitternut hickory, rock elm, silver maple, and blue beech.

3.6.4.1 Vegetation Communities

Vegetation community mapping for the study area was conducted according to the *Ecological Land Classification* (ELC) *System for southern Ontario* and where appropriate, the updated ELC Catalogue (2008). Vegetation communities were delineated on satellite photographs and verified in the field. Provincial significance of vegetation communities was based on the rankings assigned by the Natural Heritage Information Centre (NHIC).

Approximately 71% of the study area was identified as constructed communities under the ELC. The remaining 29% identified as a mix of meadow, woodland, forest, agricultural, swamp, marsh, and shallow water ELC communities. A full description of the ELC communities and their location within the study area can be found in the Natural Environment Existing Conditions report in **Appendix F**.

3.6.4.2 Vascular Plants

A list of vascular plant species identified in the study area was compiled during vegetation surveys conducted during the field investigations. Through these investigations, approximately 166 distinctive vascular plants were recorded in the study area (78 native species, 88 exotic species). Of the species identified, three were identified as being rare in Ontario (honey-locust, Kentucky coffee-tree, butternut), and two were identified as SAR (Kentucky coffee-tree (threatened), and butternut (endangered).

One Butternut (endangered) was observed in the FOM community (mixed forest) east of Shaver Road and south of Garner Road East, during field investigations. Honey locust is introduced to Hamilton and is not considered a natural occurrence. Kentucky coffee-tree is only considered threatened in the County of Elgin, the County of Essex, the County of Lambton, the County of Middlesex, the County of Norfolk, the County of Oxford and the Municipality of Chatham-Kent.

It should be noted as well that Watercress (*Nasturtium officinale*), an indicator species for groundwater seepage; and Giant hogweed (*Heracleum mantegazzianum*), an invasive and noxious plant species; were observed near watercourse crossings identified within the study area.

3.6.5 Wildlife and Wildlife Habitat

3.6.5.1 Amphibian Call Surveys

The study area was assessed to determine potential suitable habitat for breeding amphibians prior to establishing amphibian call monitoring stations and conducting the amphibian surveys. Within the study area, 14 stations were surveyed in April, May, and June 2021 in accordance with the *Marsh Monitoring Program Protocols* established by Bird Studies Canada (2008). Each survey station included a 100 m radius semicircle with the observer located at the center and listening for a three-minute period. A summary of call survey dates, times and weather conditions is provided in **Table 8**.

Table 8: Amphibian Call Count Survey

Date	Time (24 hrs)	Temp. (°C)	Wind (Beaufort)	Cloud (%)	Precipitation (mm)
April 23, 2021	2050 – 2133	8	2-3	20	0
May 18, 2021	2118 – 2206	21	1-2	0	0
June 9, 2021	2138 – 2219	20	2	30	0

During the surveys, four species of amphibians were recorded at 10 of the 14 amphibian call stations. These species included the American toad, green frog, grey treefrog, and spring peeper, all of which are common in Ontario. No SAR or SOCC were recorded during the amphibian call surveys.

3.6.5.2 Breeding Birds

Two breeding bird surveys were conducted on June 9 and 17, 2021, in accordance with methods described in Environment and Climate Change Canada's (ECCC) Breeding Bird Survey. Surveys consisted of walking systematically through the study area, recording all species of birds that were seen or heard within each of the different vegetation communities. Within the study area, 14 count stations were established, and all birds seen or heard in suitable habitat during the breeding season were assumed to be breeding. A summary of breeding bird survey dates, times and weather conditions is provided below in **Table 9**.

Table 9: Breeding Bird Survey

Date	Time (24hrs)	Temp. (°C)	Wind (Beaufort)	Cloud (%)	Precipitation (mm)
June 9, 2021	0509 – 0604	19	1-2	10	0
June 17, 2021	0557 – 0657	11	0-1	20	0

In total, 22 bird species were recorded during the breeding bird surveys and all except the Ring-billed Gull are presumed to be breeding within the study area. All species recorded during the surveys were identified as being common in Ontario.

Migratory birds and their nests are protected under the *Migratory Birds Convention Act*, 1994 (MBCA) and are afforded protection on all lands. Structures within the study area may provide nesting habitat for Barn Swallow, which is a SOCC and protected by the MBCA. No SAR or SOCC species were identified during the breeding bird surveys. It should be noted that although no Barn Swallows were observed during the breeding bird surveys, there is potential for Barn Swallow and other migratory bird species listed on Schedule 1 of the MBCA to occur on structures and in vegetation in the ROW.

3.6.5.3 Bat and Bat Roost Tree Assessments

A bat maternity colony assessment was conducted on May 4, 2021, during leaf-off within the study area. The survey protocol followed the recommended methods in the *MNRF Guelph District Bat and Bat Habitat Surveys of Treed Habitats* (MNRF 2017) which was based in part on the *Bat and Bat Habitat Guidelines* (MNR 2011).

According to the MNRF Guelph District protocol, the best candidate trees for maternity colonies are likely to contain several characteristics (to be considered a potential treed roost habitat, not all habitat characteristics listed below needed to be present), which include:

- Height – where trees are tallest in the stand
- Diameter – where trees have a large diameter at breast height (DBH)
- Loose/peeling bark – where trees have a large amount of peeling/loose bark
- Cavity height – where cavity height is high on the tree (>10 m high)
- Open canopy – located in an area of open canopy for accessibility in and out of tree
- Decay – where the tree exhibits early stages of decay

Surveys focused on all trees that were > 10 centimetres (cm) in DBH in the study area. The following data were also recorded for any trees over 10 cm DBH that had cavities or a large amount of peeling bark:

- GPS location
- Tree species
- DBH
- Tree height
- Cavity height

Forty-one (41) candidate bat maternity roost trees were observed in the study area during the bat roost tree assessment. Six (6) of the 41 candidate bat maternity roost trees are good examples of preferred habitat for bat maternity colonies, meeting six out of the eight suitability criteria outlined in the MNRF *Guelph District Bat and Bat Habitat Surveys of Treed Habitats* (MNRF 2017). Twenty (20) of the 41-candidate bat maternity roost trees are considered to be examples of low-quality candidate bat maternity colony trees, meeting less than three out of the eight suitability criteria. The remaining 14 candidate bat maternity roost trees are considered to be examples of medium quality candidate bat maternity colony trees. Details of the Bat Maternity Tree Roost Surveys are provided in **Appendix F**.

3.6.5.4 Incidental Wildlife Observations

Species recorded as incidental wildlife observations included American Woodcock, American toad, monarch (adults), eastern cottontail, striped skunk, and sulphur moth. American Woodcock, American toad, eastern cottontail, striped skunk, and sulphur moth have been recorded in the Wildlife Species List in **Appendix F.** Monarch (special concern) is included in the SOCC assessment also available within **Appendix F.** All other incidental species observed are common and secure in Ontario, with no provincial designation.

3.6.6 Fish and Fish Habitat

As discussed in **Section 3.4.2,** the study area falls within two local watersheds with the eastern area draining north to Ancaster Creek and the western area draining south to the Grand River. Of the 11 drainage features identified in the study area, six have an intermittent thermal regime, two have a warmwater thermal regime, one has a cold-water thermal regime, and the remaining three had no thermal regime identified. No constructed drains were identified in the study area. A headwater drainage feature assessment, a fish habitat assessment and fish community sampling were completed at each of the 11 drainage features.

3.6.6.1 Fish Community Sampling and Fish Habitat Surveys

A presence / absence fish community survey and fish habitat surveys at six stations was completed on May 4, 2021. Where sufficient water was present (i.e., at least approximately 5 cm depth), two certified electrofishing operators completed the surveys under a license to collect fish for scientific purpose (#1097293) issued by the MNRF Guelph District Office. Electrofishing followed methods described in the *Ontario Stream Assessment Protocol* (OSAP) manual for single pass surveys. Where water depth was insufficient for electrofishing, the presence / absence fish community surveys were completed using dip nets for three minutes per station. Five stations were not fished, as they were dry at the time of the field investigation.

Four of the 11 stations had sufficient water for electrofishing (i.e., W05, W06, W07, W11). Station W08 and Station W10 did not have sufficient water for electrofishing and were sampled using dipnets. There was no water at Stations W01, W02, W03, W04, and W09. Fish were captured at two (i.e., W05, W11) of the six stations where presence / absence fish community surveys were completed. The following four species of fish were captured during fish community sampling: white sucker, pumpkinseed, fathead minnow, and creek chub. All four species captured during the fish community sampling are identified as common species in Ontario.

The following summary of conditions at the eleven stations assessed informs both the Headwater Drainage Feature (HDF) Assessment and the fish habitat assessment.

Station W01: Intermittent flow with a warmwater thermal regime, altered to convey stormwater, with a constructed channel south of Garner Road connecting to a stormwater pond.

Station W02: Intermittent watercourse with a warmwater thermal regime, altered for stormwater conveyance, with a constructed channel north of Garner Road and no channel south.

Station W03: Intermittent watercourse with a warmwater thermal regime, no channel north of Garner Road, and a concrete channel south, leading to a pond.

Station W04: Intermittent watercourse with a warmwater thermal regime south of Garner Road only, with no channel or culvert found in the ROW.

Station W05: Intermittent watercourse with a coldwater thermal regime, featuring a defined natural channel and a culvert under Garner Road, with fish species like white sucker and creek chub observed.

Station W06: Intermittent watercourse with a warmwater thermal regime south of Garner Road, with a defined natural channel and a culvert, showing signs of erosion and aquatic life but no fish.

Station W07: Intermittent watercourse with a warmwater thermal regime, no defined channel, standing water in a vegetated area, and a downstream pond with no fish captured.

Station W08: Intermittent watercourse with a coldwater thermal regime south of Garner Road, with a stormwater intake structure and a defined natural channel downstream, but no fish observed.

Station W09: Permanent watercourse with a warmwater thermal regime, no defined natural channel, and a dented culvert under Garner Road.

Station W10: Permanent watercourse with a warmwater thermal regime, no defined natural channel, a dented culvert, and a non-evaluated wetland south of Garner Road.

Station W11: Permanent watercourse with an unknown thermal regime, a swale north of Garner Road, a poorly defined channel south, and fish species like pumpkinseed and fathead minnow observed.

Stations W05 and W11 provide direct fish habitat as defined in subsection 2(1) of the *Fisheries Act* within the study area. Two species of fish (i.e., white sucker, creek chub) were captured at Station W05 and two species of fish (i.e., pumpkinseed, fathead minnow) were captured at Station W11 within the study area. All four species of fish captured belonged to cool or warm thermal guilds.

Although Stations W03, W06, W07, W08, and W10 do not provide direct fish habitat, they provide contributing fish habitat as they provide seasonal flows to downstream locations with potential fish habitat.

3.6.6.2 Headwater Drainage Features

The HDF assessments were conducted at the 11 stations identified in **Section 3.6.6**. The assessments were conducted in accordance with the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (TRCA and CVC 2014). The HDF Guidelines were developed to provide direction for features that are not clearly covered by existing policy and legislation as being important eco-hydrological features (e.g., perennial streams and provincially significant wetlands), but may contribute to the overall health of a watershed (TRCA and CVC 2014).

The surface water features assessed are within the regulation limits of either the Grand River Conservation Authority (GRCA) or Hamilton Conservation Authority (HCA), and the HDF assessment data were used to support the characterization of conditions at the 11 stations assessed. The HDF assessments were completed on March 30, May 4, and July 15, 2021 (**Table 5**). Results of the HDF assessment are summarized in **Table 10.**

Table 10: Site Conditions at Eleven Stations within the Study Area

Station Number	Site Conditions			
	Hydrological	Riparian	Fish and Fish Habitat	Terrestrial Habitat
W01	Watercourse is mapped as an intermitted flow regime. Dry on March 30, May 4, and July 15, 2021. GRCA Regulated Area (north side of Garner Road)	Vegetation consists of mowed lawn upstream (south of Garner Road); and meadow south of Garner Road.	Channel conveys stormwater to a Stormwater management pond (SWP) north of Garner Road. This station does not provide direct or contributing fish habitat.	Swale and roadside ditch.
W02	March 30, 2021 – dry May 4, 2021 – minimal flow (<0.5 L/s) July 15, 2021 – dry GRCA Regulated Area (north side of Garner Road)	Vegetation consists of meadow surrounding the SWP.	Channel conveys stormwater to a SWP north of Garner Road. The channel is not at the surface south of Garner Road. This station does not provide direct or contributing fish habitat.	Conveyance for stormwater.
W03	Dry on March 30, May 4, and July 15, 2021.	This concrete channel and the pond are surrounded by manicured lawn and sparse shrubs.	Channel conveys stormwater to a pond south of Garner Road. The pond may provide direct fish habitat based on its size and depth. Limited contributing fish habitat (i.e., conveyance of water to the pond).	No channel north of Garner Road. Concrete channel south of Garner Road connects to pond.
W04	Dry on March 30, May 4, and July 15, 2021.	Dense phragmites growth north of Garner Road. Roadside ditch south of Garner Road located within mixed meadow and meadow marsh communities.	No direct or contributing fish habitat at this station.	Meadow marsh south of Garner Road.
W05	Substantial flow (>0.5 L/s) on March 30, May 4, and July 15, 2021. GRCA Regulated Area	Maintained lawn and scrub thicket south of Garner Road.	Well-defined channel with permanent flow. Coldwater thermal regime. Fish captured. Direct fish habitat is present at this station.	No terrestrial habitat present.
W06	Substantial flow (>0.5 L/s) on March 30, May 4, and July 15, 2021. GRCA Regulated Area	Maintained lawn and scrub thicket south of Garner Road.	Well defined channel with an intermittent flow regime. No fish captured. Contributing fish habitat.	Meadow marsh south of Garner Road

Station Number	Site Conditions			
	Hydrological	Riparian	Fish and Fish Habitat	Terrestrial Habitat
W07	Minimal flow (<0.5 L/s) on March 30, May 4, and July 15, 2021. GRCA Regulated Area	Wetland north and manicured lawn south of Garner Road.	No fish captured in defined channel with flow downstream (south) of Garner Road. Contributing fish habitat.	Non-evaluated wetland north of Garner Road. Pond south of Garner Road.
W08	March 30, 2021 – standing water May 4, 2021 – minimal flow (<0.5 L/s) July 15, 2021 – minimal flow (<0.5 L/s) GRCA Regulated Area (south side of Garner Road)	Roadside ditch with manicured lawn north of Garner Road. Lawn and scrubland/ thicket south of Garner Road.	No fish captured in defined channel. With flow downstream (south) of Garner Road. Contributing fish habitat.	Pond south of Garner Road.
W09	The area around the concrete steel pipe (CSP) culvert was dry on March 30, May 4, and July 15, 2021. HCA Regulated Area	Roadside ditch, residential lawns north of Garner Road. A meadow with phragmites south of Garner Road.	No defined channel observed and no standing water during any visit. This station does not provide direct or contributing fish habitat.	Meadow marsh south of Garner Road.
W10	Minimal (<0.5 l/s) flow on March 30, May 4, and July 15, 2021. HCA Regulated Area	Feature is piped under residential property north of Garner Road. A meadow with *Phragmites sp.* south of Garner Road.	This station provides contributing fish habitat.	No terrestrial habitat presents north of Garner Road. Non-Evaluated Wetland present south of Garner Road.
W11	March 30, 2021 – minimal flow (<0.5 L/s) May 4, 2021 – standing water July 15, 2021 – dry HCA Regulated Area	Residential yards south of Garner Road. Scrubland thicket north of Garner Road.	Fish captured. Direct fish habitat is present at this station.	No terrestrial habitat present.

3.6.6.3 Aquatic Habitat Summary

Aquatic habitat information and a presence / absence was collected within the study area ROW on May 4, 2021, at the 11 assessment stations identified as surface water features or potential headwater drainage features, as identified through the background review.

Habitat characteristics were recorded including but not limited to channel dimensions, substrate, morphology, cover for fish, riparian conditions as defined by the *Ontario Stream Assessment Protocol* (Stanfield 2017). Where sufficient water was present, water quality parameters were measured in situ using a handheld water quality multiprobe (YSI) just below the water surface.

Stations W05 and W11 provide direct fish habitat as defined in subsection 2(1) of the *Fisheries Act* within the study area. Two species of fish (i.e., white sucker, creek chub) were captured at Station W05 and two species of fish (i.e., pumpkinseed, fathead minnow) were captured at Station W11 within the study area. All four species of fish captured belonged to cool or warm thermal guilds. Although Stations W03, W06, W07, W08, and W10 do not provide direct fish habitat, however, they provide contributing fish habitat as they provide seasonal flows to downstream locations with potential fish habitat.

3.6.7 Natural Heritage Summary

A summary of natural heritage features that have been confirmed or have the potential to be present within the study area are provided below in **Table 11.**

Table 11: Summary of Natural Heritage Features within the Study Area

Type	Species/Feature	Description
Conservation Authority Designation	Regulated Areas	GRCA and HCA regulation limits are present within the study area. Regulated areas include wetlands and watercourses.
Significant Natural Features	Wetlands	Unevaluated wetlands occur within the study area. Features designated as “Key Natural Heritage / Hydrologic Feature Wetlands” in the UHOP and RHOP are considered as locally significant wetlands
	Woodlands	Woodlands in the study area are identified as “Key Natural Heritage Feature Significant Woodlands” in the UHOP and RHOP.
Breeding and Migratory Birds	Bird nests	Breeding birds and migratory bird species listed on Schedule 1 of the MBCA were confirmed within the study area. There were no nests observed in the study area during field investigations, but new nests could be established in subsequent years.
Wildlife Habitat	Bat maternity roost trees	Forty-one (41) candidate bat maternity roost trees occur within the RoW. These features do not qualify as SWH but could provide habitat for bat SAR.
	Snake Hibernacula	Candidate hibernacula features were not observed in the study area during field investigations; however, the Adjacent Lands were thoroughly assessed and overwintering habitat for snakes may be present.
	Amphibian breeding habitat	The SA, MEMM3, MEMM4, MAMM1-12, MASM1-12, and FOD communities support breeding amphibians within the study area, but outside the study area. Candidate SWH was identified in wetlands adjacent to AMP05 and AMP08 in the study area.
	Marsh breeding bird habitat	The MAMM1-12, SWDM4-1, and SWTM3 communities may provide candidate breeding habitat for Green Heron within the study area, but outside the study area.
	Turtle nesting areas	Turtle nests may be present within the study area. No natural habitat for turtle nesting was observed, but turtles may nest in road shoulders. Road shoulders do not qualify as SWH.

Type	Species/Feature	Description
Confirmed SAR	Butternut	One butternut tree was observed in the FOM community east of Shaver Road on the south side of Garner Road West.
Suitable habitat for SAR	American chestnut Spotted wintergreen Jefferson Salamander Barn Owl American Badger Eastern Small-footed Myotis Little Brown Myotis Northern Myotis Tricolored Bat Eastern Red Bat Hoary Bat Silver-haired Bat	Wetlands and vernal pools in forest communities on the Adjacent Lands may support breeding Jefferson Salamander; suitable breeding habitat is absent from the study area. Human-made structures (i.e., barns) within the Adjacent Lands may support breeding Barn Owl; suitable structures are absent from the study area. Treed communities within the Adjacent Lands may support American chestnut, spotted wintergreen, American Badger and bat SAR. Bat SAR may also use trees in the study area.
Confirmed SOCC	Monarch	Adult Monarch was observed in the study area and Adjacent Lands. Larval host plants (*Asclepias* ssp.) were observed in the study area and Adjacent Lands.
Suitable habitat for SOCC	Perfoiliate bellwort Virginia bluebells Clymene moth Giant leopard moth Penitent underwing moth Pronghorn clubtail Swamp darner Unicorn clubtail Walnut caterpillar moth Eastern milksnake Midland painted turtle Snapping turtle	Perfoliate bellwort and Virginia bluebells may be found in the treed communities in the study area, outside of the study area. Insects maybe found in the woodlands, wetland and meadows in the study area. The highest quality habitats are present outside of the study area on the Adjacent Lands. Potential habitat for turtles is present in the SA and watercourses in the Adjacent Lands. Suitable nesting and thermoregulation habitat is available on road shoulders and watercourses in the study area may be used during migration. Potential snake habitat is present in forests, meadows, and agricultural areas within the Adjacent Lands. Suitable thermoregulation habitat is available on road shoulders.
Fish Habitat	Warmwater habitat	Warmwater baitfish habitat is present in mapped watercourses at Station W05 and Station W11. Stations W03, W06, W07, W08, and W10 provide contributing fish habitat as they provide seasonal flows to downstream locations with potential fish habitat.
HDF	Headwater Drainage Feature	Station W04 (south side): Management Recommendation of Protection Station W08 (north side): Management Recommendation of Mitigation

4 Alternative Solutions

Alternative solutions were developed and assessed to determine which solution would best address the objectives as defined by the Problem and Opportunity statement. As a result, the following five alternatives were identified for the study area:

- **Alternative Solution 1:** Do Nothing
- **Alternative Solution 2:** Limit Development
- **Alternative Solution 3:** Operational Improvements
- **Alternative Solution 4:** Improve Other Roadways
- **Alternative Solution 5:** Widen Garner Road

The alternative solutions were assessed in terms of how well they would address the problems and opportunities. The assessment was completed using factor groups including transportation, socio-economic, natural, cultural, and engineering as well as cost, as summarized in **Table 12**.

Table 12: Assessment of Alternative Solutions

Factor	Alternative Solution 1 – Do Nothing	Alternative Solution 2 – Limit Development	Alternative Solution 3 – Operational Improvements	Alternative Solution 4 – Improve Other Roadways	Alternative Solution 5 – Widen Garner Road
Transportation	Does not address traffic congestion, service or safety improvements, or active transportation upgrades.	Does not address current or future traffic congestion, improve service or safety, or offer opportunities for active transportation improvements, though it will reduce congestion on the future network.	Provide opportunities to improve transit, add active transportation (e.g., cycling lanes, sidewalks), and optimize traffic flow through queue jump lanes, intersection upgrades, and turning lanes.	Does not improve service, road safety, or active transportation facilities, but provides congestion relief on other existing roads.	Offers opportunities to meet future travel demands, add active transportation facilities, improve transit, and optimize traffic flow.
Socio-Economic Environment	No construction disruption to residents/businesses but doesn't address future issues from planned development.	Does not improve accessibility, emergency response times, or streetscaping, and requires no property.	Some construction disruption and limited capacity to address future issues from planned development.	Does not improve accessibility, emergency response times, or streetscaping in this roadway. May require property on other roadways.	Construction is highly disruptive, but the option will address future issues from planned development.
Natural Environment	No impact on existing trees or vegetation but also does nothing to mitigate climate change.	No impact on trees or other terrestrial resources.	Some impact to trees/ vegetation but improved transit times. Has a modest positive impact potential on climate change.	No impacts on trees or other terrestrial resources but may impact resources on other roadways.	Some impact on trees/ vegetation; improved traffic may increase personal vehicle use, negatively affecting climate change, though enables less queueing at intersections and idling. A review of potential impacts to natural features will be completed during Phase 3 Alternative Designs.
Cultural Environment	No impacts on areas of archaeological potential, built heritage resources, or cultural heritage landscapes.	No impacts on areas of archaeological potential, built heritage resources, or cultural heritage landscapes.	No impacts on areas of archaeological potential, built heritage resources, or cultural heritage landscapes.	No impacts on areas of archaeological potential, built heritage resources, or cultural heritage landscapes on this roadway but may have an impact on other roadways.	A Stage 1 AA was completed. Areas that have not been previously disturbed within the study area exhibit moderate to high potential for the identification and recovery

Factor	Alternative Solution 1 – Do Nothing	Alternative Solution 2 – Limit Development	Alternative Solution 3 – Operational Improvements	Alternative Solution 4 – Improve Other Roadways	Alternative Solution 5 – Widen Garner Road
					of archaeological resources and require a Stage 2 AA if the land is to be impacted. Details can be found in the Stage 1 Archaeological Assessment in **Appendix C**. 13 Built Heritage Resources were identified 3 Cultural Heritage Landscapes (CHL) were determined to be at risk of indirect impacts associated with vibrational effects: • 584 Garner Road West (CHL-2), Bethesda United Church Cemetery • 254 Garner Road West (CHL-3), Roman Catholic Cemetery and Church • 99 Garner Road East (CHL-5), White Brick Church and Cemetery Details can be found in the Cultural Heritage Report in **Appendix D**.
Engineering	Does not disturb existing utilities but does not provide drainage improvements or provide naturalized stormwater treatment.	Does not disturb existing utilities but does not provide drainage improvements or provide naturalized stormwater treatment.	Some impact on utilities and some ability to improve drainage but, no significant naturalized stormwater treatment.	Does nothing to improve Garner Road, has significant impact on utilities and no opportunity for drainage improvements or naturalized stormwater treatment.	Aligns lanes with adjacent sections; though utilities will be significantly disturbed, it offers the best chance to improve drainage and install naturalized stormwater treatment.
Cost	No construction costs.	No construction or operation and maintenance costs.	Moderate capital cost and lowers maintenance effort	No construction or operation and maintenance costs.	High capital cost but allows maintenance to be optimized.

Following the assessment of the alternatives, Alternative 2 (Limit Development) and Alternative 5 (Widen Garner Road) were determined to best address the problems and opportunities of the study area and were carried forward to Phase 3 of the MCEA study, Development of Design Alternatives.

5 Alternative Design Concepts

Phase 3 of the Municipal MCEA process involves the development and review of alternative design concepts for the recommended alternative solution. As part of the development of design alternatives, this section will assess and evaluate the following.

- Alternative Road Corridor Concepts
- Active Transportation Design Alternatives
- Intersection Design Alternatives

Through the analysis and evaluation of these design alternatives, a Recommended Design Alternative for the Garner Road corridor will be identified.

5.1 Alternative Road Corridor Concepts

Three Alternative Road Design Concepts were carried forward including:

- **Alternative Design 1: 3 Lane Cross-Section**, widening Garner Road to three lanes, including one travel lane in each direction, a centre two-way left turn lane, separated bike lanes and sidewalks, and a 36m ROW.
- **Alternative Design 2: 4 Lane Cross-Section**, widening Garner Road to four lanes, including two travel lanes in each direction, separated bike lanes and sidewalks, and a 36m ROW.
- **Alternative Design 3: 5 Lane Cross-Section,** widening Garner Road to five lanes, including two travel lane in each direction, a two-way left turn lane, separated bike lanes and sidewalks, and a 45m ROW.

The following evaluation criteria were used to assess the ability of each alternative to address the identified problems and opportunities, as well as to align with the recommendations of the Ancaster TMP and AEGD. Comments received from agencies, stakeholders, Indigenous communities and members of the public have been integrated as required.

Transportation/Engineering:

- Accommodate future travel demands (capacity)
- Safety for all users
- Public transit service
- Road network compatibility / connectivity
- Accommodate pedestrians / cyclists
- Response times / access for emergency vehicles
- Accommodate truck traffic
- Services / utilities
- Cost (i.e. capital cost, operational cost)

Cultural Environment:

- Archaeological resources
- Built heritage / cultural landscape resources

Socio-Economic Environment:

- Impacts to business operations
- Noise Impacts
- Property and access
- Aesthetics and complete livable better streets
- Compatibility with existing and proposed developments

Natural Environment:

- Vegetation and Wildlife
- Water Resources
- Air Quality
- Climate Change
- Stormwater Management

The evaluation of Alternative Road Design Concepts is provided in **Table 13** through **Table 16**.

Table 13: Evaluation of Alternative Road Design Concepts – Transportation

Factors/ Criteria	Alternative 1 – 3 Lane Widening 36m Right-of-Way	Alternative 2 – 4 Lane Widening 36m Right-of-Way	Alternative 3 – 5 Lane Widening 45m Right-of-Way
Accommodation of Future Travel Demands (Capacity) • Potential to accommodate future vehicular travel demands • Potential to maintain or improve existing travel times • Potential to provide a 'complete street' and balance travel modes • Potential to support future travel demands from the Airport Employment Growth District (AEGD)	• Moderate potential to support transportation demand for existing and future travel and improve travel times with addition of a turning lane. • Low potential to support existing and future travel demand associated with the Airport Employment Growth District (AEGD). • Inconsistent with AEGD Transportation Master Plan (TMP) recommendation to provide a 5-lane Arterial Road (45m ROW).	• High potential to support transportation demand for existing and future travel and improve existing travel times by increasing capacity with provision of additional travel lanes. • Supports existing and future travel demand associated with the AEGD. • Consistent with the recommendations for other sections to widen from 2-lanes to 4-lanes proposed in the AEGD TMP, though inconsistent with proposed 45m ROW. Consistent with the recommendations for other sections for Garner Road / Rymal Road. • Reduced level of service at stop-controlled side street intersections compared to 3-lanes.	• High potential to support transportation demand for existing and future travel demands and improve existing travel times by increasing capacity with provision of additional travel lanes and turning lanes. • Supports existing and future travel demand associated with the AEGD. • Consistent with recommendation to provide -lane Arterial Road proposed in the AEGD TMP. • Reduced level of service at stop-controlled side street intersections compared to 3-lanes.
Safety • Potential to improve traffic safety based on the opportunity to reduce congestion and potential for collisions. • Potential to provide safe and comfortable street experience for all modes of travel, including pedestrians and cyclists.	• Low potential to improve traffic safety overall when compared to 4-lane and 5-lane widening, although provides an opportunity for a turning lane in key areas. • Opportunity to provide safe and comfortable street experience for all modes of transportation while building out corridor.	• Moderate potential to improve traffic safety through reducing congestion and potential for collisions when compared to 3-lanes without continual turning lane. • Opportunity to provide safe and comfortable street experience for all modes of transportation while building out corridor.	• High potential to improve traffic safety through reducing congestion and potential for collisions when compared to 3-lanes. • Opportunity to provide safe and comfortable street experience for all modes of transportation while building out corridor.
• Public Transit Service • Potential to improve the transit level of service • Potential to provide improved integration of transit services into the existing and planned system, including the	• Low potential to improve transit level of service or provide improve integration of transit services, as transit would be required to a single shared lane with vehicular traffic without passing opportunities.	• High potential to improve transit level of service and improve integration of transit services, as 4-Lanes provides opportunity for transit and vehicles to travel in separate lanes. • High potential to provide transit priority measures, to facilitate increased transit	• High potential to improve transit level of service and improve integration of transit services, as 5-lanes provides opportunity for transit and vehicles to travel in separate lanes. • High potential to provide transit priority measures, to facilitate

Factors/ Criteria	Alternative 1 – 3 Lane Widening 36m Right-of-Way	Alternative 2 – 4 Lane Widening 36m Right-of-Way	Alternative 3 – 5 Lane Widening 45m Right-of-Way
proposed BLAST rapid transit network. • Potential to facilitate complete trips and support an increase in transit ridership. • Potential to include transit priority measures. • Protection from mixed traffic	• Moderate potential to provide transit priority measures (i.e., transit signals if queue jump lanes are introduced). • Low potential to facilitate increased transit ridership. • No potential to provide protection from mixed traffic.	ridership, and to provide protection from mixed traffic.	increased transit ridership, and to provide protection from mixed traffic.
Response Times / Access for Emergency Vehicles • Potential to improve response times / accessibility for emergency vehicles due to changes in travel time.	• Moderate potential to improve emergency vehicles response.	• High potential to improve emergency vehicles response times.	• High potential to improve emergency vehicles response times.
Truck Traffic • Potential to improve goods movement response times.	• Moderate potential to improve goods movement.	• High potential to improve goods movement.	• High potential to improve goods movement.
Services / Utilities • Potential to impact existing services or utilities within the corridor. • Potential to accommodate planned services / utilities.	• Low potential for right-of-way width of 36m to impact existing services and utilities within the corridor compared to 4-lanes and 5-lanes.	• Moderate potential for right-of-way width of 36m to impact existing services and utilities within the corridor when compared to 3-lanes.	• High potential for right-of-way width of 45m to impact existing services and utilities within the corridor when compared to 3-lanes.
Constructability • Potential for roadway design challenges. • Compatibility of design with connecting roadway sections. • Potential for significant construction staging impacts (i.e., road closures, land reductions, etc.).	• Higher potential for roadway design challenges as a result of the 36m narrower right-of-way width. • Less permanent roadway being constructed requires greater temporary construction to accommodate traffic. • High potential for construction staging impacts (i.e., road closures, lane reductions, etc.).	• Higher potential for roadway design challenges as a result of the 36m right-of-way width. • Low potential for construction staging impacts (i.e., road closures, lane reductions, etc.) as construction of two additional lanes provides opportunity to reduce amount of time required for lane closures. • Future developments may require additional turning lanes to be implemented; wider ROW can accommodate this need as a retrofit.	• Moderate potential for roadway design challenges as a result of the 45m right-of-way. • Low potential for construction staging impacts (i.e., road closures, lane reductions, etc.) as construction of two additional lanes provides opportunity to reduce the amount of time required for lane closures.
Cost / Benefit of Transportation Investment	• Requires less property to accommodate narrower right-of-way width compared	• Requires less property to accommodate wider right-of-way width	• Requires greatest amount of property to accommodate wider

Factors/ Criteria	Alternative 1 – 3 Lane Widening 36m Right-of-Way	Alternative 2 – 4 Lane Widening 36m Right-of-Way	Alternative 3 – 5 Lane Widening 45m Right-of-Way
• Relative cost in terms of capital, property and maintenance. • Relative impact of transportation investment on all travel modes. • Relative benefit to adjacent land uses.	to 4-lanes and 5-lanes. Capital costs are anticipated to be the lowest, as the least amount of lane paving is required. • Accommodates all modes of transportation. • Nominal change in existing benefits for adjacent land uses.	compared to 4-lanes and 5-lanes. Capital costs are anticipated to be greater when compared to 3 lanes, as additional lane paving is required, but less than 5 lanes. • Accommodates all modes of transportation. • Similar benefit to adjacent land uses when compared to 5-lanes.	right-of-way width. Greatest capital costs anticipated with larger ROW, additional lane paving, utility relocations, etc. • Accommodates all modes of transportation. • Similar benefit to adjacent land uses when compared to 4-lanes.
Summary of Transportation	**Least Preferred**	**Most Preferred**	**Moderately Preferred**

Table 14: Evaluation of Alternative Road Design Concepts – Cultural Environment

Factors/ Criteria	Alternative 1 – 3 Lane Widening 36m Right-of-Way	Alternative 2 – 4 Lane Widening 36m Right-of-Way	Alternative 3 – 5 Lane Widening 45m Right-of-Way
Archaeological Resources • Conserves archaeological resources. • Minimize potential impact on archaeological sites and areas of archaeological potential.	• Potential to impact areas with archaeological potential along corridor (similar potential on either side of the right of way) to be confirmed with Stage 2 archaeological assessment.	• Potential to impact areas with archaeological potential along corridor (similar potential on either side of the right of way) to be confirmed with Stage 2 archaeological assessment.	• Potential to impact areas with archaeological potential along corridor (similar potential on either side of the right of way) to be confirmed with Stage 2 archaeological assessment.
Built Heritage Resources and Cultural Heritage Landscapes • Conserves built heritage resources and cultural heritage landscapes. • Minimize potential impact on known (e.g., previously recognized) and potential built heritage resources and cultural heritage landscapes.	• Less potential to impact built heritage resources and cultural heritage landscapes within the corridor as a result of road widening when compared to 5-lane.	• Less potential to impact built heritage resources and cultural heritage landscapes within the corridor as a result of road widening when compared to 5-lane.	• Greater potential to impact built heritage resources and cultural heritage landscapes within the corridor due to widest right-of-way width.
Summary of Cultural Environment	**Moderately Preferred**	**Moderately Preferred**	**Least Preferred**

Table 15: Evaluation of Alternative Road Design Concepts – Socio-Economic Environment

Factors/ Criteria	Alternative 1 – 3 Lane Widening 36m Right-of-Way	Alternative 2 – 4 Lane Widening 36m Right-of-Way	Alternative 3 – 5 Lane Widening 45m Right-of-Way
Impacts to Business Operations • Potential to impact businesses / business operations, such as displacement, access or reductions in parking.	• Potential for short-term construction impacts to areas along Garner Road. • Potential for long-term access improvements to businesses along the corridor due to the increase in active transportation connectivity.	• Potential for short-term construction impacts to areas along Garner Road. • Potential for long-term access improvements to businesses along the corridor due to the increase in active transportation connectivity.	• Potential for short-term construction impacts to areas along Garner Road. • Potential for long-term access improvements to businesses along the corridor due to the increase in active transportation connectivity.
Noise Impacts • Potential to impact noise sensitive areas (NSA) (i.e., residential dwellings, daycares).	• Less potential to impact noise sensitive areas as a result of future anticipated traffic demand, and additional travel lane.	• Greatest potential to impact noise sensitive areas as a result of future anticipated traffic demand, additional travel lanes, and bringing traffic lanes closer to potential NSA's.	• Greatest potential to impact noise sensitive areas as a result of future anticipated traffic demand, additional travel lanes, and bringing traffic lanes closer to potential NSA's.
Property and Access • Potential impacts to property along the corridor (e.g., property acquisition). • Potential to impact access to existing and future land uses served by the corridor.	• Less potential to impact properties along the corridor as a result of widening to a 36m right-of-way. Less pavement widening required when compared to 4 or 5-laning. • Potential to improve access to existing and future land uses served by the corridor. • The proposed two-way left turn lane can help accommodate access to future development.	• Potential to impact properties along the corridor as a result of widening to a 36m right-of-way. Less pavement widening required when compared to 5-laning. • Potential to improve access to existing and future land uses served by the corridor. • Traffic turning left within the corridor must cross an additional lane, introducing potential for delay.	• Greatest potential to impact properties along the corridor as a result of widening to a 45m right-of-way, and largest paved footprint. • Potential to improve access to existing and future land uses served by the corridor. • Traffic turning left within the corridor must cross an additional lane, introducing potential for delay. • The proposed two-way left turn lane can help accommodate access to future development.
Aesthetics & Complete-Livable-Better Streets • Potential to impact streetscaping, and landscaped areas. • Potential to integrate Complete-Livable-Better Streets elements including street trees, landscaping, sidewalks, cycling lanes.	• The 3-lane cross-section has potential to improve streetscaping and landscaping, integrating elements of Complete-Livable-Better Streets. • Provides limited flexibility to implement cycling lanes, MUPs and/or sidewalks within the boulevard with 36m right-of-way.	• The 4-lane cross-section provides the least amount of flexible space to improve streetscaping and landscaping, integrating elements of Complete-Livable-Better Streets (additional travel lanes with same right-of-way width when compared to Alternative 3). • Provides limited flexibility to implement cycling lanes, MUPs and/or sidewalks within the boulevard with 36m right-of-way.	• The 5-lane cross-section has potential to improve streetscaping and landscaping, to integrate elements of Complete-Livable-Better Streets. • Provides more flexibility to implement MUPs, cycling lanes, and sidewalks within the boulevard compared to 36m right-of-way in Alternative 1.

Factors/ Criteria	Alternative 1 – 3 Lane Widening 36m Right-of-Way	Alternative 2 – 4 Lane Widening 36m Right-of-Way	Alternative 3 – 5 Lane Widening 45m Right-of-Way
• Ability to embellish green canopy by incorporating new green additions, such as additional trees.			
Compatibility with Existing and Proposed Developments • Potential to support existing and future development of lands within the Garner Road corridor.	• The 3-lane cross-section supports the existing development within the Garner Road corridor, and accommodates travel demands associated with future development. • The footprint of the 3-lane cross-section can accommodate existing and future developments more easily due to the 36m right-of-way.	• The 4-lane cross-section supports the existing development within the Garner Road corridor, and accommodates travel demands associated with future development. • The footprint of the 3-lane cross-section can accommodate existing and future developments more easily due to the 36m right-of-way.	• The 5-lane cross-section supports the existing development within the Garner Road corridor, and accommodates travel demands associated with future development. • The footprint of the 5-lane cross-section has the greatest impact on the existing and future developments due to the 45m right-of-way.
Summary of Socio-Economic Environment	**Most Preferred**	**Moderately Preferred**	**Least Preferred**

Table 16: Evaluation of Alternative Road Design Concepts – Natural Environment

Factors/ Criteria	Alternative 1 – 3 Lane Widening 36m Right-of-Way	Alternative 2 – 4 Lane Widening 36m Right-of-Way	Alternative 3 – 5 Lane Widening 45m Right-of-Way
Vegetation and Wildlife • Potential impact to wildlife and wildlife habitat • Potential to impact aquatic species and habitat	• Smallest paved footprint compared to 4 or 5-lanes, resulting in least potential to impact wildlife and wildlife habitat. • Direct loss of vegetation will occur where proposed road improvements overlay natural areas; vegetation removal is required to facilitate construction (including temporary and permanent impacts). • Less potential to negatively impact bat maternity roost and amphibian habitat. • Less potential to negatively impact species at risk, and species at risk habitat.	• Smaller paved footprint compared to 5-lanes, resulting in less potential to impact wildlife and wildlife habitat. • Direct loss of vegetation will occur where proposed road improvements overlay natural areas; vegetation removal is required to facilitate construction (including temporary and permanent impacts). • Potential to negatively impact bat maternity roost and amphibian habitat due to larger paved area. • Potential to negatively impact species at risk, and species at risk habitat due to larger paved area.	• Largest paved footprint compared to 3 or 4-lanes, resulting in greatest potential to impact wildlife and wildlife habitat. • Direct loss of vegetation will occur where proposed road improvements overlay natural areas; vegetation removal is required to facilitate construction (including temporary and permanent impacts). • Greatest potential to negatively impact bat maternity roost and amphibian habitat when compared to 3-lane with narrower right-of-way. • Greatest potential to negatively impact species at risk, and species at risk habitat when compared to 3-lane with narrower right-of-way.
Air Quality • Potential to impact air quality and emissions	• Low potential to improve air quality and emissions as a result of least reduction in traffic congestion, and potential to shift from personal auto use to active transportation.	• Moderate potential to improve air quality and emissions as a result of reduction in traffic congestion, and potential to shift from personal auto use to active transportation. • Reduced level of service at stop-controlled intersections has potential to reduce air quality due to idling.	• Moderate potential to improve air quality and emissions as a result of reduction in traffic congestion, and potential to shift from personal auto use to active transportation. • Reduced level of service at stop-controlled intersections has potential to reduce air quality due to idling.
Climate Change • Potential to improve climate change resiliency and vulnerability • Potential to mitigate greenhouse gas emissions through reduced personal vehicle use	• Moderate potential to minimize impacts on climate change and reduce greenhouse gas emissions as a result of decreased traffic congestion, increase in transit and active transportation use and reduction in personal auto use.	• Higher potential to minimize impacts on climate change and reduce greenhouse gas emissions as a result of decreased traffic congestion, increase in transit and active transportation use and reduction in personal auto use.	• Higher potential to minimize impacts on climate change and reduce greenhouse gas emissions as a result of decreased traffic congestion, increase in transit and active transportation use and reduction in personal auto use.

Factors/ Criteria	Alternative 1 – 3 Lane Widening 36m Right-of-Way	Alternative 2 – 4 Lane Widening 36m Right-of-Way	Alternative 3 – 5 Lane Widening 45m Right-of-Way
Source Water Protection • Potential to impact Source Water Protection areas	• Potential to impact Significant Groundwater Recharge Area (SGRA) and Highly Vulnerable Aquifer (HVA) as a result 36m ROW.	• Potential to impact Significant Groundwater Recharge Area (SGRA) and Highly Vulnerable Aquifer (HVA) as a result of 36m ROW. • Smaller paved footprint has less potential to impact SGRA and HVA compared to 5-lanes, but greater than 3-lanes.	• Greatest potential to impact SGRA and HVA as a result of 45m right-of-way. • Larger paved footprint has greater potential to impact SGRA and HVA compared to 3-lanes and 4-lanes.
Stormwater Management • Potential to impact stormwater runoff	• Potential to improve stormwater runoff as 3-lanes would provide some space within the boulevard for stormwater management (SWM) infrastructure (i.e., Low Impact Development (LIDs), swales, etc.). • Lowest amount of increased hard surface to increase peak runoff flows.	• Potential to improve stormwater runoff as 4-lanes would provide the greatest amount of space within the boulevard for stormwater management (SWM) infrastructure (i.e., LIDs, swales, etc.). • Moderate amount of increased hard surface to increase peak runoff flows.	• Potential to improve stormwater runoff as 5-lanes would provide some space within the boulevard for stormwater management (SWM) infrastructure (i.e., LIDs, swales, etc.). • Highest amount of increased hard surface to increase peak runoff flows.
Summary of Natural Environment	**Moderately Preferred**	**Most Preferred**	**Least Preferred**

5.1.1 Recommended Road Design Concept

Based on the results of the evaluation, Alternative 2 is recommended and includes the widening of Garner Road to a four-lane cross-section, with two travel lanes in each direction, separated bike lanes and sidewalks, and a 36m ROW. This alternative provides the best option for active transportation facilities and future uses such as rapid transit, accommodates user safety, allows the addition of turning lanes at key intersections to support the current and future growth of the corridor while also avoiding or minimizing impacts to the socio-economic, cultural, and natural environments along Garner Road.

5.2 Active Transportation Alternatives

As part of the 4-lane cross-section recommended for Garner Road, active transportation facilities will be included in the ROW to accommodate pedestrians and cyclists. To determine the suitable cycling facility for the corridor, the 3-step *Recommended Facility Selection Process in the Ontario Traffic Manual (OTM) Book 18: Cycling Facilities*[3] *(2021)* was used. This process guided the identification of the best cycling facility type based on a review of existing conditions and evaluation of ROW characteristics.

Through undertaking Steps 1 and 2 of the facility selection process, it was determined that a physically separated bikeway (i.e., a separated bicycle lane, cycle track, and/or multi-use path) is the preferred facility type for the study area. The Active Transportation Memorandum that outlines the process followed is provided in **Appendix G**.

5.2.1 Evaluation of Active Transportation Design Alternatives

Based on the selected facility type, three Active Transportation Alternatives were developed for Garner Road.

- **Alternative Design A:** 3.5m Multi-Use Pathway on Both Sides of the Road
- **Alternative Design B:** 3.5m Multi-Use Pathway on North Side and 2.0m Sidewalk on South Side
- **Alternative Design C:** 2.0m Sidewalk and 2.0m Cycle Track on Both Sides of the Road (+0.6m Buffer)

[3] OTM Book 18 is a traffic engineering and control reference manual produced by the Ministry of Transportation and developed in association with the Ontario Traffic Council.

The alternatives were assessed using similar factors and criteria used to assess the Alternative Road Corridor Concepts. The criteria have been modified to align with the active transportation focus of these alternatives rather than the entire corridor.

The detailed evaluation of each alternative cross-section is provided in **Table 17** through **Table 20**.

5.2.2 Recommended Active Transportation Design

Alternative Design B is recommended based on the results of the evaluation and includes a 3.5m multi-use pathway on north side and 2.0m sidewalk on south side of Garner Road. The alternative is consistent with the recommended improvements along the corridor outside of the study area. This alternative provides a physical separation for cyclists and pedestrians from traffic, accommodates users of all ages and abilities, has the least impact on cultural and natural environments, and is consistent with the recommended improvements for Garner Road.

Table 17: Evaluation of Active Transportation Alternatives – Transportation

FACTORS/ CRITERIA	ALTERNATIVE A 3.5M MULTI-USE PATHWAY (MUP) ON BOTH SIDES	ALTERNATIVE B 3.5M MULTI-USE PATHWAY ON NORTH SIDE AND 2.0M SIDEWALK ON SOUTH SIDE	ALTERNATIVE C 2.0M SIDEWALK & 2.0M CYCLE TRACK ON BOTH SIDES OF THE ROAD (+0.6M BUFFER)
Services / Utilities • Potential to impact existing services or utilities within the corridor	• Moderate potential to reduce impacts to the existing services and utilities using a 'best fit' approach within the corridor.	• Highest potential to reduce impacts to the existing services and utilities using a 'best fit' approach within the corridor.	• Least potential to reduce impacts to the existing services and utilities using a 'best fit' approach within the corridor.
Safety • Potential to provide safe experience for cyclists and pedestrians of all ages and abilities (i.e., novice, casual cyclist, commuter cyclist) and ability to encourage active transportation use.	• Moderate potential to provide a safe experience: ○ Provides physical separation for cyclists and pedestrians from the road and vehicular/transit traffic. ○ Does not provide separate facility for pedestrians and cyclists although lower-volume pedestrian area therefore signage may be used to inform proper use of MUP.	• Least potential to provide a safe experience: ○ Provides physical separation for cyclists and pedestrians from the road and vehicular/transit traffic. ○ Does not provide separate facility for pedestrians and cyclists on north side of road although lower-volume pedestrian area therefore signage may be used to inform proper use of MUP. ○ Does not provide cycling facilities on south side of road.	• Highest potential to provide a safe experience: ○ Provides physical separation for cyclists and pedestrians from the road and vehicular/transit traffic. ○ Provides space separation between cyclists and pedestrians.
Compatibility • Compatibility of design with connecting roadway sections (i.e., proposed MUP on the north side of the road and sidewalk on the south side of the road recommended for the Rymal Road Environmental Assessment study)	• Moderate compatibility with connecting roadway sections - has potential to tie into the facilities.	• Highest compatibility with connecting roadway sections – consistent facilities along corridors.	• Least compatibility with connecting roadway sections - has potential to tie into the facilities.

FACTORS/ CRITERIA	ALTERNATIVE A 3.5M MULTI-USE PATHWAY (MUP) ON BOTH SIDES	ALTERNATIVE B 3.5M MULTI-USE PATHWAY ON NORTH SIDE AND 2.0M SIDEWALK ON SOUTH SIDE	ALTERNATIVE C 2.0M SIDEWALK & 2.0M CYCLE TRACK ON BOTH SIDES OF THE ROAD (+0.6M BUFFER)
Ease of Accommodating Transit Stops	• Can accommodate transit stops • Connection to transit stop would be for mixed users and has potential for cyclist conflicts.	• Can best accommodate transit stops due to lowest boulevard footprint. • Connection to transit stop would be single user (pedestrian) on the south side, reducing the potential for cyclist and transit user conflict.	• Can best accommodate transit stops, though has the largest boulevard footprint. • Connection to transit stop would require transit users to cross the bike lane with potential for conflict.
Capital Costs • Overall estimated costs	• Moderate estimated costs due to consolidated cycling and pedestrian facilities. Some signage and markings may be required. • Some additional maintenance required for snow removal.	• Cost savings with consolidated cycling and pedestrian facilities on north side, and smaller sidewalk footprint on south side of road.	• Highest estimated costs due to additional paving required for sidewalk and separate cycle path. • Additional maintenance required for snow removal.
Corridor Width • Ability to maintain consistent width of corridor; number of occasions to reduce width.	• Moderate property area within the boulevard required.	• Lowest property area required within the boulevard.	• Greatest area of property required within the boulevard.
Summary of Transportation	**Least Preferred**	**Most Preferred**	**Most Preferred**

Table 18: Evaluation of Active Transportation Alternatives – Cultural Environment

FACTORS/ CRITERIA	ALTERNATIVE A 3.5M MULTI-USE PATHWAY (MUP) ON BOTH SIDES	ALTERNATIVE B 3.5M MULTI-USE PATHWAY ON NORTH SIDE AND 2.0M SIDEWALK ON SOUTH SIDE	ALTERNATIVE C 2.0M SIDEWALK & 2.0M CYCLE TRACK ON BOTH SIDES OF THE ROAD (+0.6M BUFFER)
Archaeological Resources • Conserves archaeological resources. • Minimize potential impact to archaeological sites and areas of archaeological potential.	• Each alternative will be within the same ultimate ROW width. Considering the existing ROW width, Stage 1 Archaeological Assessment indicates: o Areas of archaeological potential within the corridor exist requiring further archaeological work. o Cemeteries within corridor will be avoided. • Stage 2 archaeological assessment will be completed for any portion of the Project's anticipated construction which impacts an area of archaeological potential. • Lands adjacent to the extant boundaries of the Bethesda United Church Cemetery and the White Brick Cemetery require Stage 3 Cemetery Investigation (following any requisite Stage 2 property assessment) to confirm whether or not burials exist outside of that boundary. • This alternative provides some flexibility to avoid or mitigate impacts.	• Each alternative will be within the same ultimate ROW width. Considering the existing ROW width, Stage 1 Archaeological Assessment indicates: o Areas of archaeological potential within the corridor exist requiring further archaeological work. o Cemeteries within corridor will be avoided. • Stage 2 archaeological assessment will be completed for any portion of the Project's anticipated construction which impacts an area of archaeological potential. • Lands adjacent to the extant boundaries of the Bethesda United Church Cemetery and the White Brick Cemetery require Stage 3 Cemetery Investigation (following any requisite Stage 2 property assessment) to confirm whether or not burials exist outside of that boundary. • This alternative provides the most flexibility to avoid or mitigate impacts due to being the narrowest alternative.	• Each alternative will be within the same ultimate ROW width. Considering the existing ROW width, Stage 1 Archaeological Assessment indicates: o Areas of archaeological potential within the corridor exist requiring further archaeological work. o Cemeteries within corridor would be impacted. • Stage 2 archaeological assessment will be completed for any portion of the Project's anticipated construction which impacts an area of archaeological potential. • Lands adjacent to the extant boundaries of the Bethesda United Church Cemetery and the White Brick Cemetery require Stage 3 Cemetery Investigation (following any requisite Stage 2 property assessment) to confirm whether or not burials exist outside of that boundary. • This alternative provides the least flexibility to avoid or mitigate impacts due to being the widest alternative.
Built Heritage Resources and Cultural Heritage Landscapes • Conserves built heritage resources and	• A review of existing built heritage resources and cultural heritage landscapes within the study area to be completed. A 'best fit' approach will be utilized to avoid and/or reduce impacts.	• A review of existing built heritage resources and cultural heritage landscapes within the study area to be completed. A 'best fit' approach will be utilized to avoid and/or reduce impacts.	• A review of existing built heritage resources and cultural heritage landscapes within the study area to be completed. A 'best fit' approach will be utilized to avoid and/or reduce impacts.

FACTORS/ CRITERIA	ALTERNATIVE A 3.5M MULTI-USE PATHWAY (MUP) ON BOTH SIDES	ALTERNATIVE B 3.5M MULTI-USE PATHWAY ON NORTH SIDE AND 2.0M SIDEWALK ON SOUTH SIDE	ALTERNATIVE C 2.0M SIDEWALK & 2.0M CYCLE TRACK ON BOTH SIDES OF THE ROAD (+0.6M BUFFER)
cultural heritage landscapes. • Minimize potential impact on known (e.g., previously recognized) and potential built heritage resources and cultural heritage landscapes.	• This alternative provides some flexibility to avoid or mitigate impacts.	• This alternative provides the most flexibility to avoid or mitigate impacts due to being the narrowest alternative.	• This alternative provides the least flexibility to avoid or mitigate impacts due to being the widest alternative.
Summary of Cultural Environment	**Moderately Preferred**	**Moderately Preferred**	**Least Preferred**

Table 19: Evaluation of Active Transportation Alternatives – Socio-Economic Environment

FACTORS/ CRITERIA	ALTERNATIVE A 3.5M MULTI-USE PATHWAY (MUP) ON BOTH SIDES	ALTERNATIVE B 3.5M MULTI-USE PATHWAY ON NORTH SIDE AND 2.0M SIDEWALK ON SOUTH SIDE	ALTERNATIVE C 2.0M SIDEWALK & 2.0M CYCLE TRACK ON BOTH SIDES OF THE ROAD (+0.6M BUFFER)
Businesses Operations • Potential to impact businesses / business operations, such as displacement, access or reductions in parking.	• Facilitates improved access to existing and future business operations. • No anticipated impacts to businesses / business operations.	• Facilitates improved access to existing and future business operations. • No anticipated impacts to businesses / business operations.	• Facilitates improved access to existing and future business operations. • No anticipated impacts to businesses / business operations.
Property • Potential impacts to property along the corridor (e.g., property acquisition).	• Moderate property area within the boulevard required. • Moderate property required outside of the existing ROW.	• Lowest property area required within the boulevard. • Lowest property required outside of the existing ROW.	• Greatest area of property required within the boulevard. • Greatest property required outside of the existing ROW.
Aesthetics & Complete Livable Better Streets • Potential to integrate Hamilton's Design Manual elements of Complete-Livable-Better Streets (i.e., street trees, landscaping, sidewalks, cycling lanes). • Ability to embellish green canopy by incorporating new green additions, such as additional trees.	• High potential to integrate Complete-Livable Better Streets elements, including MUP which provides consolidated cycling facilities and sidewalks. • Moderate impacts to the available boulevard area to plant future trees and vegetation.	• High potential to integrate Complete-Livable Better Streets elements, including sidewalks and cycling lanes, and MUP. • Lowest impacts to the available boulevard area to plant future trees and vegetation.	• High potential to integrate Complete-Livable Better Streets elements, including sidewalks and cycling lanes. Potential for street trees and landscaping. • Greatest impacts to the available boulevard area to plant future trees and vegetation.
Planning Policy • Ability to align with objectives of: ○ Hamilton's Cycling Master Plan (i.e., recommends bike lanes)	• Inconsistent with Cycling Master Plan, Transportation Master Plan, and AEGD. • It should be noted that the policies outlined in the identified plans are not fully aligned, and in some cases, present overlapping or conflicting directives. As a result, the proposed	• Inconsistent with Cycling Master Plan, Transportation Master Plan, and AEGD. • It should be noted that the policies outlined in the identified plans are not fully aligned, and in some cases, present overlapping or conflicting directives. As a result, the proposed	• Inconsistent with Cycling Master Plan and Transportation Master Plan. • Consistent with AEGD. • It should be noted that the policies outlined in the identified plans are not fully aligned, and in some cases, present overlapping or conflicting

FACTORS/ CRITERIA	ALTERNATIVE A 3.5M MULTI-USE PATHWAY (MUP) ON BOTH SIDES	ALTERNATIVE B 3.5M MULTI-USE PATHWAY ON NORTH SIDE AND 2.0M SIDEWALK ON SOUTH SIDE	ALTERNATIVE C 2.0M SIDEWALK & 2.0M CYCLE TRACK ON BOTH SIDES OF THE ROAD (+0.6M BUFFER)
○ Transportation Master Plan (i.e., recommends bike lanes) ○ Airport Employment Growth District (AEGD) Transportation Master Plan (i.e., recommends constructing sidewalk and cycle track on both sides of the road)	alternative does not directly contradict one policy over another but aims to incorporate key elements from each.	alternative does not directly contradict one policy over another but aims to incorporate key elements from each.	directives. In this case, the proposed alignment favours the policies in the AEGD over the Cycling Master Plan and Transportation Master Plan.
Accessibility • Potential to provide opportunity to improve accessibility/reduce barriers in the built environment and meets AODA guidelines.	• Provides opportunity to improve accessibility/reduce barriers in the built environment and meets AODA guidelines. • Provides mixed users (pedestrians and cyclists) on both sides of the road.	• Provides opportunity to improve accessibility/reduce barriers in the built environment and meets AODA guidelines. • Provides for mixed users on the north side, but only pedestrians on the south side.	• Provides opportunity to improve accessibility/reduce barriers in the built environment and meets AODA guidelines. • Provides for both types of users and separates pedestrians and cyclists for better accommodation.
Summary of Socio-Economic Environment	**Most Preferred**	**Moderately Preferred**	**Least Preferred**

Table 20: Evaluation of Active Transportation Alternatives – Natural Environment

FACTORS/ CRITERIA	ALTERNATIVE A 3.5M MULTI-USE PATHWAY (MUP) ON BOTH SIDES	ALTERNATIVE B 3.5M MULTI-USE PATHWAY ON NORTH SIDE AND 2.0M SIDEWALK ON SOUTH SIDE	ALTERNATIVE C 2.0M SIDEWALK & 2.0M CYCLE TRACK ON BOTH SIDES OF THE ROAD (+0.6M BUFFER)
Wildlife • Potential to impact wildlife, Species at Risk (SAR) and SAR habitat. • Potential to impact or enhance corridors for wildlife movement.	• Each alternative will be within the same ROW width. A 'best fit' approach will be utilized to avoid and/or reduce impacts.	• Each alternative will be within the same ROW width. A 'best fit' approach will be utilized to avoid and/or reduce impacts.	• Each alternative will be within the same ROW width. A 'best fit' approach will be utilized to avoid and/or reduce impacts.
Terrestrial and Aquatic Habitat • Potential to impact aquatic species and habitat. • Potential to impact woodlots and vegetation communities.	• Each alternative will be within the same ROW width. A 'best fit' approach will be utilized to avoid and/or reduce impacts.	• Each alternative will be within the same ROW width. A 'best fit' approach will be utilized to avoid and/or reduce impacts.	• Each alternative will be within the same ROW width. A 'best fit' approach will be utilized to avoid and/or reduce impacts.
Street Trees/Mature Tree Canopy • Potential to impact to existing trees • Ability to replant displaced trees	• Moderate impacts to available existing trees and vegetation.	• Lowest impacts to existing trees and vegetation.	• Greatest impacts to existing trees and vegetation.
Air Quality • Potential to impact air quality within the study area.	• High potential to improve air quality through increased / improved active transportation facilities.	• High potential to improve air quality through increased / improved active transportation facilities.	• High potential to improve air quality through increased / improved active transportation facilities.
Climate Change • Potential to improve climate change resiliency and vulnerability, and mitigate climate change through reduction in greenhouse gas (GHG) emissions.	• High potential to assist with reduction of GHG emissions through supporting active transportation facilities.	• High potential to assist with reduction of GHG emissions through supporting active transportation facilities.	• High potential to assist with reduction of GHG emissions through supporting active transportation facilities.
Summary of Natural Environment	**Moderately Preferred**	**Most Preferred**	**Least Preferred**

Table 21: Evaluation of Active Transportation Alternatives – Summary

FACTORS/ CRITERIA	ALTERNATIVE A 3.5M MULTI-USE PATHWAY (MUP) ON BOTH SIDES	ALTERNATIVE B 3.5M MULTI-USE PATHWAY ON NORTH SIDE AND 2.0M SIDEWALK ON SOUTH SIDE	ALTERNATIVE C 2.0M SIDEWALK & 2.0M CYCLE TRACK ON BOTH SIDES OF THE ROAD (+0.6M BUFFER)
CONCLUSION	Alternative A is not selected as the preferred alternative due to the following reasons: • Does not provide a separate facility for cyclists and pedestrians • Has a moderate impact on the existing trees, property and heritage resources • Is inconsistent with the recommended improvements along the corridor outside of the study area	Alternative B is selected as the preferred alternative for the following reasons: • Provides a physical separation for cyclists and pedestrians from traffic • Multi-Use Pathway is accommodating for several levels of users • Has the least impact on the existing trees, property and heritage resources • It is consistent with the recommended improvements along the corridor outside of the study area	Alternative C is not selected as the preferred alternative: • Has the most significant impact on existing trees, property and heritage resources • Least compatibility with existing roadway and ability to reduce impacts to existing services and utilities • Highest estimated costs for additional paving and additional snow maintenance • Is inconsistent with the recommended improvements along the corridor outside of the study area
Overall Summary	**Moderately Preferred**	**Most Preferred**	**Least Preferred**

5.3 Intersection Design Alternatives

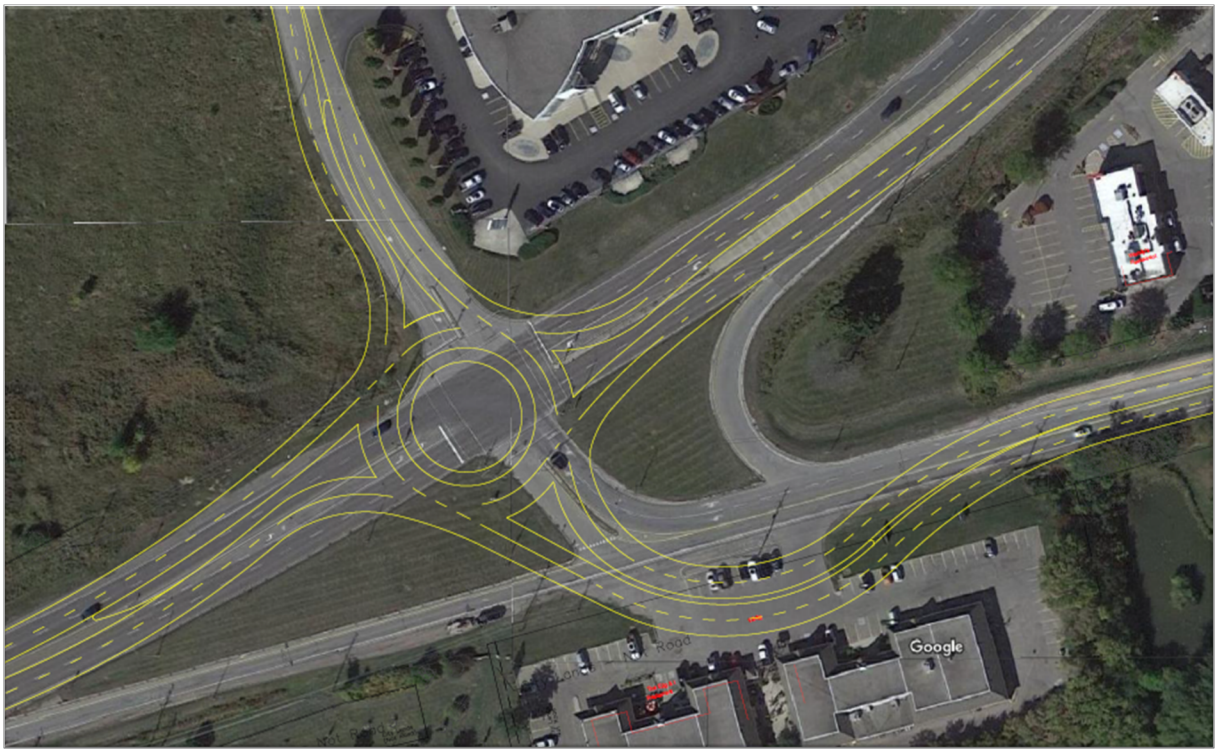
5.3.1 Garner Road and Wilson Street West

Improvements to the intersection of Garner Road and Wilson Street West are required as part of the study. A two-lane roundabout was reviewed and compared to the current signalized intersection.

Operationally, the traffic signals were found to function well into the future, though a roundabout offered a slight increase in serviceability. Collision history was reviewed for this location, and it was found that the collision trends for this intersection were less than the rest of the Garner Road corridor and did not indicate that a roundabout would greatly improve safety.

A roundabout was not recommended as it would have significant property impacts to accommodate the unique road geometry of the intersection. **Figure 8** provides a conceptual drawing of the roundabout and is provided for consideration. This concept layout was shifted to various locations in the area, though each concept included various property impacts. Therefore, maintaining a signalized intersection at this location is recommended.

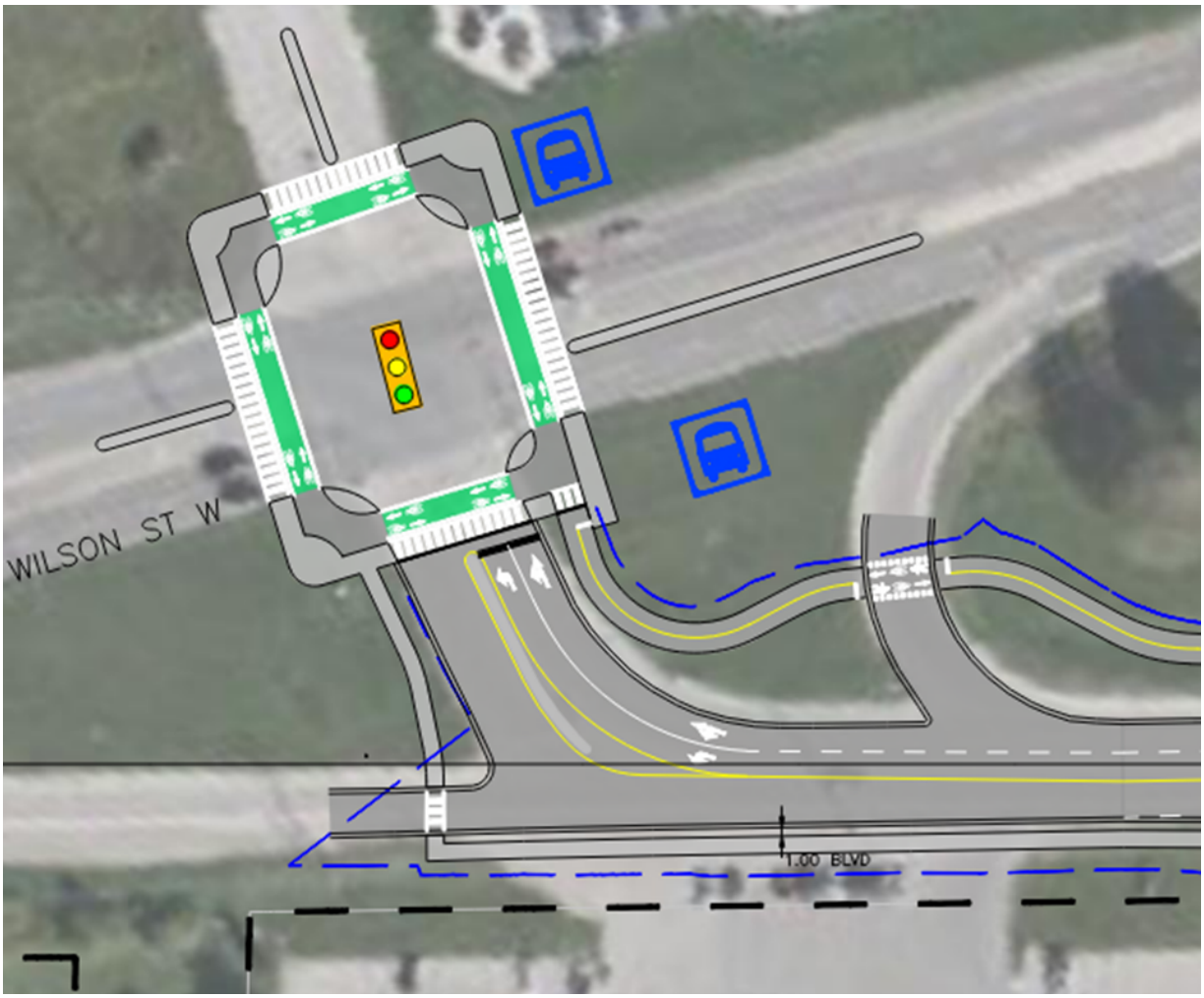
Figure 8: Roundabout Concept at Garner Road and Wilson Street West



Improvements to the existing signalized intersection were considered in the form of a protected intersection configuration. These improvements include integrating pedestrian and cycling facilities into the intersection footprint and minimizing the crossing times for these users. A concept of this layout is provided in **Figure 9**.

The configuration of the proposed intersection improvements will be coordinated with the future active transportation facilities on Wilson Street as outlined in the City of Hamilton TMP. Review of the intersection configuration and possible removal of the existing slip lanes will be further reviewed during detailed design for potential design configuration modifications. The final intersection configuration will be confirmed during detailed design.

Figure 9: Protected Intersection Concept at Garner Road and Wilson Street West



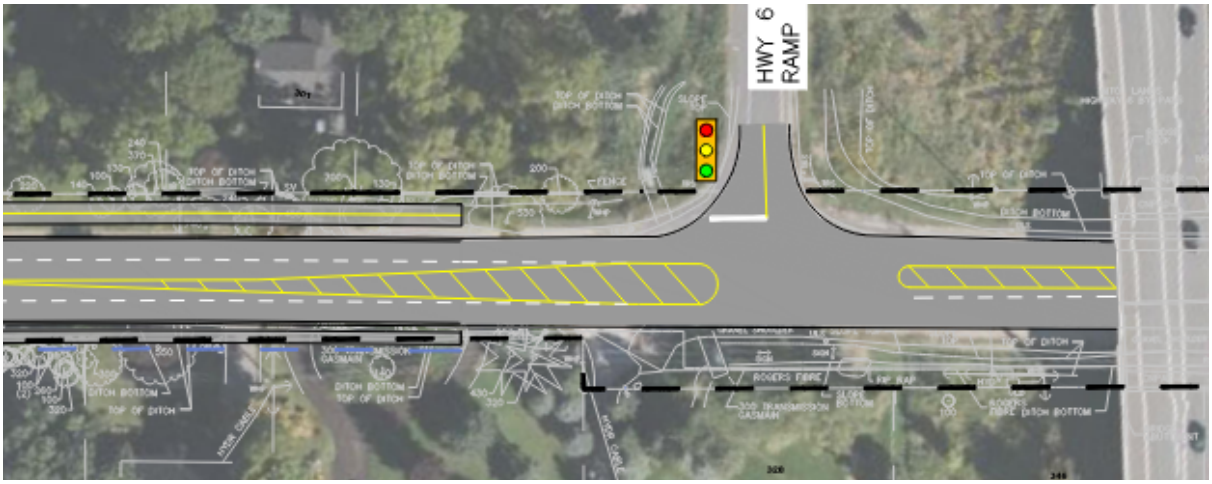
5.3.2 Garner Road and Highway 6 West Ramp Terminal

Adjustments to the intersection of Garner Road and the Highway 6 West Ramp Terminal are required to incorporate the recommended design. The four-lane cross section will transition west of the ramp terminal, and the existing single lane in each direction under the structure will remain.

The City of Hamilton and the Ministry of Transportation are currently examining the potential to add traffic signals to both ramp terminals on Garner Road. The recommendations from this MCEA can be integrated into a future signalized intersection during detailed design.

Transitioning of the active transportation infrastructure into the intersection will be determined through consultation with the Ministry of Transportation and the development of the signalized intersection, and detailed design.

Figure 10: Signalized Intersection Concept at Garner Road and Highway 6 West Ramp Terminal



5.4 Recommended Design Concept for Garner Road

The recommended design concept for the study area includes:

- 4 Lane cross-section within a 36m ROW
- 3.5m multi-use pathway on north side and 2.0m sidewalk on south side
- Signalized intersections at Garner Road and Wilson Street West, Garner Road and Shaver Road, Garner Road and Panabaker Drive, Garner Road and Fidlers Green Road, and new traffic signals at the Garner Road and Highway 6 west ramp terminal.

The conceptual design of the recommended cross-section of Garner Road is shown in **Figure 11**.

6 Project Description

Following the selection of the recommended design concept for the study area, the preliminary design was further developed. The major features of the recommended preliminary design are described in the sections below. This information should be reviewed in combination with **Section 5** of the ESR, which describes alternative design concepts and the recommended design alternative. The preliminary plan and profile are included in **Appendix H**.

During detailed design, some refinements to the design features recommended in the ESR may be necessary but should not alter the intent of the recommended undertaking or its components. During detailed design, there will be further consultation with technical agencies and stakeholders, such as GRCA, HCA, MTO, MECP, utilities, Indigenous Communities, and affected property owners.

6.1 Road Design Elements

6.1.1 Horizontal Alignment

The existing horizontal alignment for Garner Road was used to develop the recommended preliminary design. The alignment is comprised of line elements, with no significant horizontal or vertical curves existing within the project limits. As such, the alignment is deemed acceptable for the design speeds within the study limits, and no geometric concerns have been identified. There are no proposed changes to the existing horizontal alignment for the purposes of this project.

6.1.2 Profile

The existing vertical alignment for Garner Road was used to develop the recommended preliminary design. The existing vertical curve geometry is summarized in **Table 22.** It should be noted that these are approximate and will be confirmed during detailed design.

Table 22: Garner Road – Existing Vertical Curves

Curve No.	PVI Station	Crest/Sag	K Value	Length of Vertical Curves (LVC) (m)
1	10+900	Sag	19.26	62.44
2	11+100	Crest	22.36	187.24
3	11+507	Sag	57.80	280
4	12+006	Sag	20.48	150
5	12+120	Crest	34.80	67.71
6	12+345	Sag	43.40	100
7	12+718	Crest	32.55	100
8	13+997	Sag	13.91	90
9	14+233	Crest	23.12	150
10	14+556	Sag	20.81	100

Based on the profile, the vertical conditions are considered to be relatively flat, with grades ranging from 0.0 to 5.0%.

6.1.3 Typical Cross-Sections

The proposed cross section for Garner Road is a 36.0 m right-of-way. Four travel lanes are proposed (two lanes in each direction) with curb and gutter on either side. A multi-use path will be implemented with a boulevard on the north side of Garner Road, and a sidewalk will be implemented with a boulevard on the south side of Garner Road.

The alignment of the sidewalk and multi-use path should minimize the impact on existing trees and preserve as many of them as possible. In areas where tree removal is necessary, a 1.75m flat boulevard area should be provided, when available, to allow for the planting of additional trees.

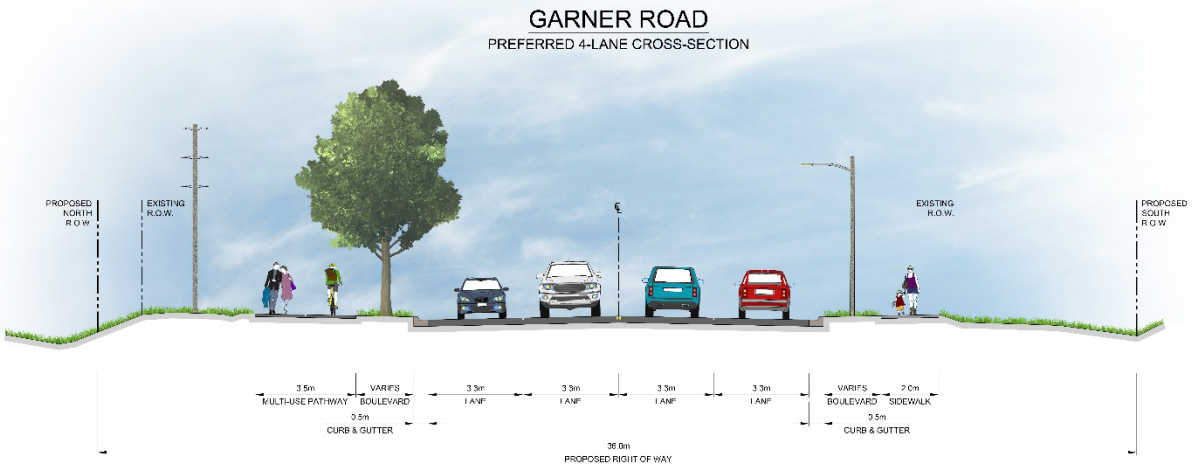
The boulevard widths vary to accommodate landscaping, lighting, and utility poles. Using an anticipated medium pedestrian activity level, the general spacing of illumination poles in conjunction with the hydro poles were reviewed as part of the EA phase. This confirmed that lighting levels along the corridor and at the crossings can meet City and RP-8 requirements. The specific illumination layout and lighting calculations will be reviewed and confirmed during detailed design.

The proposed cross-section for Garner Road is generally represented by **Figure 10**. A summary of cross-section details is included below:

- Eastbound lane width (2 lanes): 3.30 m
- Westbound lane width (2 lanes): 3.30 m

- Left-turn Lane width (where applicable): 3.05 m
- Boulevard and curb width: varies, up to 7.1 m
- Sidewalk: 2.0 m
- Multi-use path: 3.50 m

Figure 11: Recommended Typical Cross-Section of Garner Road



6.1.4 Access Management

An evaluation of the collision history revealed that no specific locations along the corridor had a higher incidence of collisions compared to the rest of the corridor. As opportunities arise to condense entrance conflict points along the corridor, safety of the corridor can be further improved. Additional movement restrictions (such as the introduction of right-in, right-out exclusive movements) will be reviewed during detailed design and the ability to include a median within the cross section and available property, in particular for the roadway section between Wilson Street and Fiddlers Green.

6.2 Intersection Improvements

All existing intersections along the corridor will be improved to accommodate the proposed sidewalk and multi-use path. Additional intersection reviews and potential design configuration changes may be assessed during the detailed design phase.

6.2.1 Garner Road and Wilson Street West

The proposed improvements at the Garner Road and Wilson Street West intersection include a protected intersection for cyclists and pedestrians. This includes improving active transportation connection with crosswalks and cross-rides on all approaches to the intersection. The configuration of the proposed intersection improvements will be coordinated with the future active transportation facilities on Wilson Street as outlined in the City of Hamilton TMP. Review of the intersection configuration and possible removal of the existing slip lanes will be further reviewed during detailed design for potential design configuration modifications. The final intersection configuration will be confirmed during detailed design.

6.2.2 Garner Road and Highway 6 West Ramp Terminal

The proposed improvements at the Garner Road and Highway 6 West ramp terminal includes active transportation facilities on the west side of the Highway 6 ramp. A sidewalk on the south side, and a multi-use path on the north side will terminate west of the existing ramp. The configuration of the proposed intersection improvements should align with the future active transportation facilities on Garner Road, east of Highway 6, as outlined in the City of Hamilton TMP. Intersection improvements will be confirmed during detailed design.

6.3 Active Transportation

The active transportation facilities recommended within the Garner Road corridor features a 3.5m multi-use pathway on north side and 2.0m sidewalk on south side of Garner Road. The new active transportation facility promotes a multi-modal shift by providing safe, dedicated facilities for cyclists and pedestrians, ensuring equitable access for all users.

6.4 Utilities and Servicing

A preliminary review of potential utility impacts was completed. It is anticipated that the proposed work will impact various existing utilities throughout the corridor. The potential conflicts are identified on the Utility Composite Plan, provided in **Appendix I**.

Generally, the identified impacts relate to Hydro, municipal infrastructure, and Bell. It should be noted that conflicts were identified with existing streetlight infrastructure and existing traffic signal infrastructure within the study area as well. Generally, the identified impacts are located at the intersections and in areas of reconstruction and widening to accommodate the additional travel lanes and active transportation improvements.

6.5 Drainage and Stormwater Management

As part of the overall design, stormwater management measures will be included along the corridor to mitigate impacts of the proposed improvements. An urban cross section with storm sewers is proposed for the corridor, utilizing quantity and quality control measures at the outlet locations.

LID features (such as bioretention or enhanced grass swales) were considered, however the boulevard space is constrained, and available property is limited. Therefore, traditional stormwater measures have been considered and recommended, including storm sewers and oil and grit separators to meet quantity and quality control. Underground infiltration chambers are a potential solution to explore further in detail design. Major storm events will drain by overland flow along the roadway. Details of the stormwater management analysis and recommendations are provided in **Appendix J**.

6.6 Property Requirements

Permanent property acquisition and dedication is anticipated throughout the study area corridor to accommodate the proposed roadway and active transportation improvements. Property acquisition will be required on the north and south sides of Garner Road to achieve the new proposed 36.0 m ROW. The new ROW and associated property requirements will be confirmed detailed design.

6.7 Preliminary Cost Estimates

A preliminary cost estimate has been developed for the construction of the proposed work. The capital costs are estimated to be approximately $38,362,500. A summary is provided in **Table 23**.

Table 23: Preliminary Cost Estimate [4]

Capital Cost	Estimated $
Roadworks and Intersections	$19,750,000
Subsurface Infrastructure	$5,000,000
Sub Total	**$24,750,000**
Utilities (10% Roadworks)	$1,975,000
Contingency (20% Sub Total)	$4,950,000
Property (10% Sub Total)	$2,475,000
Environmental Mitigation	$500,000
Engineering (15% Sub Total)	$3,712,500
Total Estimated Cost	**$38,362,500**

[4] Note that this estimate was updated September 2, 2025 and supersedes the estimate reflected in the report to staff approved August 9, 2025 and presented to the Public Works Committee September 8, 2025.

7 Engagement Plan

The main objective of the consultation plan for this study was to encourage two-way communication between stakeholders and City staff to aid the development of the recommended preliminary design.

The Project Team developed a stakeholder contact list at the outset of the study. This list included representatives from relevant government and regulatory agencies, utilities, community organizations, interested members of the public, businesses, landowners, developers, and Indigenous communities.

The contact list has been maintained and updated by the Project Team throughout the study. Given protection of privacy legislation, names, addresses and telephone numbers of members of the public were not released beyond the Project Team. The contact list is provided in **Appendix K.**

7.1 Public Engagement

A key component of the MCEA process is public consultation, the documentation of how public input has influenced project planning, and how issues have been managed. The Project Team acknowledged and/or provided responses to all submitted comments.

For this study, the main points of public consultation were:

- Notice of Study Commencement and Public Information Centre (PIC) 1
- PIC 1
- Notice of PIC 2
- PIC 2
- Notice of Completion

Notices and materials presented at the PICs are included in **Appendix K** and can be found on the project website (https://engage.hamilton.ca/GarnerRoadEA).

7.1.1 Public Information Centre 1

The first PIC was hosted in-person on December 11, 2023, from 6:00 p.m. to 8:00 p.m. to present the problem/opportunity statement, the alternative solutions, and the recommended solution. The PIC displays and a video recording of the presentation were posted to the project website (https://engage.hamilton.ca/GarnerRoadEA) on December 4, 2023, and were available until January 1, 2024.

During the comment period (December 11, 2023, to January 11, 2024), six comment forms were received in-person, one phone call was received, 25 electronic comment forms were submitted via the project website, and 13 emails were received for PIC 1.

The following is an overview of the general theme of comments, areas of interest, and verbal discussions held between the project team and PIC participants:

- Active transportation opportunities and improvements
- Traffic speed, safety, and alternative cross-sections
- Noise impacts and noise impact mitigation
- Preservation of green space and natural environment/wildlife surrounding the corridor
- Preservation of built heritage resources and cultural heritage landscapes
- Impacts on the climate crisis

A copy of the materials presented as part of PIC 1, including a copy of the most frequently asked questions, is provided within **Appendix K**.

7.1.2 Public Information Centre 2

The second PIC was hosted in-person on August 22, 2024, from 6:00 p.m. to 8:00 p.m. to present the recommended design alternative and the associated evaluation process. A pre-recorded presentation was prepared and accessible on the project website (https://engage.hamilton.ca/GarnerRoadEA). The project website was available anytime from August 15, 2024, to September 10, 2024 to view information display panels, with a comment form available until midnight on September 10, 2024.

In total, approximately 36 individuals attended the in-person PIC. During the comment period (August 10, 2024, to September 12, 2024), approximately 14 comment forms were received in-person, 5 electronic comment forms were submitted via the project website, and 3 emails were received for PIC 2.

The following is an overview of the general theme of comments and areas of interest held between the project team and PIC participants:

- Active Transportation improvements
- Traffic speed and Safety
- Noise impacts and noise mitigation
- Clarifying Evaluation Criteria
- Preservation of green space and natural environment/wildlife surrounding the corridor

- Preservation of built heritage resources and cultural heritage landscapes
- Inquiries on the Construction Phase of the project

A copy of the materials presented as part of PIC 2, including a copy of the most frequently asked questions, is provided within **Appendix K**.

7.2 Agency Engagement

The list of ministries, municipalities, agencies, and authorities contacted as part of this study is provided in **Appendix K**, along with relevant correspondence. All agencies were included in the study mailing list and updated regularly to ensure communication effectiveness.

7.2.1 Technical Advisory Committee

A Technical Advisory Committee (TAC) was established at the onset of the study to meet at key study milestone and allow participants to provide technical input into the existing study area conditions, confirm the requirements for the project and review and provide feedback on the alternatives and preliminary design. An invitation to join the TAC was distributed to selected agencies, municipal representatives, utilities, and other stakeholders in conjunction with the Notice of Study Commencement. Each meeting was held in advance of the two PICs to allow participants to provide valuable input to project planning.

The TAC meetings were held on the following dates:

- Technical Advisory Committee Meeting #1 – October 17, 2023
- Technical Advisory Committee Meeting #2 – June 24, 2024

A brief summary of each of these meetings is provided in the sub-sections below. Comments received at the TAC meetings were taken into consideration as the study progressed.

7.2.1.1 Technical Advisory Meeting #1 (October 17, 2023)

Technical Advisory Meeting #1 was held with agency representatives on October 17, 2023, to introduce the TAC to the Garner Road Municipal Class Environmental Assessment (MCEA) study being undertaken by the City of Hamilton. As part of this meeting, the study team shared a draft presentation with attendees that would be used as the presentation for PIC 1 (later held on December 11, 2023).

The purpose of the meeting was to present and gather feedback on study background information, the problems and opportunities of the study area, existing area conditions, the evaluation of alternative solutions and preliminary draft design criteria, and the

general project schedule and timelines. This was followed by an open question/answer period to provide participants with an opportunity to raise questions, discuss concerns and provide valuable technical feedback and suggestions.

A copy of the meeting minutes and meeting materials presented at TAC meeting #1 are provided within **Appendix K**.

7.2.1.2 Technical Advisory Meeting #2 (June 24, 2023)

Technical Advisory Meeting #2 was held with agency representatives on June 24, 2024, to provide an update since the last TAC meeting in October 2023. As part of this meeting, the study team shared a draft presentation with attendees that would be used as the presentation for PIC 2 (held on August 22, 2024).

The purpose of the meeting was to present and gather feedback on study background information and public feedback received to date, alternative cross-section designs, active transportation alternatives, intersection improvements, the overall recommended design, stormwater management approach, potential impacts and mitigation measures and next steps in the study process. This was followed by an open question/answer period to provide participants with an opportunity to raise questions, discuss concerns and provide valuable technical feedback and suggestions.

A copy of the meeting minutes and meeting materials presented at TAC meeting #2 are provided within **Appendix K**.

7.2.2 Agency Correspondence

In addition, individual meetings were held with the MTO to present information and gather feedback on the traffic modeling and natural environment investigations and recommendations, evaluation of alternative design concepts and the subsequent recommended preliminary design.

The information presented at these meetings and feedback received is discussed within **Section 5**, and a copy of the information presented at the meetings and associated meeting minutes is available within **Appendix K**.

7.3 Indigenous Community Engagement

Indigenous communities and organizations relevant to this study were identified through desktop research conducted during the initial stages of the MCEA process and in consultation with the MECP. The following Indigenous communities were notified as part of this study:

- Haudenosaunee Development Institute (HDI) for the Haudenosaunee Confederacy of Chiefs Council (HCCC)

- Huron-Wendat First Nation
- Mississaugas of the Credit First Nation
- Six Nations of the Grand River Council
- Métis Nation of Ontario (MNO)

Prior to initiating this study, the City held a general meeting with Six Nations of the Grand River Council in December 2020 to review EA projects led by the City's Infrastructure Renewal section, which included the Garner Road MCEA.

Following project initiation, the City issued an introductory letter on January 7, 2021, to HDI, Huron-Wendat First Nation, Mississaugas of the Credit First Nation, and Six Nations of the Grand River Council with an introductory letter. This correspondence outlined the study scope, upcoming activities, and emphasized archaeological components. It served as the first formal notification regarding the Garner Road MCEA.

Throughout the study, these communities were informed of key milestones via email. Meetings were arranged upon request to provide updates and gather feedback on questions, concerns, and recommendations. A summary of comments and responses are provided below, with a record of meeting minutes included in **Appendix L**.

Table 24: Summary of Indigenous Community Comments and Responses

Comment/Theme	Response Provided and/or Action Taken
Request for monitors during construction, depending on project scope.	City staff advised that this requirement be identified early and flagged with archaeologists for inclusion in initial reporting.
Request for monitors at Natural Heritage field work.	The City noted funding was unavailable but committed to coordinating with Stantec, who will confirm field work dates.
Concern about deep excavation and ossuaries.	Discussed with Archaeology team; protocols in place.
Interest in participating in Archaeology field work.	Archaeological field work will be completed in detailed design.
Feedback and requests on the Stage 1 AA Report.	All comments incorporated into final report.

Opportunities to review and provide input on Stage 1 archaeological investigations were offered to interested communities. Records of correspondence related to the Stage 1 AA are also available within **Appendix L.**

All project notices were also sent to the Métis Nation of Ontario via email; however, no formal meetings were requested. A detailed log of all correspondence with Indigenous communities is provided in **Appendix L**.

8 Impacts, Mitigation and Monitoring

This section outlines the potential environmental impacts, including natural environment, socio-economic environment, cultural environment, and transportation. Potential direct and indirect impacts are described, including mitigation measures and commitments to future work during the detailed design and construction phases.

8.1 Natural Environment

The study area and road improvement design was overlaid on natural feature mapping in ArcGIS to assess direct and indirect impacts, including impacts associated with construction. Direct impacts are quantifiable effects and include loss of features by area, while indirect effects are qualitative in nature and may include effects such as sedimentation and noise impacts to wildlife on adjacent lands.

The road improvements along Garner Road are primarily within the existing road allowance, with a relatively small amount of encroachment into natural features. The preliminary design footprint has a low potential to negatively impact natural heritage features and species given the magnitude and duration of the project and extent of the proposed improvements. However, even small areas of encroachment can have an impact on features and species, and poorly managed on-site construction or design elements can inadvertently affect adjacent areas and associated flora and fauna beyond the planned construction footprint if not properly mitigated.

Many of the environmental impacts related to this project were mitigated through the process by which the preferred design was developed and selected. Stantec's ecosystem team worked closely with the transportation design team as field data became available, to avoid natural heritage features and develop mitigation to reduce impacts, where possible.

Site-specific and standard mitigation are identified below to reduce potential impacts to natural features. Site-specific measures are recommended to address specific natural heritage features and functions identified for the study area, while standard measures address strategies that are typically required for construction including but not limited to erosion and sediment control, flagging and signage.

8.1.1 Vegetation

Loss of vegetation will occur where the study area overlaps with natural features and vegetation removal is required to facilitate construction.

Permanent loss of 12.91 ha of vegetation will occur in the Garner Road ROW (CVI_1). The direct loss of natural vegetation in ELC communities beyond the ROW and within the study area is shown within **Figure 12**, and detailed in **Table 25**.

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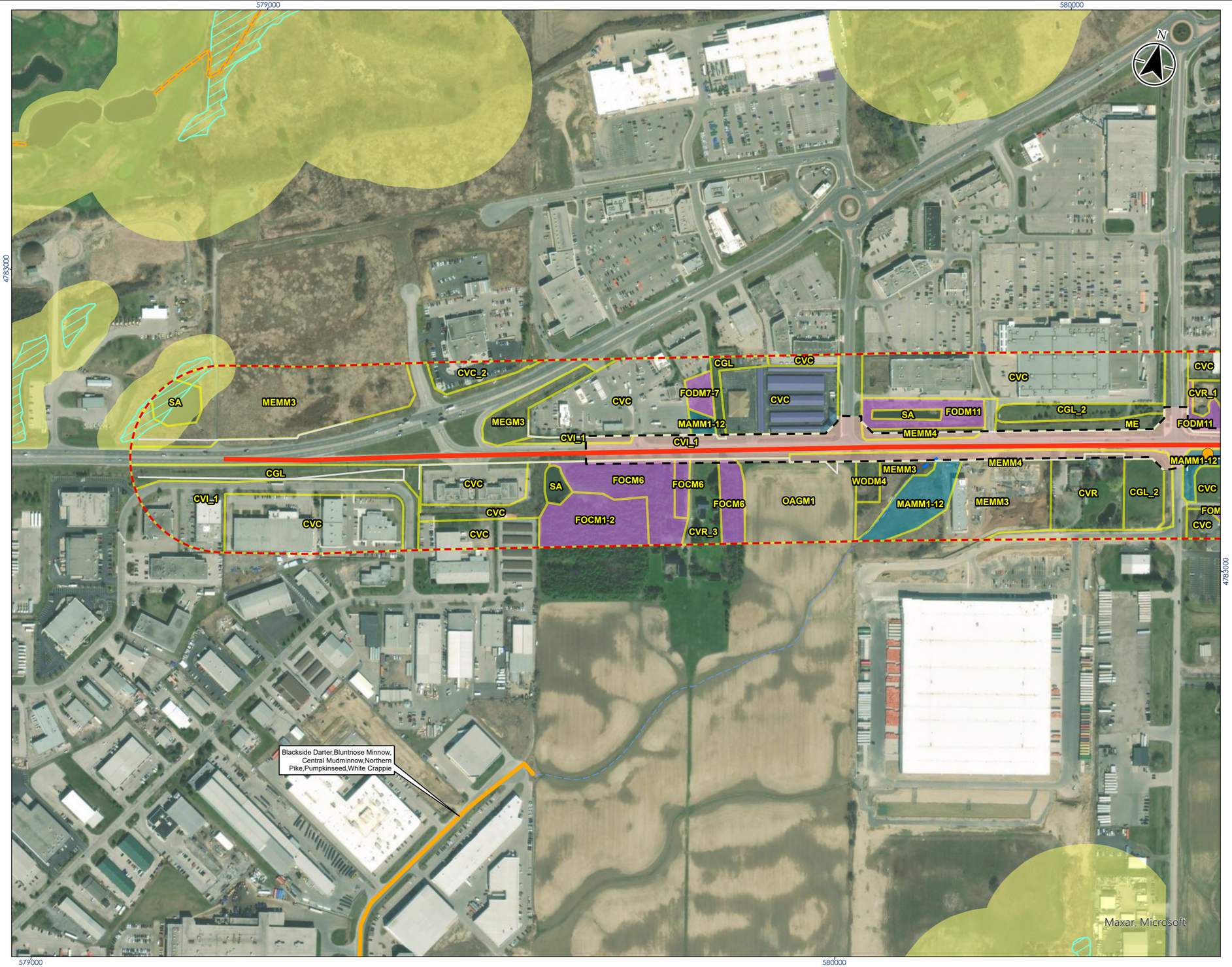

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Stantec

Legend

- Study Area
- Property Line (Proposed Road Allowance)
- Property Line (Existing)
- Proposed Impact

Sensitive Species Observations

- Monarch
- Headwater Drainage Feature
- Wetland Communities
- Woodlands/Candidate SWH for Bat Maternity Colonies
- ELC
- Thermal Regime, Warm
- Watercourse (Intermittent)
- Wetland, Unevaluated
- GRCA Regulation Limit

ELC Legend

CGL (Green Lands)
CGL_2 (Parkland)
CVC (Commercial and Institutional)
CVC_2 (Light Industry)
CVI_1 (Transportation)
CVR (Residential)
CVR_1 (Low Density Residential)
CVR_3 (Single Family Residential)
FOCM1-2 (Dry – Fresh White Pine – Red Pine Coniferous Forest Type)
FOCM6 (Naturalized Coniferous Plantation)
FODM11 (Naturalized Deciduous Hedge-row Ecosite)
FODM7-7 (Fresh - Moist Manitoba Maple Lowland Deciduous Forest Type)
FOM (Mixed Forest)
MAMM1-12 (Common Reed Graminoid Mineral Meadow Marsh Type)
ME (Meadow)
MEGM3 (Dry - Fresh Graminoid Meadow Ecosite)
MEMM3 (Dry - Fresh Mixed Meadow Ecosite)
MEMM4 (Fresh - Moist Mixed Meadow Ecosite)
OAGM1 (Annual Row Crops)
SA (Shallow Water)
WODM4 (Dry - Fresh Deciduous Woodland Ecosite)

0 100 200 Meters

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Notes

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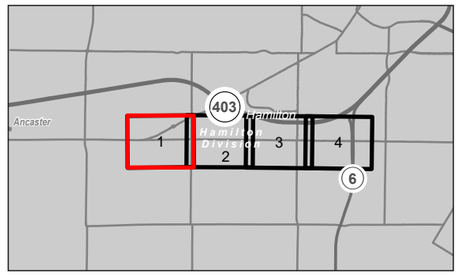


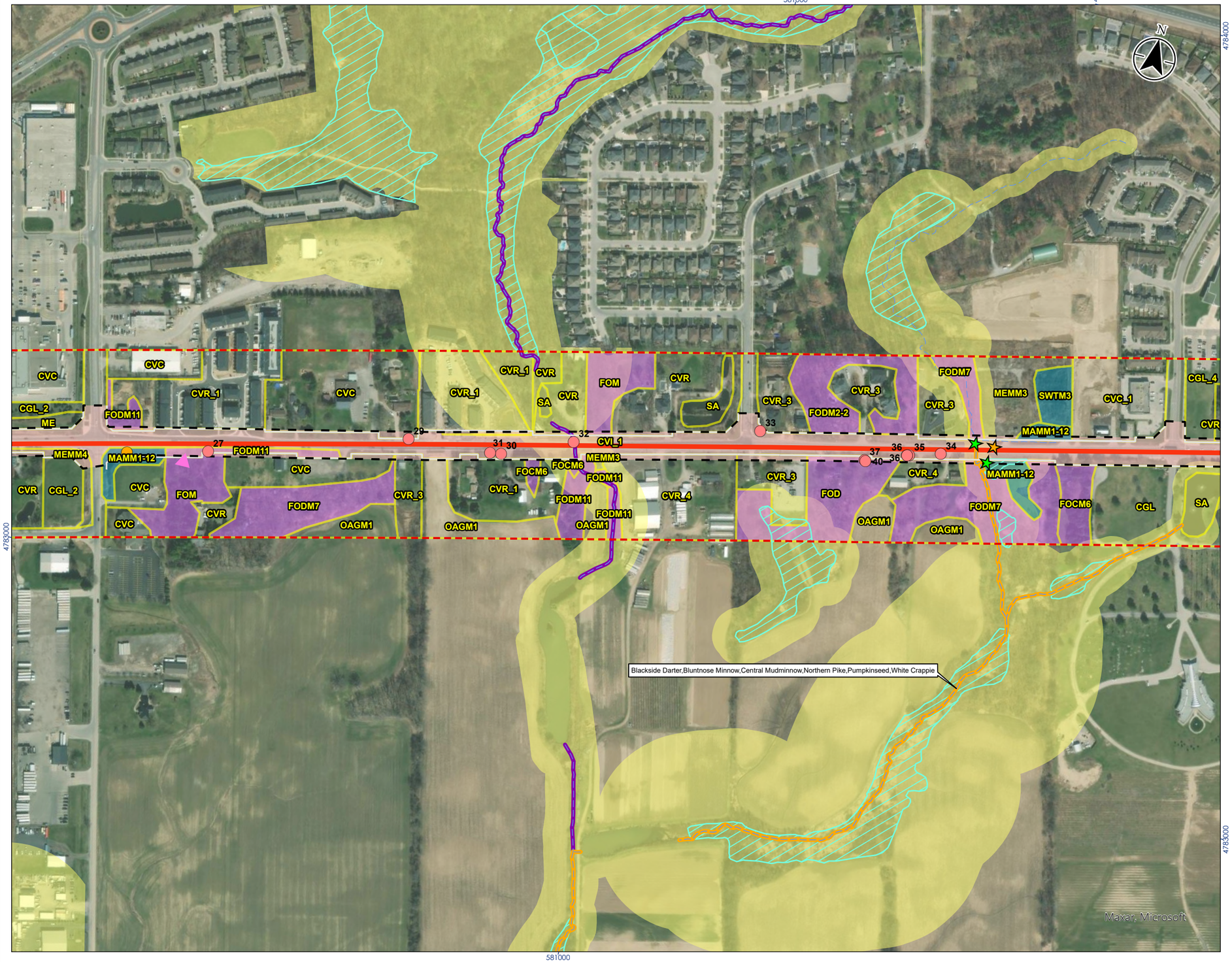
Project Location
City of Hamilton

165001196 REV4
Prepared by ST on 2025-05-02

Client/Project
CITY OF HAMILTON
GARNER ROAD (WILSON ST TO HIGHWAY 403 RAMP)
MUNICIPAL CLASS EA PHASE 3 AND 4

Figure No.
12-1

Title
Natural Heritage Features and Areas Summary



Stantec

Legend

- Study Area
- Property Line (Proposed Road Allowance)
- Property Line (Existing)
- Proposed Impact

Sensitive Species Observations

- Butternut
- Monarch
- Potential Bat Maternity Roost Tree

Incidental Observations

- Giant Hogweed
- Watercress
- Wetland Communities
- Woodlands/Candidate SWH for Bat Maternity Colonies
- ELC
- Thermal Regime, Cold
- Thermal Regime, Warm
- Watercourse (Intermittent)
- Wetland, Unevaluated
- GRCA Regulation Limit

ELC Legend

CGL (Green Lands)
CGL_2 (Parkland)
CGL_4 (Recreational)
CVC (Commercial and Institutional)
CVC_1 (Business Sector)
CVI_1 (Transportation)
CVR (Residential)
CVR_1 (Low Density Residential)
CVR_3 (Single Family Residential)
CVR_4 (Rural Property)
FOCM6 (Naturalized Coniferous Plantation)
FOD (Deciduous Forest)
FODM11 (Naturalized Deciduous Hedge-row Ecosite)
FODM2-2 (Dry – Fresh Oak – Hickory Deciduous Forest Type)
FODM7 (Fresh – Moist Lowland Deciduous Forest Ecosite)
FOM (Mixed Forest)
MAMM1-12 (Common Reed Graminoid Mineral Meadow Marsh Type)
ME (Meadow)
MEMM3 (Dry - Fresh Mixed Meadow Ecosite)
MEMM4 (Fresh - Moist Mixed Meadow Ecosite)
OAGM1 (Annual Row Crops)
SA (Shallow Water)
SWTM3 (Willow Mineral Deciduous

0 100 200 Meters

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Notes

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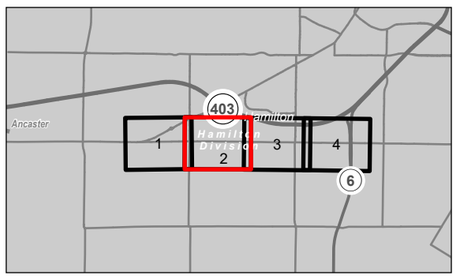


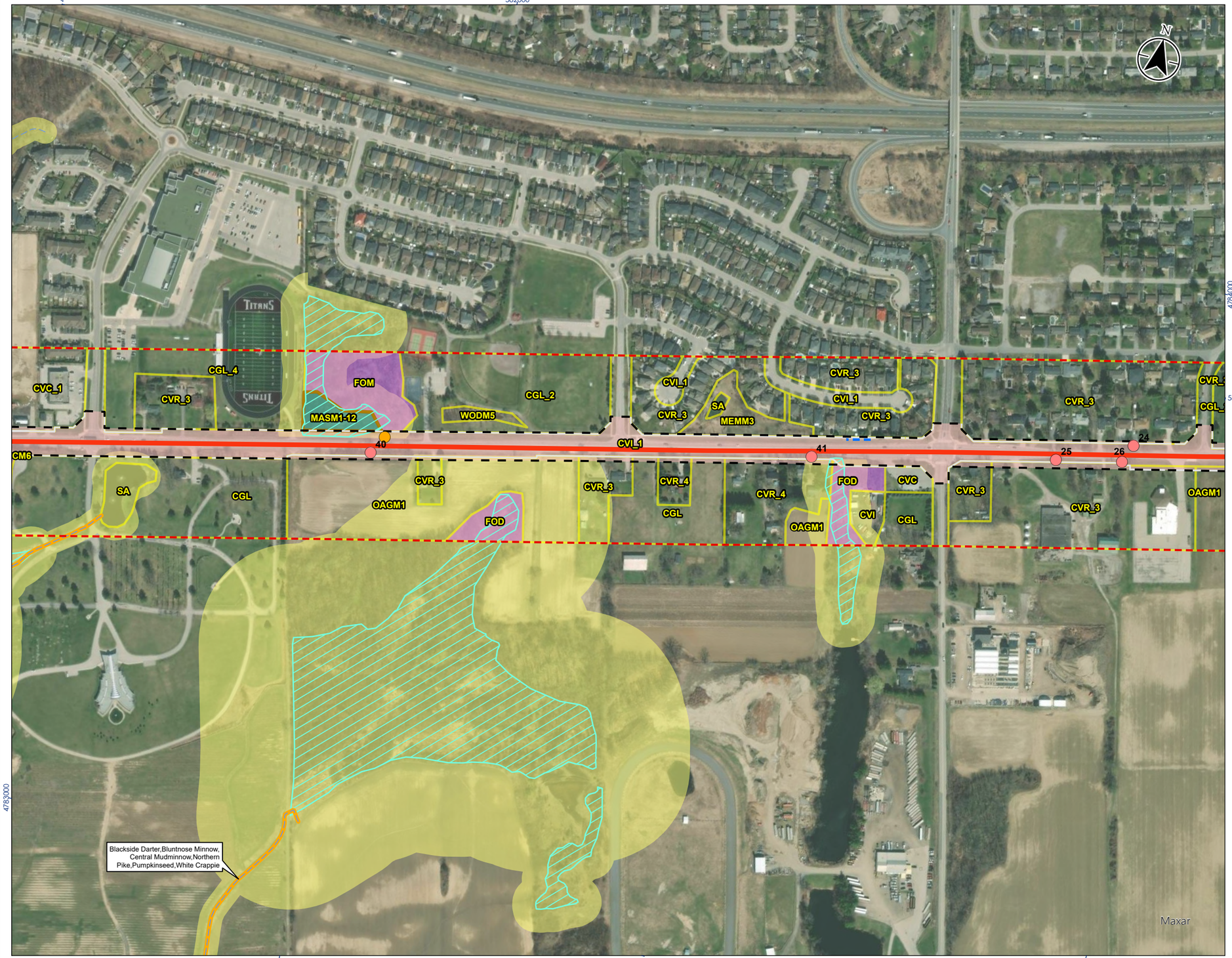
Project Location
City of Hamilton

165001196 REV4
Prepared by ST on 2025-05-02

Client/Project
CITY OF HAMILTON
GARNER ROAD (WILSON ST TO HIGHWAY 403 RAMP)
MUNICIPAL CLASS EA PHASE 3 AND 4

Figure No.
12-2

Title
Natural Heritage Features and Areas Summary



Stantec

Legend

- Study Area
- Property Line (Proposed Road Allowance)
- Property Line (Existing)
- Proposed Impact

Sensitive Species Observations

- Monarch
- Potential Bat Maternity Roost Tree
- Headwater Drainage Feature
- Candidate SWH for Amphibian Breeding
- Wetland Communities
- Woodlands/Candidate SWH for Bat Maternity Colonies
- ELC
- Thermal Regime, Warm
- Watercourse (Intermittent)
- Wetland, Unevaluated
- GRCA Regulation Limit

ELC Legend

CGL (Green Lands)
CGL_2 (Parkland)
CGL_4 (Recreational)
CVC (Commercial and Institutional)
CVC_1 (Business Sector)
CVI (Transportation and Utilities)
CVI_1 (Transportation)
CVR_3 (Single Family Residential)
CVR_4 (Rural Property)
FOCM6 (Naturalized Coniferous Plantation)
FOD (Deciduous Forest)
FOM (Mixed Forest)
MASM1-12 (Common Reed Mineral Shallow Marsh Type)
MEMM3 (Dry - Fresh Mixed Meadow Ecosite)
OAGM1 (Annual Row Crops)
SA (Shallow Water)
WODM5 (Fresh - Moist Deciduous Woodland Ecosite)

0 100 200 Meters

1:139,495 (At original document size of 11x17)

Notes

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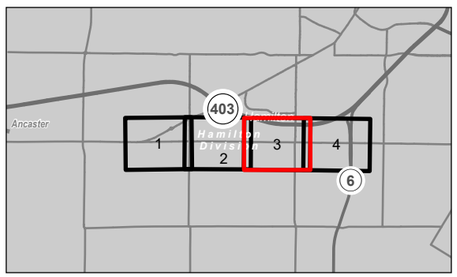

Project Location
City of Hamilton

165001196 REV4
Prepared by ST on 2025-05-02

Client/Project
CITY OF HAMILTON
GARNER ROAD (WILSON ST TO HIGHWAY 403 RAMP)
MUNICIPAL CLASS EA PHASE 3 AND 4

Figure No.
12-3

Title
Natural Heritage Features and Areas Summary

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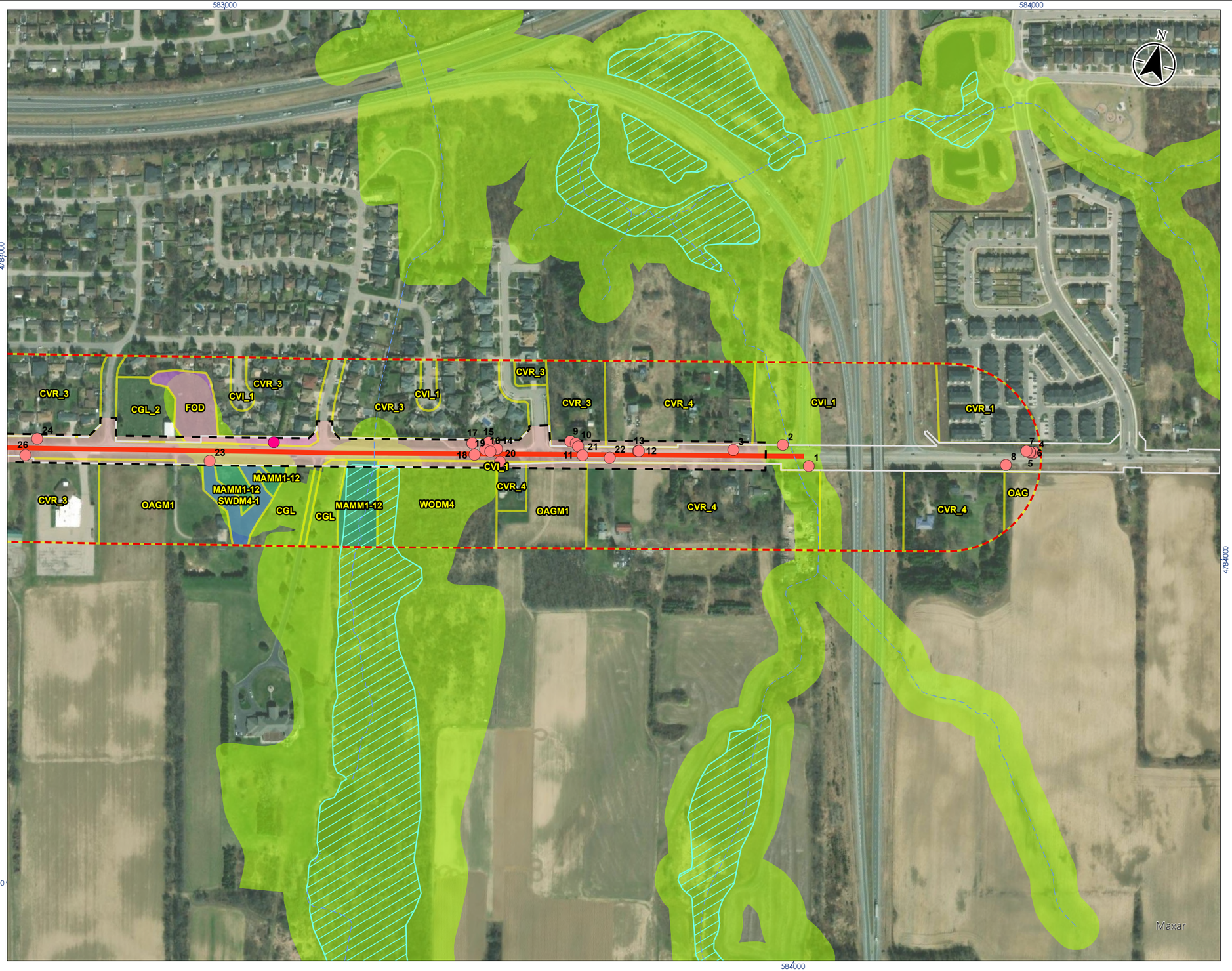

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Stantec

Legend

- Study Area
- Property Line (Proposed Road Allowance)
- Property Line (Existing)
- Proposed Impact

Sensitive Species Observations

- Kentucky coffeetree
- Potential Bat Maternity Roost Tree
- Wetland Communities
- Woodlands/Candidate SWH for Bat Maternity Colonies
- ELC
- Watercourse (Intermittent)
- Wetland, Unevaluated
- HRCA Regulation Limit

ELC Legend

- CGL (Green Lands)
- CGL_2 (Parkland)
- CVI_1 (Transportation)
- CVR_1 (Low Density Residential)
- CVR_3 (Single Family Residential)
- CVR_4 (Rural Property)
- FOD (Deciduous Forest)
- MAMM1-12 (Common Reed Graminoid Mineral Meadow Marsh Type)
- OAG (Open Agriculture)
- OAGM1 (Annual Row Crops)
- SWDM4-1 (Willow Mineral Deciduous Swamp Type)
- WODM4 (Dry - Fresh Deciduous Woodland Ecosite)

0 100 200 Meters

1:139,495 (At original document size of 11x17)

Notes

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Project Location
City of Hamilton

165001196 REV4
Prepared by ST on 2025-05-02

Client/Project
CITY OF HAMILTON
GARNER ROAD (WILSON ST TO HIGHWAY 403 RAMP)
MUNICIPAL CLASS EA PHASE 3 AND 4

Figure No.
12-4

Title
Natural Heritage Features and Areas Summary

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Table 25: Natural Vegetation Loss per ELC Ecosite Associated with the Project

ELC Code	ELC Ecosite	Vegetation Loss (ha)
FOCM6	Naturalized Coniferous Plantation	0.08
FOD	Deciduous Forest	0.23
FODM11	Naturalized Deciduous Hedgerow	0.22
FODM2-2	Dry – Fresh Oak – Hickory Deciduous Forest	0.01
FODM7	Fresh – Moist Lowland Deciduous Forest	0.04
FOM	Mixed Forest	0.03
MAMM1-12	Common Reed Graminoid Mineral Meadow Marsh	0.19
ME	Meadow	0.03
MEMM3/MAMM1-12	Dry-Fresh Mixed Meadow	0.02
MEMM4	Fresh-Moist Mixed Meadow	0.64
WODM4	Dry - Fresh Deciduous Woodland	0.13
	Total	**1.62**

A landscape planting plan is recommended for the detailed design phase of this project. This plan should include native wildflowers, grasses, shrubs, and deciduous trees to restore areas disturbed by construction and enhance near-road ecosystems. In commercial and residential areas, compensatory rehabilitation opportunities may be limited. However, if land is available within the street ROW or local settings, the landscape planting plan will guide the design. Plant materials should be native species suitable for site conditions and sourced from local nurseries specializing in native plants. The near-road planting regime should create a sustainable and protective environment along the edges of near-road areas.

It is recommended that invasive species control be implemented at the transition zone between the active vegetation removal and the remaining community to the extent possible. Invasive species management strategies will be developed during detailed design for the project and will be based on Best Management Practices developed by the Ontario Invasive Plant Council.

8.1.2 Erosion and Sediment Transport

Erosion and sediment transport is possible at all construction sites. The goal of erosion and sediment mitigation is to reduce the potential for erosion and subsequent sediment release through various methods of control.

In areas where erosion (wind, rain, slope erosion) has the potential to occur, reducing the extent of erosion and its advancement within the disturbed construction area is critical to reducing impacts on natural areas near the road improvement area.

Mitigation measures for sedimentation, erosion, and dust control should be implemented to reduce sediment and dust from entering sensitive natural features. The primary principles associated with sedimentation and erosion protection measures are to:

- Reduce the duration of soil exposure
- Retain existing vegetation where feasible
- Encourage re-vegetation
- Divert runoff away from exposed soils
- Keep runoff velocities low
- Trap sediment as close to the source as possible

To address these principles, the following mitigation measures are proposed:

- Silt fencing and/or barriers should be used along all construction areas adjacent to natural areas.
- Equipment should not be permitted to enter natural areas beyond the vegetation protection fencing.
- Exposed soil areas should be stabilized and re-vegetated promptly upon completion of construction activities through the placement of seed and mulch or seed and an erosion control blanket.
- Equipment should be re-fueled a minimum of 30 m away from all watercourses to avoid potential impacts if an accidental spill were to occur. Spill control materials, including absorbent barriers and mats, should be kept on site to immediately address accidental spills.
- Additional silt fence should be available on site to provide a contingency supply in the event of an emergency.

Sediment and erosion controls should be monitored regularly and properly maintained as required. Controls are to be removed only after the soils of the construction area have been stabilized and adequately protected or until cover is re-established.

Disturbed natural areas should be restored to pre-construction conditions, or better, where areas for restoration are available beyond the ROW.

The management of excess soil will be completed in accordance with Ontario Regulation (O. Reg.) 406/19 and the ministry’s current guidance document titled

"Management of Excess Soil – A Guide for Best Management Practices". All waste generated during construction must be disposed of in accordance with the Ministry of the Environment and Energy requirements.

8.1.3 General Wildlife Mitigation

Reptiles, amphibians, and other ground-dwelling animals may occasionally enter work areas. Interaction with wildlife during construction may result in direct mortality. Wildlife interaction is more likely to occur where natural areas are present in the study area, including woodlands, wetlands and watercourse crossings.

Sediment and erosion control fencing (geotextile fences) are effective for the temporary exclusion of amphibians and reptiles (MECP 2021). Light duty geotextile fences are suitable for construction duration lasting up to one season (MECP 2021). Heavy-duty geotextile fences are effective for up to two to three years (MECP 2021). Geotextile fencing with nylon mesh should be avoided due to the risk of entanglement by snakes.

Prior to work commencing in a new work area, a thorough visual search of the work area should be conducted by construction contractors to locate snakes or other wildlife, particularly between April 1 and October 31 when snakes are most active. If snakes or other wildlife are encountered during construction, work at that location will stop, and wildlife will be permitted reasonable time to flee the area on their own. If necessary, a biologist or other qualified professional can move wildlife to a location that is both safe and suitable. Temporary exclusionary fence to control wildlife that may attempt to find refuge in the construction zone can be effective in further reducing this potential threat to wildlife.

8.1.4 Migratory Bird Nests

Vegetation clearing has the potential to impact migratory bird nests (including Eastern Wood-Pewee) and should be avoided during the breeding season which is generally from April 1 to August 31 in southern Ontario (Environment Canada 2014) to avoid contravention of the Migratory Birds Convention Act. Migratory birds and their nests are protected from harm and disturbance under the MBCA.

The core nesting period for all migratory birds is identified as April 1 to August 31 (Government of Canada 2018). Clearing vegetation in migratory bird breeding habitat during nesting periods can destroy active nests and contravene the MBCA. If work must take place during the core nesting period and the area is small enough to be effectively searched for nesting birds, then a breeding bird survey can be completed by a Qualified Biologist. The area where vegetation is to be removed must be searched within five days prior to the work commencing. If breeding pairs are located, then they will be protected with a buffer until the nest is no longer active.

If an active nest is observed during construction, a designated buffer will be delineated within which no activity will be allowed to occur while the nest is active (i.e., with eggs or young). The radius of the buffer will be determined by a Qualified Professional. Once the nest is determined to be inactive (e.g., the young have fledged the nest), clearing and other activities in the area may proceed.

8.1.5 Species at Risk

8.1.5.1 Bat Species at Risk

Consultation with the MECP will be required to determine mitigation and/or permitting requirements for bat SAR (**Section 9.3.3**). To reduce the potential of harm to bat SAR, trees greater than 10 cm diameter at breast height (DBH) should be removed outside the active season for bats (April 1 to September 30), which includes the bat maternity roosting season. Bats typically give birth in late May to early June, and females fly with newborn young until they become excessively heavy. Young begin to fly in mid to late June, at the age of three to four weeks. Rearing is completed by August and bats move to hibernacula in August or September (Broders et al. 2006, Cagle and Cockrum 1943, Gerson 1984).

8.1.5.2 Butternut

The regulated habitat for the Butternut identified in the FOM community east of Shaver Road on the south side of Garner Road extends into the project footprint (25 m from the trunk of the Butternut). Potential impacts to Butternut include direct impacts such as removal or accidental injury to tree limbs and roots (i.e., working within 25 m) during site access and construction activities.

If feasible, a Butternut Health Assessment (BHA) is recommended to be completed to determine whether the Butternut is a pure, retainable specimen. If the Butternut is determined to be retainable, or if a BHA is not able to be conducted, mitigation measures should be implemented as follows:

- Install tree protection fencing along the edge of the Project Footprint adjacent to the Butternut to avoid accidental encroachment.
- Inform workers of the presence of Butternut.
- Where surface work is required within the 25 m compression buffer of Butternut, use compression mats to reduce compression of the root zone, if possible.

8.1.6 Fish and Fish Habitat

Permanent impacts to fish habitat refer to changes that are long-lasting, such as habitat modification or degradation, aquatic invasive species, and pollution. Temporary impacts are those that occur during a specific project or activity and can be minimized through mitigation measures.

Permanent Impacts

Two watercourses in the study area provide direct fish habitat (Station W05 and W11). Five watercourses provide contributing fish habitat (Stations W03, W06, W07, W08, and W10). The Fisheries Act protects direct and contributing fish habitat. Proposed extensions of culverts at these locations to accommodate the widening of Garner Road will result in a loss of channel length and direct impact on fish habitat at seven watercourses mentioned above. The length of the channel habitat lost will be determined during detailed design. Extending culverts may also reduce potential for upstream fish migration at locations that provide direct fish habitat (W05 and W11).

Temporary Impacts

Loss of Riparian Vegetation

Temporary impacts to fish and fish habitat may include the loss functions such as nutrient and shading resulting from the removal of riparian vegetation during construction. The riparian vegetation along the proposed realigned creeks will take several years to establish before they provide these functions.

Impacts to Water Quality

Temporary impacts include the loss of access during in-water construction activities such as work area isolation using dams and pump operations. Temporary sediment release during construction activities.

Indirect impacts may result from the potential for sediment transport from exposed soil surfaces, potential entry of construction debris (e.g., concrete slurry, dust, etc.) into the water and spills associated with refueling of equipment. Sediment introductions can affect fish due to increased turbidity of the water column, which can impair vision and subsequent feeding by fish that are sight-hunters. Suspended sediments can also abrade gill membranes leading to physical stress, and impact prey organism’s behavioral changes (i.e., avoidance, etc.).

Impact of sedimentation can be reduced through the implementation of sediment and erosion control measures.

8.1.7 Clean Equipment Protocol

Standard measures for erosion and sediment control, and revegetation of disturbed areas will be implemented to reduce opportunities for invasive plants. A clean equipment protocol will be implemented during construction to reduce the potential for the introduction and spread of invasive plants. The protocol should be developed in consideration of the *Clean Equipment Protocol for Industry* (Halloran et al. 2013).

8.1.8 Salt Application

A salt management plan should be prepared during detailed design to protect sensitive natural features during regular road operations. The salt management plan should reference the Ontario Good Roads Association & Conservation Ontario's *Good Practices for Winter Maintenance in Salt Vulnerable Areas* (June 2018). Detailed design should also consider design approaches to reduce salt impacts, including site grading and use of vegetated swales within the right-of-way.

8.1.9 Standard Mitigation Measures for Construction

Potential indirect impacts from construction include inadvertent encroachment of heavy equipment, siltation and/or spills of deleterious substances, and dust migration into natural features. These impacts may alter species composition by compacting and smothering vegetation, introducing harmful substances to vegetation and wildlife, such as fuel used by construction vehicles, and causing the spread of invasive species. Additional disturbance may also be required to facilitate spill clean-up activities.

These potential indirect effects are common to various types of construction can be controlled using standard mitigation measures for erosion and sediment control as discussed previously.

Potential indirect impacts from construction may also include the addition of noise and vibration from the use of heavy equipment. The contractor will be required to abide by the municipal noise control by-laws and ensure that all construction equipment is kept in good working order to limit additional noise. The contractor will also ensure that the idling of construction equipment is kept to a minimum. Additional noise and vibration control measures will be addressed during detailed design and included in the construction contract, as required.

8.2 Noise

A noise impact assessment was completed to assess nearby noise sensitive areas (NSAs) identify where noise mitigation was needed. The assessment considered thirty-five representative receptors for existing NSAs and seven representative receptors for proposed future developments were identified.

The predicted daytime noise levels indicate that the Future Build noise level is not expected to increase over 5dB at any of the existing receptors. Therefore, mitigation is not required for the existing receptors, even if some of the receptors exceed the 55dBA absolute daytime noise limit.

Predicted Future Build noise levels at the proposed development receptors exceed the MECP daytime and/or nighttime noise limits for all future development receptors. However, noise mitigation for the future developments is expected to be addressed in the development noise report and implemented by the developers. Therefore, noise mitigation for these developments is not investigated or recommended.

8.3 Property Impacts

As a result of the study area improvements outlined in the preferred design, property impacts are anticipated for many of the properties along the corridor to implement the proposed standard 36m ROW. Impacts to sensitive properties, such as the Bethesda United Church Cemetery and the White Brick Cemetery have been avoided.

Impacts and associated mitigation measures will be reviewed and confirmed during detail design in consultation with affected property owners. Acquisition of private property will be negotiated with affected property owners and purchased at market value. The new right-of-way and the limits of property acquisition required will be confirmed during the detailed design phase.

Permission-to-enter onto private properties will be required to perform driveway reconstruction and minor grading activities associated with roadway reconstruction. Continued correspondence with property owners will be conducted to address issues that may arise.

8.4 Cultural Environment

8.4.1 Archaeological Resources

As discussed in **Section 3.3.1**, approximately 40% of the study area retains potential for the identification and documentation or archaeological resources. In accordance with the MCM's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011), a Stage 2 AA is required for any portion of the project's anticipate construction which impacts an area of archaeological potential.

In addition, the Mississauga's of the Credit First Nation have requested a reduced survey interval near Snyder Cemetery due to its sensitive nature. For areas adjacent to the Bethesda United Church Cemetery and White Brick Cemetery, a Stage 3 Cemetery Investigation is necessary to confirm the presence of burials outside known boundaries. This will involve mechanical excavation under the supervision of a licensed archaeologist, with specific procedures in place if human remains are found. Areas

previously assessed or identified as having low archaeological potential do not require further assessment.

The results of the Stage 2 AA may trigger further stages of assessment for parts of the area it covers, and the outstanding archaeological assessment work will take place as early as practicable in the detail design stage and well in advance of ground-disturbing activities. If archaeological resources are encountered during construction in spite of the completion of archaeological resources, work impacting the resources will cease, MCM will be notified, and an archaeologist licensed under the *Ontario Heritage Act* will be engaged to assess the site. If the find includes human remains, the police and coroner should also be notified.

A copy of the Stage 1 AA report is included in **Appendix C.**

8.4.2 Built Heritage Resources and Cultural Heritage Landscapes

As discussed in **Section 3.3.2**, 13 BHRs and three CHLs were identified as having potential indirect impacts associated with vibration effects from the construction phase of the proposed project. To reduce the risk of indirect impacts on these sites, a preventative approach is being recommended for mitigation measures.

The preferred mitigation measure is to completely avoid identified BHRs and CHLs for which potential impacts have been identified. In this case, a 50-metre buffer zone will be established around the resources to avoid construction activities. This can be completed through appropriate preventive measures such as mapping on construction maps and/or plans and temporary fencing.

Where the identified BHRs and CHLs cannot be completely avoided, an alternative option is to mitigate the risk by having a qualified building specialist or engineer to develop a strategy to carry out condition surveys and vibration monitoring, where required. This mitigation measure will include a pre-condition survey to screen activities and identify critical properties and appropriate noise levels for these properties. This would then be followed by random confirmatory vibration monitoring during construction to ensure that activities are within the appropriate noise levels at critical properties. A postcondition survey should be carried out on an as-needed basis to be determined by a qualified building condition specialist or engineer following the completion of the construction phase of the project.

It should be noted that both CHL-1 and CHL-5 contain historic cemeteries with stone grave markers, which should be considered as individual heritage structures and incorporated into vibration screening/monitoring as a result.

For detailed information on the BHR and CHL resources identified, a copy of the Cultural Heritage Report is included in **Appendix D.**

8.5 Tree Removal and Preservation of Vegetation

To support the proposed design, the removal of some trees and vegetation will be required. Efforts will be made to minimize impacts by preserving existing natural features wherever feasible, particularly trees identified as significant wildlife habitat, such as potential bat maternity roost trees. These features will be assessed and considered during the detailed design phase, where opportunities for new plantings and landscape enhancements will also be explored to restore and improve the site's ecological and visual character.

A general tree inventory was completed in spring 2024 to locate and tag any tree that was within the designated lands for proposed development. Data collected for each tree includes tree genus, specific epithet (where possible to accurately determine), trunk integrity, crown structure, crown vigour, general health condition, DBH, and dripline radius.

The recommended design has the potential to impact approximately 181 trees. Of these, 83 trees were identified to the east and west of Woodmount Ave, 61 were identified between Shaver Road and Panabaker Avenue, and the rest were dispersed along the north and south sides of the Garner Road corridor.

The final list of trees and vegetation to be preserved or removed will be confirmed during detailed design. It should be noted that a Butternut Health Assessment was not completed as part of this study and shall be undertaken during the detailed design phase.

8.6 Source Water Protection

As described in **Section 3.5**, a desktop review of hydrogeological information was completed as part of this study. Based on the Ontario Source Protection Information Atlas, the site spans potions of the Grand River and Hamilton Region SPA and is located in an area with several HVAs, consisting of granular aquifer material or fractured rock.

A Source Water Protection and Hydrogeological investigation will be undertaken once the extents of the grading limits and impacts are confirmed, and a mitigation strategy will be enacted.

Regulations governing dewatering activities outlined in Ontario Regulation 63/16: Registrations Under Part II.2 of the Act – Water Taking also place restrictions on where dewatering effluent may be discharged within Wellhead Protection Areas (WHPAs). Although a WHPA was not identified, the requirements of this regulation shall be considered during the dewatering planning and execution stages.

8.7 Transportation

All modes of transportation will be accommodated within the planned improvements. The recommended preliminary design supports the long-term plan for transportation within the corridor.

Following the completion of the EA process, the roadway and intersection designs will be refined during the detailed design phase. These designs will be developed in consultation with the Ministry of Transportation and will adhere to the guidelines outlined in the Ontario Traffic Manual – Book 18 – Cycling Facilities. The location of transit bus bays will be coordinated with City transit staff during detailed design. Further investigations during the detailed design phase will be required to assess the grading impacts to accommodate the road profile and intersection improvements.

A copy of the Transportation Assessment report is available within **Appendix A**.

8.8 Climate Change

The MECP's guide, Consideration of Climate Change in the Environmental Assessment Process, outlines two approaches for consideration and addressing climate change in project planning including:

- Reducing a projects impact on climate change (climate change mitigation).
- Increasing the projects and local ecosystems resilience to climate change (climate change adaptation).

The objectives of the climate change document have been considered in the generation and evaluation of alternatives, recommended design, and mitigation approaches.

The City of Hamilton has also committed to addressing climate change in response to City Council's declaration of a Climate Change Emergency in 2019. This commitment is reflected through their Climate Action Strategy, which consists of two key plans: the Community Energy and Emissions Plan (2022), which addresses climate mitigation through a reduction in greenhouse gases; and the Climate Change Impact Adaption Plan (2022), which addresses climate adaption by decreasing impacts and preparing for unavoidable impacts of climate change.

The City is in the process of developing further frameworks and policies to address climate change, including a Carbon Budget and Accounting Framework to integrate GHG emissions into financial planning, a Climate Justice Framework to ensure equity in climate action, and a Corporate Net Zero Policy to guide energy performance standards for new municipal buildings.

The proposed improvements along Garner Road support the objectives of both plans by incorporating infrastructure that promotes active transportation and climate resilience.

The project includes the addition of sidewalks and multi-use paths/cycling facilities, which encourage a shift away from single-occupancy vehicle use and reduce transportation-related emissions. These enhancements align with the City's goal of increasing the share of daily trips made by walking, cycling, and transit. In addition, the project includes stormwater management upgrades and design considerations that improve the corridor's ability to withstand extreme weather events, such as flooding. By integrating these features, the Garner Road project contributes to both climate change mitigation and adaptation, supporting Hamilton's broader vision for a low-carbon, resilient transportation network.

9 Regulatory Compliance

9.1 Federal Policy Conformance and Regulatory Approval Requirements

9.1.1 Species at Risk Act

Terrestrial species regulated under the Species at Risk Act (SARA) are not considered in this report because the development does not occur on federal lands, and there were no aquatic species regulated by the SARA identified in the drainage features in the study area.

Migratory bird species that are listed as extirpated, endangered or threatened on Schedule 1 of the SARA and are also listed in the MBCA are regulated under the SARA. Should detailed design result in potential impacts to a regulated migratory bird species, consultation with ECCC is recommended to confirm authorization requirements under the SARA. Contravention of the SARA can be avoided by implementing measures (i.e., construction outside of breeding bird timing window) to prevent the disturbance, destruction, or taking of a nest as described for the MBCA.

9.1.2 Fisheries Act

The fish and fish habitat protection provisions of the Fisheries Act regulate works, undertakings or activities that risk harming fish and fish habitat. Specifically, they include the two core prohibitions against persons carrying on works, undertakings or activities that result in the "death of fish by means other than fishing" (hereafter referred to as the death of fish) (subsection 34.4(1)), and the "harmful alteration, disruption or destruction (HADD) of fish habitat" (subsection 35(1)).

The proposed widening of Garner Road may require extensions of existing culverts and a loss of channel length and associated loss of fish habitat at seven locations. Quantification of the loss of fish habitat area and functions will be determined during

detailed design. Impacts to fish migration also will be evaluated for the watercourses that provide direct fish habitat (Station W05 and W11).

Fisheries and Oceans Canada (DFO) requires that 'Avoidance' and 'Mitigation' strategies are considered prior to 'Offsetting' habitat. Avoidance is not an option because these culverts need to be extended to accommodate the widening of Garner Road. Garner Road needs to be widened to allow for the City to grow its target the transportation network and meet demand due to population growth in the area.

Mitigation measures have been recommended including the implementation of best management practices during planning, construction, operation, maintenance, and temporary or permanent closures following completion of the detail design. Mitigation measures may include avoiding the restricted timing window for the protection of sensitive stages of spawning fishes, completing fish rescues to avoid the deaths of fish, and erosion and sediment control measures.

With detailed design information, a determination can be made following guidance and criteria provided on DFO's website regarding whether the in or near water work will require DFO review. Review by DFO is initiated through a Request for Review (RFR) process. If it is determined that DFO review is required, DFO's RFR Form submission is made once the layout is finalized.

The RFR Form would include details on the activities such as detailed designs, mitigation measures, schedules and potential impacts and compensations measures. Following completion of their review, DFO can proceed in two ways: 1) issue a Letter of Advice indicating that the proposed work complies with the Fisheries Act or, 2) refer the project to the Regulatory Review Unit for site specific review. If the project can avoid impacts to fish and fish habitat, project approval is not required. If impacts that cause a HADD cannot be avoided, proponents must apply for a Fisheries Act Authorization and may be required to develop a habitat offsetting or compensation plan.

9.2 Migratory Birds Convention Act

There are no permits required under the MBCA. Mitigation measures to avoid impacts on migratory breeding birds are recommended in **Section 8.1.4**. There were no birds identified in the study area that are protected under Schedule 1 of the MBR.

9.3 Provincial Policy Conformance and Regulatory Approval Requirements

9.3.1 Provincial Planning Statement

The Provincial Planning Statement (PPS) offers the overriding policy to protect the natural heritage features and embody the goals and principles of the UHOP and RHOP.

The natural heritage policy features of the PPS have been documented for the study area, and impacts have been assessed for each feature. The assessment of natural heritage features provided in this report are consistent with the protection and policies for natural heritage in the PPS.

9.3.2 Environmental Assessment Act

This study follows the Municipal Engineers Association MCEA process for a Schedule 'C' project, as outlined in the MCEA 2024 document (October 2000, as amended in February 2024), which is an approved process under the Environmental Assessment Act. In addition, the *Conservation Authority Baseline Ecological Assessment Requirements for Municipal Class Environmental Assessments* (2011) and the *Environmental Impact Statement (EIS) Guidelines* (2015) have been followed.

9.3.3 Endangered Species Act

Suitable habitat for four bat SAR species was identified as potentially occurring in the project footprint. Impacts to bat SAR can be avoided by protecting suitable maternity roost trees if possible or removing them outside the period when bats may be using them, which is generally between early April to late September. Consultation with the MECP will also be required to determine mitigation and/or permitting requirements for bat SAR.

Butternut has been confirmed on adjacent lands and regulated habitat for this species (30m from the trunk) overlaps with the project footprint. Consultation with the MECP will be required to determine mitigation and/or permitting requirements for this species, provided a Butternut Health Assessment determines that the Butternut is a retainable specimen.

Suitable habitat for several SAR was identified as potentially occurring in the adjacent lands outside of the project footprint (i.e., American Chestnut, Spotted Wintergreen, Jefferson Salamander, Barn Owl, American Badger). Should detailed design result in potential impacts to these species or their habitats, consultation with MECP is recommended to confirm authorization requirements under the ESA.

9.3.4 Ontario Regulation 41/24 Under the Conservation Authorities Act

Under O. Reg 41/24 of the *Conservation Authorities Act*, a permit will be required for proposed work within the HCA and GRCA regulation limits where development or interference with wetlands and watercourses is proposed to occur. The permit submissions will require an outline of the proposed measures that will be implemented to avoid, mitigate and/or restore habitats in the watershed within the regulated areas of the HCA and GRCA.

9.3.5 Fish and Wildlife Conservation *Act*, 1997

If in-water work areas are determined to be suitable for turtles, a Wildlife Scientific Collection Authorization must be obtained from the MNR to handle and relocate wildlife that are disturbed by the Project. If in-water work is proposed when turtles are overwintering (generally November 1 to March 31), MNR should be consulted to determine authorization and mitigation requirements under the FWCA. During isolation of flow, fish recovery and transfer will need to be conducted in accordance with a Licence to Collect Fish for Scientific Purposes obtained from the MNR.

9.4 Municipal Policy Conformance and Regulatory Approval Requirements

The recommended design was planned in accordance with the municipal planning and policies of the City of Hamilton, as discussed in **Section 2**. The assessment of impacts on natural heritage features and recommended mitigation measures to reduce impacts that are provided in this report are consistent with the policies to protect natural heritage features in the UHOP and RHOP.

9.5 Permits and Approvals

Any permits required should be identified during detailed design. Prior to commencing construction, the following permits and approvals may be required:

- MTO Occupancy Permit
- Notification to utilities
- DFO review under the Fisheries Act
- Permit to Take Water for construction dewatering
- Permit for development or interference with wetlands and alterations to shorelines and watercourses under O. Reg. 41/24 to HCA and GRCA
- Environmental Compliance Approvals for storm and sanitary infrastructure (MECP)

The City will continue to engage Indigenous communities, HCA, GRCA, MECP, MTO, and the MNRF during detailed design.

9.6 Next Steps

The next step in the MCEA process is filing this Environmental Study Report for public review. Interested persons are invited to provide written comments to the City of Hamilton in accordance with the Notice of Completion.

In addition, requests can be made to the Ministry of the Environment, Conservation and Parks for an order requiring a higher level of study (e.g., individual/comprehensive EA approval) or imposing conditions (e.g., further studies), but only if the 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's contact information and full name for the ministry. The request should be sent in writing by mail 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 Hamilton by mail or by email:

Megan Salvucci, Project Manager – Capital Infrastructure Planning
Public Works, Engineering Services
City of Hamilton
71 Main Street West
Hamilton, ON, L8P 4Y5
megan.salvucci@hamilton.ca

Once the 30-day public review period ends, there is a mandatory waiting period before any construction or project activities can begin. During this time, the project proponent must wait at least 30 additional days to allow for final processing and consideration of all comments received.

If a request for a Section 16 order was submitted during the review period, the project cannot proceed until that request is fully resolved and any conditions are met. This waiting period ensures that all public input has been properly considered and that any outstanding environmental concerns are addressed before the project moves forward. Only after this waiting period is complete, and provided no unresolved Section 16 orders exist, can the City begin implementing the project (i.e., detailed design and construction).

Appendix A Transportation Assessment

Appendix B Noise Impact Assessment

Appendix C Stage 1 Archaeological Assessment

Appendix D Cultural Heritage Report

Appendix E Phase I Environmental Site Assessment

Appendix F Natural Environment Existing Conditions

Appendix G Active Transportation Memorandum

Appendix H Preliminary Plan and Profile

Appendix I Composite Utility Plan

Appendix J Stormwater Management Report

Appendix K Engagement

Appendix L Indigenous Community Engagement

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Stantec is a global leader in sustainable architecture, engineering, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.