



North Halton Coordinated Municipal Class Environmental Assessment Study

*Regional Road 25 from 5 Side Road to 10 Side
Road, Town of Halton Hills*

Halton Region

Environmental Study Report

September 2026





Disclaimer

The material in this report reflects HDR's professional judgment considering the scope, schedule and other limitations stated in the document and in the contract between HDR and the client. The opinions in the document are based on conditions and information existing at the time the document was published and do not consider any subsequent changes. In preparing the document, HDR did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that HDR shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party resulting from decisions made or actions taken based on this document.

In preparing this report, HDR relied, in whole or in part, on data and information provided by the Client and third parties that was current at the time of such usage, which information has not been independently verified by HDR and which HDR has assumed to be accurate, complete, reliable, and current. Therefore, while HDR has utilized its best efforts in preparing this report, HDR does not warrant or guarantee the conclusions set forth in this report which are dependent or based upon data, information or statements supplied by third parties or the client, or that the data and information have not changed since being provided in the report. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that HDR shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party resulting from decisions made or actions taken based on this document.

Executive Summary

ES.1 Introduction

Halton Region has undertaken the North Halton Coordinated Municipal Class Environmental Assessment (MCEA) Study in accordance with Schedule 'C' projects of the MCEA (2024), which is an approved process under the Ontario Environmental Assessment Act. This MCEA Study considered a range of options for corridor improvements on:

- James Snow Parkway (Regional Road 4) from Britannia Road (Regional Road 6) to just south of Highway 401;
- Regional Road 25 from 5 Side Road to 10 Side Road; and
- Steeles Avenue (Regional Road 8) from Regional Road 25 to Trafalgar Road (Regional Road 3).

Separate Environmental Study Reports (ESR) will be prepared for each of the three corridors.

This Study has completed Phases 1 through 4 of the MCEA process for the Regional Road 25 corridor as documented in this ESR.

To determine the preferred improvements, a wide range of considerations were assessed for Regional Road 25 from 5 Side Road to 10 Side Road, including cross-sectional requirements, active transportation (AT), intersection improvements, overall traffic operations, and the impacts of such improvements on the social, cultural, and natural environments.

This ESR summarizes the study process, consultation approach and decision-making rationale for improvements to Regional Road 25 within the study limits.

ES.2 Planning and Policy Context

A number of Provincial, Regional and Municipal planning documents were reviewed in the context of Regional Road 25 including:

- Halton Region Official Plan (ROP) (Office Consolidation 2024)*,
- Transportation Master Plan (TMP) to 2031 – The Road to Change (2011), recently completed
- Active Transportation Master Plan (ATMP) (2015),
- Halton Integrated Master Plan (IMP) for Water, Wastewater and Transportation Infrastructure to 2051 (2026),
- Town of Halton Hills Official Plan (OP) (2020),

- Town of Halton Hills Transportation Master Plan (2011), and
- Town of Halton Hills Active Transportation Master Plan (2020).

*As of July 1, 2024, the Halton Region Official Plan is no longer a Regional Plan. It is now a Local Plan of the four Local Municipalities in Halton. The Planning Act identifies the Region as an “upper-tier Municipality without planning responsibilities”. The OP remains for each of the Local Municipalities in Halton until it is revoked or amended by the respective Local Municipality. Additional details are provided in **Section 2** of the ESR.

The 2011 TMP recommended the Regional Road 25 study corridor be widened from two to four lanes from 5 Side Road to 10 Side Road and include AT within a 42 m OP ROW.

ES.3 Consultation and Engagement

Section 3 documents the consultation and engagement completed as part of the MCEA Study. A variety of stakeholders were engaged through the study, including individual agencies, utilities, residents and the general public, as well as, First Nations and Indigenous Communities. These stakeholders were contacted throughout the study and encouraged to provide input. Communication with agencies, stakeholders, and the public took place through a variety of means including:

- Letters,
- Emails,
- Phone calls,
- Notices,
- Newspaper advertisements (for Notice of Study Commencement),
- Online advertisements (for Public Information Centres (PICs)),
- Halton Region project website (visit the North Halton Coordinated Municipal Class
- Environmental Assessment Study webpage at halton.ca),
- Meetings, and
- PICs

Notices were mailed to the identified stakeholders and property owners / residents adjacent to the study corridor. Key points of consultation are provided below.

Notices	Date
Notice of Commencement	April 20th, 2023
Notice of Public Information Centre (PIC) #1	November 23 rd , to December 21 st , 2023
Notice of Public Information Centre #2	December 9 th , 2024 to January 10 th , 2025
Notice of Completion	September 16, 2026

All public notifications, communication materials used, detailed comments and project team responses are provided in **Appendix A**.

Halton Region engaged with several technical agencies, including federal departments, provincial ministries, local municipalities, utilities and school boards for information, comments and input for the study. The list is provided in **Section 3.2**. Key agency feedback received, and meeting minutes are summarized in **Appendix B**.

The Region engaged with First Nations and Indigenous Communities that may have an interest in or may potentially be affected by the project. The list of First Nations and Indigenous Communities identified for engagement for this MCEA study are:

- Mississaugas of the Credit First Nation
- Six Nations of the Grand River
 - Six Nations of the Grand River Elected Council
 - Haudenosaunee Confederacy Chiefs Council
 - Haudenosaunee Development Institute
- Métis Nation of Ontario
- Wendat Nation (added to the contact list on November 22nd, 2023).

A summary of correspondence with First Nations and Indigenous Communities is provided in **Section 3.4** and **Appendix C**.

ES.4 Existing and Future Conditions

Section 4 documents the existing conditions of Regional Road 25 to identify potential constraints along the study corridor. Existing conditions include natural, socio-economic, cultural, archaeological, drainage, traffic, source water protection, fluvial geomorphology, hydrogeological, geotechnical, noise and utilities. An overview of the existing conditions includes:

- The study corridor is located predominantly in a rural area and has a mix of agricultural protected countryside and urban land use;
- There are three known built heritage resources (BHRs) and an additional two potential cultural heritage landscapes (CHLs) were identified during the background information review and fieldwork;
- Background research determined there are 11 previously registered archaeological sites located within one km of the study area and that part of the study area has been previously assessed;

- The study area contains multiple significant woodlands and wetlands. A portion of the natural features located on the east side of Regional Road 25 comprise part of the Greenbelt Natural Heritage System (NHS). A single tree was identified, which may provide suitable roosting habitat for Species at Risk (SAR) bats. One fish habitat was identified at the Middle Sixteen Mile Creek;
- There is one watercourse crossing, Middle Sixteen Mile Creek that is regulated by Conservation Halton. The culvert is located north Chudleigh's Entertainment Farm access;
- There is no source water protection area of importance to note within the vicinity of the study corridor; and
- The Regional Road 25 study corridor has overhead hydro on both sides of the corridor serviced by Halton Hills Hydro and underground Rogers cables. The Hydro One lines cross Regional Road 25 just north of 5 Side Road.

As the Region was completing the Regional Road 25 MCEA study, Halton Hills Town Council approved an Official Plan Amendment and Zoning By-law Amendment at the June 22, 2026 Town Council Meeting for lands north-west of Regional Road 25 and 5 Side Road, which designates a portion of the subject lands within the Town's urban boundary and permits various commercial uses. See Town of Halton Hills staff Report No. PD-2026-061, dated June 8, 2026.

Halton Region staff will continue to work with the Town and developer through the Implementation process including review of development submissions and technical studies (e.g. Transportation Impact Study).

Infrastructure requirements, such as roadway improvements, identified through the development process will be reviewed and approved by Halton Region staff, including design, timing, and coordination with the Region's MCEA study recommendations for Regional Road 25 from 5 Sideroad to 10 Sideroad, and any other planned projects.

ES.5 Problem and Opportunity

The problem and opportunity statement for the study includes:

Regional Road 25 is a Major Arterial north-south link providing connections within the Towns of Halton Hills and Milton. Without localized improvements, traffic operations are expected to experience increasing delays. The future ROW will consider the unique rural characteristics of Regional Road 25 and will accommodate all road users, including farm vehicles and AT.

ES.6 Identification and Evaluation of Alternative Solutions

The Alternative Solutions were identified and assessed.

To support future travel demand and a transportation system that is safe, continuous, connected, and coordinated for all users and all abilities, the recommended solution for Regional Road 25 is proposed to consist of a combination of the following alternative solutions:

- Enhance facilities for pedestrians, cyclists, mobility device users and other non-vehicular travel to create a safe and accessible network; and
- Improve overall operations including intersections, as well as localized improvements for example turn lanes.

Further details are provided in **Section 6**.

ES.7 Alternative Design Concepts

Based on the evaluation of the Alternative Design Concepts as outlined in **Section 7 of the ESR**, the Recommended Design Concept for Regional Road 25 is summarized below:

Segment 1 – Regional Road 25 from 5 Side Road to Chudleigh’s Entertainment Farm Access

- Continuous two-way centre left turn lane is recommended to improve traffic operations and reduce congestion from queuing, especially at Chudleigh’s Entertainment Farm, where the two-way centre left turn lane provides agricultural vehicles more space to turn and allows vehicles to safely pass agricultural vehicles and into their properties.
- For active transportation, buffered paved shoulders on both sides and a MUP on the west side was recommended. This accommodates on-road cyclist travel and provides a shared AT facility on one side of the boulevard while accommodating the passage of agricultural vehicles.
- To reduce the need for additional property / grading easements on residential properties along Segment 1 (constrained areas), a storm sewer will be added west of the MUP instead of a drainage ditch.

Segment 2 – Regional Road 25 from Chudleigh’s Entertainment Farm Access to 10 Side Road

- Maintain existing two lanes with localized improvements as it improves traffic operations and reduces congestion from queuing as needed, has less impact to properties and natural and cultural heritage resources and lower costs.

- For active transportation, buffered paved shoulders on both sides was recommended as it provides cyclists with direct access / connections on both sides of the road, has no property requirements, lower costs and accommodates passage of agricultural vehicles. A MUP was not recommended as there are fewer key destinations for pedestrians traveling through Segment 2.

ES.8 Recommended Design

Typical Cross-Section

The recommended preliminary design for Regional Road 25 between 5 Side Road and 10 Side Road was selected with consideration of the evaluation criteria. The recommended preliminary design addresses the problem/opportunity statement, while also minimizing impacts. **Section 8** provides details of the recommended preliminary design.

5 Side Road to Chudleigh's Entertainment Farm Access

Figures E-1 and E-2 illustrate the typical cross-section for Regional Road 25 between 5 Side Road and Chudleigh's Entertainment Farm Access, which includes the following key features:

- 42 m right-of-way (varies locally near intersections and at constrained locations);
- Two general purpose lanes (one in each direction) being 3.65 m wide;
- 4.0 m two-way centre left turn lane;
- Two 3.0 m buffered paved shoulders, one on each side;
- 3.0 m MUP on the west side of the road; and
- Storm sewer at constrained locations (at residential cluster), west of the MUP to reduce property requirements / grading impacts to residential properties.

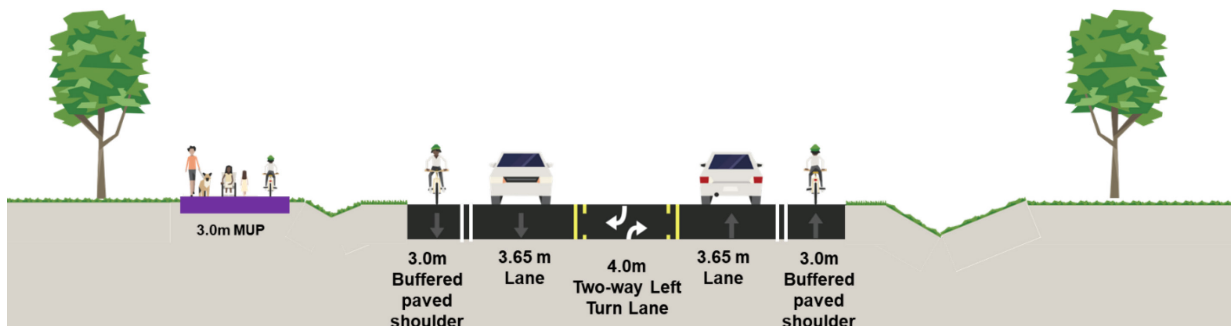


Figure E-1: Typical Cross-section for Segment 1 - Regional Road 25 from 5 Side Road to Chudleigh's Entertainment Farm Access

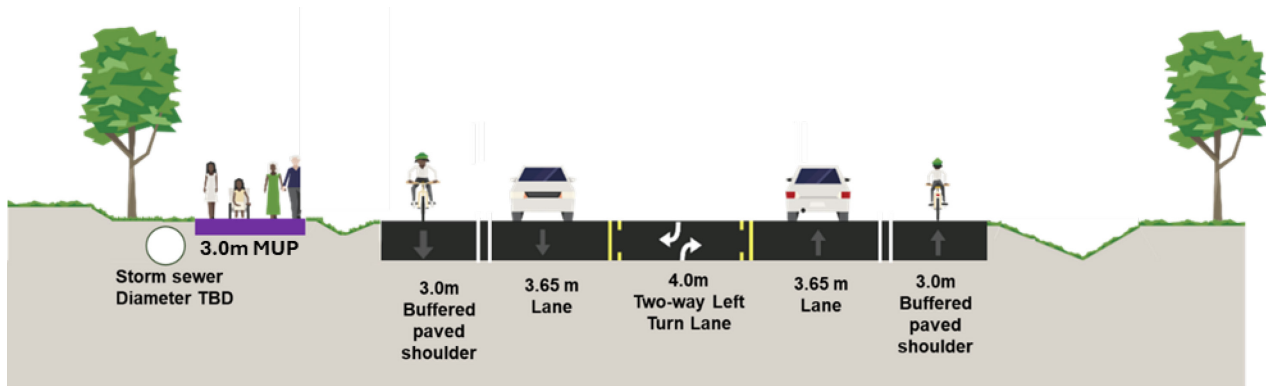


Figure E-1: Typical Cross-section for Segment 1 - Constrained Locations

Chudleigh's Entertainment Farm Access to 10 Side Road

Figure E-3 illustrates the typical cross-section for Regional Road 25 between Chudleigh's Entertainment Farm Access and 10 Side Road, which includes the following key features:

- 42 m right-of-way (varies locally near intersections and at constrained locations);
- Two general purpose lanes (one in each direction) being 3.65 m wide; and
- Two 3.0 m buffered paved shoulders, one on each side.

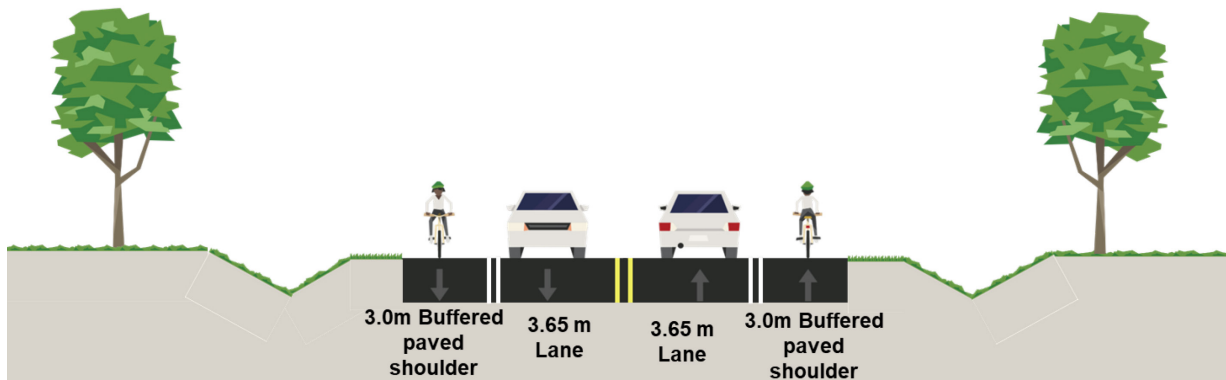


Figure E-2: Typical Cross-sections for Segment 2 - Chudleigh's Entertainment Farm to 10 Side Road

ES.9 Potential Environmental Impacts and Mitigation

Potential impacts and mitigation measures were identified to help avoid or minimize impacts to natural, socio-economic, and cultural environments. The list of potential impacts and mitigation measures are provided in **Section 9.4**.

ES.10 Detailed Design Commitments for Future Work

The ESR identifies specific items to be reviewed and confirmed during Detailed Design. The list of future work commitments is provided in **Section 10**.



Table of Contents

1. Introduction	1
1.1 Study Area	1
1.2 Environmental Assessment Process	2
1.2.1 Municipal Class Environmental Assessment Process	2
2. Planning and Policy Context	5
2.1 Provincial Planning Context	5
2.2 Regional Planning Context	8
2.3 Municipal Planning Context	13
3. Consultation and Engagement	16
3.1 Consultation Approach	16
3.1.1 Halton Region Website - Project Webpage	17
3.2 Agency Consultation	18
3.2.1 Conservation Halton	20
3.3 Stakeholder Consultation	20
3.4 First Nations and Indigenous Communities Engagement	21
3.5 Consultation Events	24
3.5.1 Notice of Commencement	24
3.5.2 Public Information Centre (PIC) #1	25
3.5.3 Public Information Centre (PIC) #2	26
3.5.4 Filing of the Environmental Study Report	26
4. Existing and Future Conditions	27
4.1 Existing Features	27
4.2 Local Context	27
4.2.1 Land Use Assessment	27
4.2.2 Existing Local Businesses	29
4.3 Transportation Conditions	30
4.3.1 Existing Transportation Conditions	30
4.3.2 Road Safety Review	34
4.3.3 Future Transportation Conditions – “Do Nothing”	35
4.3.4 Future Transportation Conditions – Proposed Improvements	36
4.3.5 Roundabout Feasibility Review	36
4.4 Existing Environmental Conditions	36



4.4.1	Socio-Economic Environment	36
4.4.2	Cultural Environment	38
4.4.3	Natural Environment	46
4.4.4	Technical Environment	52
5.	Problem and Opportunity	55
6.	Identification and Evaluation of Alternative Solutions	56
6.1	Identification of Alternative Solutions.....	56
6.2	Evaluation of Alternative Solutions	57
6.3	Preferred Alternative Solution	57
7.	Alternative Design Concepts	59
7.1	Development of Alternative Design Concepts	59
7.1.1	Corridor Segmentation.....	59
7.1.2	Cross-Section Elements	61
7.1.3	Localized Improvements	63
7.1.4	Active Transportation Alternative Designs.....	64
7.2	Evaluation Criteria.....	68
7.3	Evaluation of Alternative Design Concepts	68
7.3.1	Evaluation of Active Transportation Alternatives	69
7.4	Evaluation of Alternative Design Concepts Summary	74
8.	Recommended Design.....	75
8.1	Description of the Recommended Design	75
8.2	Design Criteria	75
8.3	Road Geometry	80
8.3.1	Horizontal Alignment.....	80
8.3.2	Vertical Alignment.....	80
8.4	Typical Cross-Section	80
8.5	Cycling and Pedestrian Facilities	82
8.6	Intersection Designs, Traffic Signals and Accesses	82
8.7	Illumination	83
8.8	Tree Inventory.....	83
8.9	Streetscaping and Landscaping	84
8.10	Property Requirements	87
8.11	Pavement Design	87
8.12	Drainage / Stormwater Management Plan	88

8.13	Noise	90
8.14	Air Quality	91
8.15	Utilities	92
8.16	Preliminary Cost Estimate	92
8.17	Constructability, Staging and Detour Considerations	93
8.18	Construction Monitoring and Maintenance Considerations	93
9.	Potential Environmental Impacts and Mitigation	95
9.1	Greenbelt Plan, 2017	95
9.2	Niagara Escarpment Plan, 2017	95
9.3	Climate Change	96
9.4	Anticipated Impacts and Mitigation Measures	97
10.	Detailed Design Commitments for Future Work	105

List of Figures

Figure E-1: Typical Cross-section for Segment 1 - Constrained Locations	viii
Figure E-2: Typical Cross-sections for Segment 2 - Chudleigh's Entertainment Farm to 10 Side Road	viii
Figure 1-1: Study Area	2
Figure 1-2: Municipal Class Environmental Assessment Process	4
Figure 4-1: Key Features and Constraints	27
Figure 4-2: Map of Halton Hills Land Use Adjacent to the Study Corridor (Source: Town of Halton Hills OP (2024), Schedule A3)	28
Figure 4-3: Location of Local Businesses	29
Figure 4-4: Existing Intersection Vehicle LOS (AM and PM)	33
Figure 4-5: Bird Tree Carving Located West Side of Regional Road 25, North of Chudleigh's Entertainment Farm	37
Figure 4-6: Map of Known BHRs and Potential CHLs	40
Figure 4-7: Map of Known BHRs and Potential CHLs	41
Figure 4-8: Map of Areas with Archaeological Potential	42
Figure 4-9: Map of Areas with Archaeological Potential	43
Figure 4-10: Map of Areas with Archaeological Potential	44
Figure 4-11: Map of Areas with Archaeological Potential	45
Figure 4-12: Map of Natural Environment Features	48
Figure 4-13: Map of Natural Environment Features	49
Figure 4-14: Map of Natural Environment Features	50
Figure 4-15: Map of Natural Environment Features	51
Figure 5-1: Regional Road 25 Queuing	55
Figure 7-1: Existing ROW along Regional Road 25 from 5 Side Road to 10 Side Road	60

Figure 7-2: Recommended Localized Improvements for Segment 1	63
Figure 7-3: Recommended Localized Improvements for Segment 2	64
Figure 7-4: Alternative A – Buffered Paved Shoulders on Both Sides	65
Figure 7-5: Alternative B - Buffered paved shoulders on both sides, MUP on west side.....	65
Figure 7-6: Alternative C - Buffered paved shoulder and MUP on both sides	65
Figure 7-7: Alternative D – MUP on the west and buffered paved shoulder on the east, semi-urban	66
Figure 7-8: Alternative A – Buffered paved shoulders on both sides	66
Figure 7-9: Alternative B - Buffered paved shoulders on both sides, MUP on west side.....	67
Figure 7-10: Alternative C - Buffered paved shoulder and MUP on both sides	67
Figure 7-11: Alternative D – MUP on the west (semi urban) and buffered paved shoulder on the east.....	67
Figure 8-1: Typical Cross-section for Segment 1 - Regional Road 25 from 5 Side Road to Chudleigh's Entertainment Farm Access.....	81
Figure 8-2: Typical Cross-section for Segment 1 - Constrained Locations	81
Figure 8-3: Typical Cross-sections for Segment 2 - Chudleigh's Entertainment Farm to 10 Side Road	81
Figure 8-4: Regional Road 25, South of Chudleigh's Entertainment Farm Access (Facing North)	85
Figure 8-5: Regional Road 25, South of 10 Side Road (Facing North)	86

List of Tables

Table 2-1: Provincial Planning Context	5
Table 2-2: Regional Planning Context.....	8
Table 2-3: Municipal Planning Context.....	13
Table 3-1: First Nations and Indigenous Communities Engagement	22
Table 3-2: Notice of Commencement Newspaper Advertisements.....	24
Table 4-1: Intersections and Driveways on Regional Road 25 (5 Side Road to 10 Side Road) .	31
Table 4-2: LOS Definitions	31
Table 4-3: Design Peak Flow for Traverse Crossings.....	53
Table 6-1: Evaluation of Alternative Solutions	58
Table 7-1: Key Design Parameters	62
Table 7-2: Segment 1 Regional Road 25 from 5 Side Road to Chudleigh's Entertainment Farm Access	70
Table 7-3: Segment 2 Regional Road 25 from Chudleigh's Entertainment Farm Access to 10 Side Road	72
Table 8-1 : Preliminary Design Criteria - Road Design Parameters	76
Table 8-2: Design Criteria - Intersections Design: Turning Lane Design Parameters	78
Table 8-3: Design Criteria – Other Cross-section and Active Transportation Elements	79
Table 9-1: Summary of Potential Environmental Impacts, Mitigation Measures and Commitments to Future Work	98



List of Appendices (Available Upon Request)

Appendix A – Public Consultation

Appendix B – Agency Consultation

Appendix C – First Nations and Indigenous Communities Engagement

Appendix D – Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment

Appendix E – Stage 1 Archaeological Assessment Report

Appendix F – Natural Environment Report

Appendix G – Drainage and Stormwater Management Report

Appendix H – Fluvial Geomorphology Assessment

Appendix I – Hydrogeological Report

Appendix J – Geotechnical Report

Appendix K – Noise Impact Assessment Report

Appendix L – Preliminary Design Drawings and Profiles

Appendix M – Tree Inventory Report

Appendix N – Air Quality Assessment

List of Acronyms / Terms / Abbreviations

AA – Archaeological Assessment
AODA – Accessibility for Ontarians with Disabilities Act
AT – Active Transportation
ATMP – Active Transportation Master Plan
BHR – Built Heritage Resource
CAAQS – Canadian Ambient Air Quality Standards
CHIS – Cultural Heritage Impact Statement
CHL – Cultural Heritage Landscape
CO – Carbon Monoxide
CPKC – Canadian Pacific Kansas City
DFO – Fisheries and Oceans Canada
DMTR – Defining Major Transit Requirements
EA – Environmental Assessment
EAA – Environmental Assessment Act of Ontario
EASR – Environmental Activity and Sector Registry
ECA – Environmental Compliance Approval
ELC – Ecological Land Classification
EPA – Environmental Protection Act
ESC – Erosion and Sediment Control
ESR – Environmental Study Report
GHG – Greenhouse Gas
GGH – Greater Golden Horseshoe
GTHA – Greater Toronto and Hamilton Area
HTA – Highway Traffic Act
IAA – Impact Assessment Act
IMP – Integrated Master Plan
IO – Infrastructure Ontario
LID – Low Impact Development
LOS – Level(s) of Service
MCEA – Municipal Class Environmental Assessment
MCFN – Mississaugas of the Credit First Nation
MCM – Ministry of Citizenship and Multiculturalism



MECP – Ministry of Environment, Conservation and Parks
MEA – Municipal Engineers Association
MMLOS – Multi-Modal Level of Service
MMS – Mobility Management Strategy
MNR – Ministry of Natural Resources
MTO – Ministry of Transportation Ontario
MUP – Multi-use Path
MUT – Multi-Use Trail
NEC – Niagara Escarpment Commission
NEP – Niagara Escarpment Plan
NHS – Natural Heritage System
NO_x – Nitrogen Oxides
NSAs – Noise Sensitive Receptors
OLA – Outdoor Living Area
OMNR – Ontario Ministry of Natural Resources
ORMCP – Oak Ridges Moraine Conservation Plan
OP – Official Plan
OPP – Ontario Provincial Police
OPSS – Ontario Provincial Standard Specification
OTC – Ontario Traffic Council
OTM – Ontario Traffic Manual
OWRA – Ontario Water Resources Act
PIC – Public Information Centre
PPS – Provincial Policy Statement
PTTW – Permit to Take Water
PWQO – Provincial Water Quality Objectives
RER – Regional Express Rail
RfR – Request for Review
ROP – Regional Official Plan
ROW – Right-of-Way
RPP – Restoration Planting Plan
RTP – Regional Transportation Plan
SAR – Species at Risk
SCA – Species Conservation Act



SCC – Species of Conservation Concern

SPA – Special Policy Areas

SWH – Significant Wildlife Habitat

TAC – Technical Advisory Committee

TDM – Travel Demand Management

TMP – Transportation Master Plan

TIR – Tree Inventory Report

TTS – Transportation Tomorrow Survey

VOC – Volatile Organic Compounds

1. Introduction

Halton Region has undertaken the North Halton Coordinated Municipal Class Environmental Assessment (MCEA) Study in accordance with Schedule 'C' projects of the MCEA (2024), which is an approved process under the Ontario Environmental Assessment Act. This MCEA Study considered a range of options for corridor improvements on:

- James Snow Parkway (Regional Road 4) from Britannia Road (Regional Road 6) to just south of Highway 401;
- Regional Road 25 from 5 Side Road to 10 Side Road; and
- Steeles Avenue (Regional Road 8) from Regional Road 25 to Trafalgar Road (Regional Road 3).

A separate Environmental Study Report (ESR) has been prepared for each of the three corridors.

This ESR documents Phases 1 through 4 of the MCEA process for the Regional Road 25 corridor.

To determine the preferred improvements, a wide range of considerations were assessed for Regional Road 25 from 5 Side Road to 10 Side Road, including cross-sectional requirements, active transportation (AT), intersection improvements, overall traffic operations, and the impacts of such improvements on the social, cultural, and natural environments.

This ESR summarizes the study process, consultation approach and decision-making rationale for improvements to Regional Road 25 within the study limits.

1.1 Study Area

The North Halton Coordinated MCEA Study includes Regional Road 25 from 5 Side Road to 10 Side Road corridor, which is a 3 km north-south rural road located in the Town of Halton Hills and is shown in **Figure 1-1**. The Transportation Master Plan (TMP) identified a right-of-way (ROW) of 42 m and the existing ROW ranges between 30 m to 36 m. The existing ROW includes:

- Two lanes (one in each direction); and
- Gravel shoulders.

The study corridor is predominantly adjacent to residential and rural lands and its key features and landmarks include Chudleigh’s Entertainment Farm, Glencairn Golf Club, St. Mathew’s Mar Thoma Church, various heritage sites and watercourse crossings of the Middle Sixteen Mile Creek.

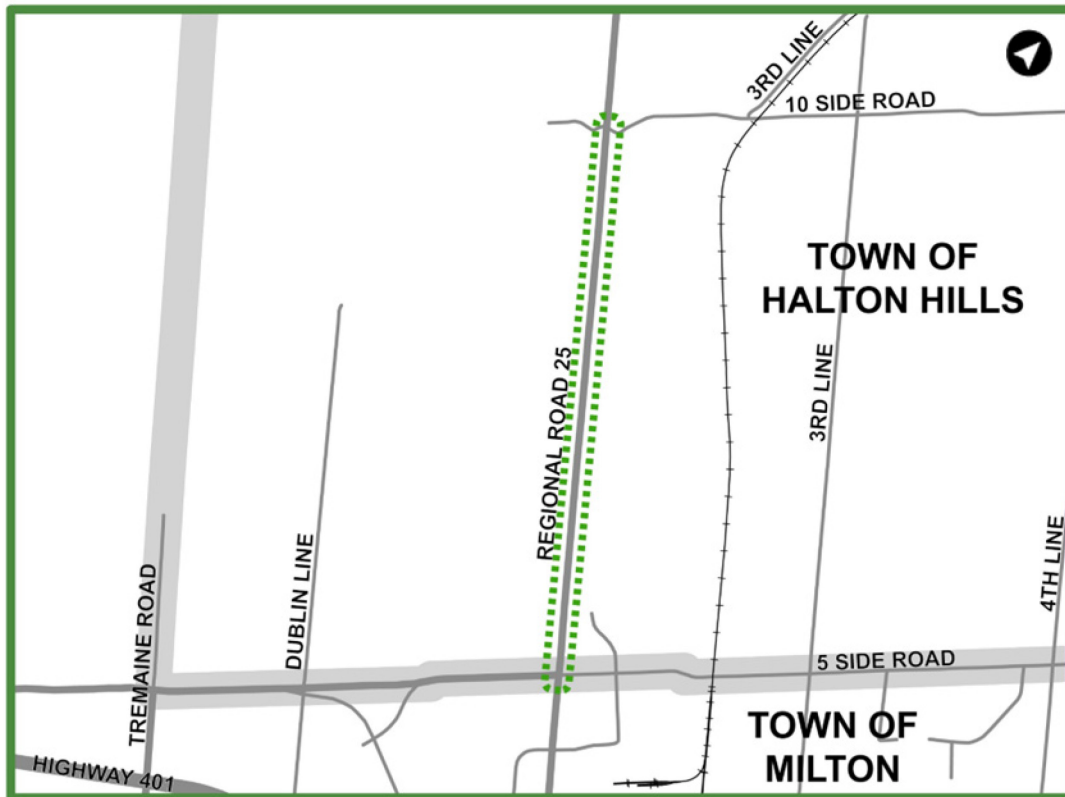


Figure 1-1: Study Area

1.2 Environmental Assessment Process

An overview of the *Environmental Assessment Act of Ontario* (EAA), the MCEA process, and the *Canadian Impact Assessment Act, 2019* (IAA, 2019) is provided in this section as they relate to the North Halton Coordinated MCEA Study.

1.2.1 Municipal Class Environmental Assessment Process

The EAA provides for the protection, conservation, and management of the environment in Ontario. The EAA 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 Class Environmental Assessment (EA) process.

The MCEA (2024) process is an approved Class EA process that applies to municipal infrastructure projects including roads, water, wastewater, and transit. This process provides a comprehensive planning approach to consider alternative solutions and evaluate their impacts based on a set of criteria (e.g. transportation, environmental, social / cultural, engineering consideration) and determine mitigating measures to arrive at a preferred alternative for addressing the problem (or opportunity). The Class EA process involves a rigorous engagement process that includes various provincial and municipal agencies, First Nations and Indigenous Communities, emergency services, interest groups and the public.

The North Halton Coordinated MCEA Study was undertaken in accordance with the guidelines of the MEA MCEA (2024). Due to the type of project, anticipation for potential effects, and estimated capital costs, the North Halton Coordinated MCEA Study was undertaken as a Schedule 'C' project. A Schedule 'C' project involves either the construction of new facilities, or reconstruction and / or major modifications to existing facilities. Modifications to existing facilities could include road improvements, intersection improvements, and / or other operational improvements.

Figure 1-2 illustrates the sequence of activities within the approved Class EA process leading to project implementation. The phases for this study are described as follows:

- **Phase 1 (Problem and Opportunity)** – Identify the problem and opportunity;
- **Phase 2 (Alternative Solutions)** – Identify alternative solutions to address the problem or opportunity considering the existing environment, and establish the preferred solution taking into account public and review agency input;
- **Phase 3 (Alternative Design Concepts for Preferred Solution)** – Examine alternative methods of implementing the preferred solution, based on the existing environment, public and review agency input, anticipated environmental effects, and methods of minimizing negative effects and maximizing positive effects;
- **Phase 4 (ESR)** – Document in an ESR, a summary of the study background, problem statement, alternative solutions, alternative designs, and the public consultation process. Place the ESR on public record for a minimum 30 calendar days for review, and notify the public on the completion of the ESR and opportunity for Section 16 Order requests; and
- **Phase 5 (Implementation)** – Undertake detailed design and the preparation of contract/tender documents followed by construction, operation, and monitoring.

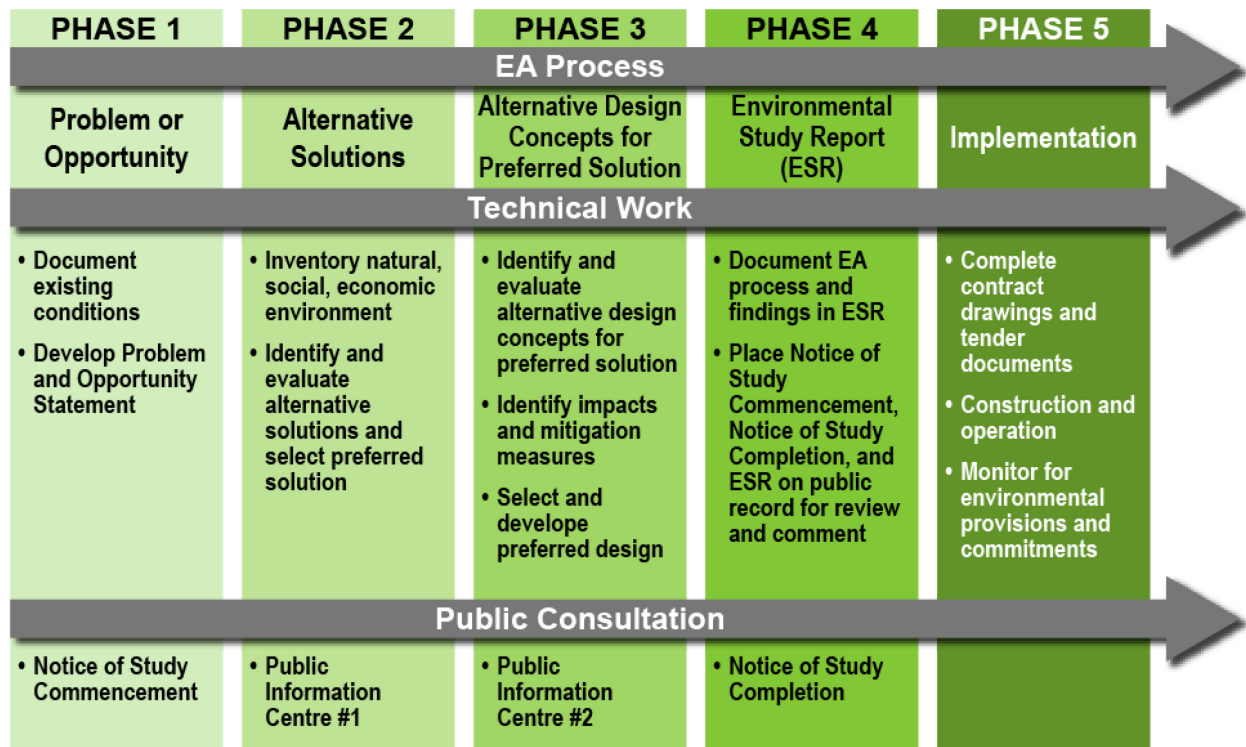


Figure 1-2: Municipal Class Environmental Assessment Process

1.2.1.1 SECTION 16 ORDERS

MCEA 2024 provides an opportunity to request a higher level of study for Schedule B and C projects through a Section 16 order request to the Minister of the Environment, Conservation and Parks (MECP) on the grounds that the order may prevent, mitigate or remedy adverse impacts on the existing Aboriginal and treaty rights of the Aboriginal peoples of Canada as recognized and affirmed in section 35 of the Constitution Act, 1982. The opportunity for a Section 16 Order will be outlined in the Notice of Completion.

1.2.1.2 CANADIAN IMPACT ASSESSMENT ACT (2019)

The federal EA study may apply to projects that are subject to the Ontario EAA. The IAA is administered and enforced by the Impact Assessment Agency of Canada and applies to projects that are designated by the Physical Activities Regulations (SOR/2019-285), or projects that have been specifically designated by the Minister of Environment and Climate Change Canada. Based on the review of projects designated by the Physical Activities Regulations, the IAA does not apply to this MCEA for the North Halton Coordinated MCEA Study.

2. Planning and Policy Context

A summary of the provincial, regional, and municipal planning and policy context as they relate to the North Halton Coordinated MCEA Study is summarized in this section.

2.1 Provincial Planning Context

Provincial planning policies were reviewed to identify their relevance to the North Halton Coordinated MCEA Study. Provincial plans are identified and summarized in **Table 2-1**.

Table 2-1: Provincial Planning Context

Provincial Planning Document	Description/Relevance
Provincial Planning Statement (2024)	<u>Description:</u> Provides direction on land use planning and development as well as the transportation system. <u>Directions:</u> The relevant land use, transportation and natural heritage policies include: 3.2 Transportation Systems: 1. Transportation systems should be provided which are safe, energy efficient, facilitate the movement of people and goods, are appropriate to address projected needs, and support the use of zero- and low- emission vehicles. 2. Efficient use should be made of existing and planned infrastructure, including using transportation demand management strategies, where feasible. 3. As part of a multimodal transportation system, connectivity within and among transportation. 4. Systems and modes should be planned for, maintained and, where possible, improved, including connections which cross jurisdictional boundaries. 4.1 Natural Heritage: 1. Natural features and areas shall be protected for the long term. 2. The diversity and connectivity of natural features in an area, and the long-term ecological function and

Provincial Planning Document	Description/Relevance
	biodiversity of Natural Heritage System (NHS), should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features.
Ontario Traffic Manual (OTM) Book 18: Cycling Facilities (2021)	<u>Description:</u> The purpose of the Ontario Traffic Manual (OTM) is to provide information and guidance for transportation practitioners and to promote uniformity of treatment in the design, application and operation of traffic control devices and systems across Ontario. The objective is safe driving behaviour, achieved by a predictable roadway environment through the consistent, appropriate application of traffic control devices. Further purposes of the OTM are to provide a set of guidelines consistent with the intent of the Highway Traffic Act and to provide a basis for road authorities to generate or update their own guidelines and standards. <u>Directions:</u> OTM Book 18 outlines specifics on designing cycling facilities for different users, planning an overarching AT plan as well as implementing the plan, designing different biking facility designs and how to select the right design, intersections, crossings and other facility features and maintenance strategies. The objective of OTM Book 18 is to achieve safe driving behaviour through the design of predictable roadway environments which value the consistent application of guidelines and standards. OTM Book 18 (2021) is considered to be the most up-to-date version and is the most consistent with the intent of the Highway Traffic Act (HTA) with respect to municipal roads and infrastructure. This book should be used to update transportation practitioners' guidelines and standards.

Provincial Planning Document	Description/Relevance
Ontario Traffic Manual (OTM) Book 15: Pedestrian Crossing Treatments (2016)	<u>Description:</u> The OTM Book -15 provides practical guidance on the planning, design and operation of pedestrian roadway crossings treatments in Ontario. <u>Directions:</u> The ministry updated OTM Book 15 to provide guidelines for Justification, Treatment System Selection and Treatment System Design for the new PXOs. OTM Book 15 (2016) is considered to be the most up-to-date version and is the most consistent with the intent of the Highway Traffic Act (HTA) with respect to municipal roads and infrastructure. This book should be used to update transportation practitioners' guidelines and standards.
Greenbelt Plan (2017)	<u>Description:</u> In concert with the Niagara Escarpment Plan (NEP) and Oak Ridges Moraine Conservation Plan (ORMCP), and further to the Provincial Planning Statement, the Greenbelt Plan (GBP) establishes land use planning framework for the Greater Golden Horseshoe (GGH) to support a clean and healthy environment, a thriving economy and social equity. This plan emphasizes permanent protection of natural heritage, water and ecological systems and human health by reducing loss and / or fragmentation of designated lands. The Regional Road 25 corridor is partially located within the Greenbelt. More specifically, a portion of the land is considered a NHS of the Protected Countryside. This means the study corridor is within core Protected Countryside and alongside an area where a high concentration of extremely sensitive or significant natural features are present. In this case, Sixteen Mile Creek is located along the study corridor. Improvements within these lands will adhere to the relevant policies of the GBP.

Provincial Planning Document	Description/Relevance
Niagara Escarpment Plan (2017)	<u>Description:</u> The Niagara Escarpment includes a variety of topographic features and land uses extending 725 km from Queenston on the Niagara River to the islands off of Tobermory on the Bruce Peninsula. The natural lands across the Niagara Escarpment provide drinking water, cleans the air, and supports recreation activities that benefit the public's health and overall quality of life, while also addressing and mitigating the effects of climate change. The NEP was established to protect the NEP area. A portion of the Regional Road 25 study area on the west side of the corridor falls within land designated as Escarpment Protection Area and Escarpment Rural Area Improvements within these lands will adhere to the relevant policies of the NEP.

2.2 Regional Planning Context

The Halton Region Official Plan (ROP) (Office consolidation May 2024), TMP to 2031 – The Road to Change (2011), Active Transportation Master Plan (ATMP) (2015) and the recently completed Integrated Master Plan for Water, Wastewater and Transportation Infrastructure to 2051 recognize the Region's strategic location within the GTHA and the GGH. These Regional documents as well as additional background studies and design guidelines were reviewed and are summarized in **Table 2-2**.

Table 2-2: Regional Planning Context

Regional Planning Document	Description/Relevance
Halton Region Official Plan (Office Consolidation May 2024)	<u>Description:</u> As of July 1, 2024, the Halton Region Official Plan is no longer a Regional Plan. It is now a Local Plan of the four Local Municipalities in Halton. The Planning Act identifies the Region as an "upper-tier Municipality without planning responsibilities". The OP remains for each of the Local Municipalities in Halton until it is revoked or amended by the respective Local Municipality.

Regional Planning Document	Description/Relevance
	<u>Relevance:</u> Regional Road 25 from 5 Side Road to 10 Side Road is located within Halton Region's prime agricultural area, Regional NHS, Greenbelt NHS, GBP Protected Countryside and NEP boundary. The study will help achieve some of the ROP objectives including: Prime Agricultural Area • Preserve agriculture industry and maintain lands for existing and future farm use; • Provide buffer to more ecologically sensitive areas of the Escarpment; • Preserve open space character and landscape; and • Removal of land from Prime Agricultural Areas are permitted under the condition that the improvements have no negative impact to adjacent agriculture operations and natural environment. Regional NHS • Increase the certainty that the biological diversity and ecological functions within Halton will be preserved and enhanced for future generations. Greenbelt NHS • Protect natural features within the GBP Area; and • Essential transportation facilities are permitted through an Environmental Impact Assessment in accordance with Section 139.3.7(4). Transportation • Provide safe, convenient, accessible, affordable and efficient transportation system in Halton; • Minimize the impact on the environment; and • Promote energy efficiency.

Regional Planning Document	Description/Relevance
Transportation Master Plan (2031) – The Road to Change (2011)	<u>Description:</u> The TMP addresses the Region’s mobility transportation needs to 2031. <u>Relevance:</u> The TMP recommended additional capacity along Regional Road 25 from 5 Side Road to 10 Sideroad within a 42 m right-of-way.
Active Transportation Master Plan (2015)	<u>Description:</u> The ATMP outlines the strategy, infrastructure, initiatives, and programs required to create an AT network that is safe, accessible, affordable and sustainable. This Plan is built from the TMP findings.
Integrated Master Plan 2026	<u>Description:</u> The Integrated Master Plan (IMP) 2026 was developed in accordance with MCEA Phase 1 and 2. The IMP is a long-term plan for water, wastewater and transportation to 2051. Through Staff Report PW-35-25 on November 12, 2025, Regional Council adopted the recommended servicing strategies to support growth in Halton Region to 2051 as set out in the Integrated Master Plan for Water, Wastewater and Transportation. The IMP will: The IMP will: • Guide the management and development of the Region's water, wastewater and transportation systems (including the active transportation network; • Maximize capacity, system flexibility and extend the life expectancy of Regional water, wastewater and transportation infrastructure; and • Outline the strategies for maintaining and improving these critical systems to ensure we meet the needs of the community now and in the future. The 2051 Transportation Network Strategy includes a transportation system that will be resilient and adaptable to support local growth priorities and increasing travel demand through: • Localized corridor widening and improvements; • Flexibility and adaptability to support the evolution of the Transit Priority Corridors; • Prioritizing walking and cycling facilities, including protected intersections;

Regional Planning Document	Description/Relevance
	- Supporting strategies and technologies (for example, real-time data collection to support adapting the strategies); - The IMP proposes a Transit Priority Corridor Network to accommodate future travel demand to 2051, building on the recommendations of the Mobility Management Strategy for Halton and Defining Major Transit Requirements in Halton Region; and - The IMP identifies proposed walking and cycling networks that builds on the Region's 2015 Active Transportation Master Plan. Multi-use paths and paved shoulders are proposed along Regional Road 25.
Active Transportation Master Plan (2015)	<u>Description:</u> The ATMP outlines the strategy, infrastructure, initiatives, and programs required to create an AT network that is safe, accessible, affordable and sustainable. This Plan is built from the TMP findings.
Halton Noise Abatement Guidelines (2014)	<u>Description:</u> The purpose of the Noise Abatement Guideline is to outline when noise abatement is required to reduce traffic noise in outdoor living area(s) (OLAs) based on the Region's established sound level objectives.
Tree Canopy Replacement Policy on Regionally Owned Lands (2008)	<u>Description:</u> The Tree Canopy Replacement Policy is in place to: - Protect areas with significant tree cover; - Promote conservation; - Recognize the importance of trees for health and welfare; - Maintain trees along major transportation corridors; - Replace trees when cut down; and - Develop new treescapes
Regional Road Landscaping Guidelines and Specifications (2018)	<u>Description:</u> The Guidelines and Specifications outline the recommended treatments for various cross-sections and features within the ROW. This includes treatments in medians, boulevards, bioswales, roundabouts and in rural areas, planting, stormwater management, utilities, and topsoil specifications.

Regional Planning Document	Description/Relevance
Mobility Management Strategy (MMS) for Halton (2016)	<u>Description:</u> In 2017, Regional Council endorsed Report No. PW-03-17/LPS13-17 re: “Mobility Management Strategy for Halton” outlining a strategy to guide the evolution of a Regionwide inter/intra transportation network over the next 25 years. The strategy focused on the principle of “Mobility-as-a-Service”, recognizing that mobility options are no longer clearly divided between automobile and transit, but rather focus on a menu of travel options including sustainable and active transportation modes. Through the Mobility Management Strategy, a Region-wide grid network of approximately 156 km of key Transit Priority Corridors and approximately 36 km of Mobility Links were identified. This network built on the strengths of the existing transportation networks in Halton (Provincial, Regional, Local) to support the Major Transit Station Areas, while enhancing connectivity amongst the local municipal and inter/intra-regional transit networks. At the time, these corridors built upon the Higher Order Transit Corridors identified in the Regional Official Plan and the Transportation Master Plan (2011) and were to serve as key links to existing and planned destinations within and beyond Halton Region. The Mobility Management Strategy recommended further study of the Transit Priority Corridor Network.
Defining Major Transit Requirements in Halton (2019)	<u>Description:</u> In May 2019, the Region completed the Defining Major Transit Requirements in Halton Study (DMTR). The study delineated the 2031 and 2041 Preliminary Transit Priority Network, in order to identify order-of-magnitude investment requirements for the Transit Priority Corridors that support inter/intra-regional connections and the potential growth of the Major Transit Station Areas. As part of the DMTR Study, Preliminary 2031 and 2041 Recommended Transit Priority Corridor Networks were identified. The networks comprised of mixed traffic corridors, priority bus corridors (with transit priority measure such as transit signal priority and queue jump lanes) and bus rapid transit corridor (with dedicated transit lanes).

2.3 Municipal Planning Context

The Town of Halton Hills planning policies were reviewed to identify their relevance to the North Halton Coordinated MCEA Study and are summarized in **Table 2-3**.

Table 2-3: Municipal Planning Context

Municipal Planning Document	Description/Relevance
Halton Hills Official Plan (OP) (Office Consolidation 2024)	<u>Description:</u> The Halton Hills OP (Office Consolidation from April, 2024) represents the Town’s vision for the community’s future and guides Municipal Council decisions. The Town of Halton Hills believes in achieving strong community objectives and improving general development policies and secondary plan implementation while maintaining urban, agricultural, environmental, and open space land use policies and proper environmental management policies. The OP sets out the Town’s policies for growth and development through to 2031 and applies to all lands within the Town. The plan emphasizes Halton Hills future urban trends in Georgetown and Acton, the management of the town’s vast watercourse system among other environmental features and cultural heritage, and the importance of agricultural land to the town. Halton Hills will achieve these objectives while ensuring growth is accommodated in a fashion that is orderly and manageable, yet sensitive to its natural environment, heritage and culture. <u>Relevance:</u> Regional Road 25 from 5 Side Road to 10 Side Road is designated as a Major Arterial Road with a ROW of 42 m. The land uses along the study corridor include agricultural, protected countryside and NEP area. The study must preserve and protect natural and agricultural features, activity and land use. Transportation facilities are permitted in the Agricultural Areas and within greenlands systems if

Municipal Planning Document	Description/Relevance
	consulted with the appropriate Conservation Authority, that there will be no negative impacts to natural features. There are two areas designated Special Policy Areas (SPA) along Regional Road 25 from 5 Side Road to 10 Side Road. Within these areas the study must follow regulations under SPA 2 and SPA 3 when developing on the subject lands. SPA 2 and 3 are located west of Regional Road 25 by 5 Side Road. As the Region was completing the Regional Road 25 MCEA study, Halton Hills Town Council approved an Official Plan Amendment and Zoning By-law Amendment at the June 22, 2026 Town Council Meeting for lands north-west of Regional Road 25 and 5 Side Road, which designates a portion of the subject lands within the Town's urban boundary and permits various commercial uses. See Town of Halton Hills staff Report No. PD-2026-061, dated June 8, 2026. Halton Region staff will continue to work with the Town and developer through the Implementation process including review of development submissions and technical studies (e.g. Transportation Impact Study). Infrastructure requirements, such as roadway improvements, identified through the development process will be reviewed and approved by Halton Region staff, including design, timing, and coordination with the Region's MCEA study recommendations for Regional Road 25 from 5 Sideroad to 10 Sideroad, and any other planned projects.

Municipal Planning Document	Description/Relevance
Town of Halton Hills Transportation Master Plan (2011)	<u>Description:</u> The Town of Halton Hills undertook a comprehensive TMP to develop an integrated transportation plan and associated strategies to meet the transportation challenges facing the Town to the year 2031. The TMP integrates municipal transportation planning with EA objectives and land use planning, ultimately providing for a transportation system that is sustainable, integrated and encourages a healthy and active lifestyle. The Town is currently undertaking an update to the TMP.
Halton Hills Active Transportation Master Plan (2020)	<u>Description:</u> The Town of Halton Hills ATMP (2020) will support and achieve a healthy community and high quality of life through both individual as well as community AT and recreation for people of all ages and abilities. The envisioned network improvements and existing environment will support active trips for all purposes including commuting, tourism, fun and fitness. The ATMP for Halton Hills will abide by specific goals to indicate successful implementation; the town will refine their cycling master plan, maintain their trails network, connect major and minor communities via integrated systems, reinforce the pre-existing regional network, and prioritize facilities at transportation corridors.

3. Consultation and Engagement

Meaningful public and stakeholder input is an important and fundamental component of the MCEA process. Transparent and inclusive engagement improves the success of a project, obtains stakeholder buy-in and support. The public, interested stakeholders, and First Nations and Indigenous Communities were engaged through the study process.

The consultation and engagement process undertaken for the MCEA Study is outlined herein and supporting materials for consultation and engagement with the public, agencies and First Nations and Indigenous Communities are provided in **Appendices A to C** respectively.

The intent of the consultation / engagement and holding Public Information Centres (PICs) for this project was to provide the public, stakeholders, external agencies, and First Nations and Indigenous Communities an opportunity to identify their concerns and contribute to the Recommended Design Concept. **Appendices A to C** also outline the key concerns and comments received and how they were addressed during the study.

3.1 Consultation Approach

The North Halton Coordinated MCEA study considered improvements along the following three corridors.

- James Snow Parkway (Regional Road 4) from Britannia Road (Regional Road 6) to just south of Highway 401;
- Regional Road 25 from 5 Side Road to 10 Side Road; and
- Steeles Avenue (Regional Road 8) from Regional Road 25 to Trafalgar Road (Regional Road 3).

The consultation and engagement approach for the study combined key consultation events and milestones, including public notices, PICs, agency meetings, letters, email correspondence, project website, etc. to discuss improvements and study updates for the three study corridors, unless otherwise stated.

A variety of stakeholder groups were identified for the study, including individual agencies, utilities, residents and the general public. These stakeholders were contacted throughout the study and encouraged to provide input. Communication with agencies, stakeholders, and the public took place through a variety of means including:

- Letters
- Emails
- Phone calls
- Notices
- Newspaper advertisements (for Notice of Study Commencement)
- Online advertisements (for PICs)
- Halton Region project website (visit the North Halton Coordinated Municipal Class Environmental Assessment Study webpage at halton.ca)
- Meetings
- PICs

The communication and consultation complied with the Accessibility for Ontarians with Disabilities Act, 2005 (AODA).

Residents and property owners situated along the study corridor were directly mailed the Notice of Commencement on April 20, 2023. Additional stakeholders and agencies who may have interest in the study were also provided notification of the study commencement.

Following the study commencement, individuals who expressed interest in the project and those who request further information, were added to the project mailing list (mail and / or e-mail). Those on the contact list were contacted at appropriate stages to inform them of study updates and events, as required.

The project website provided information to the members of the public who are interested in the project.

3.1.1 Halton Region Website - Project Webpage

The project webpage was created on the Halton Region website (Halton.ca) to coincide with the issuance of the Notice of Commencement. The project webpage presented the study location, purpose and scope. The project webpage was updated as needed throughout the study to provide information on the study notifications, ways to get involved through, online PIC events and contact information to allow those interested in the study an opportunity to contact the project team.

3.2 Agency Consultation

The following agencies, including provincial ministries, local municipalities, utilities, and schools boards were contacted for information, comments and input for the study:

- Provincial Agencies
 - Ministry of the Environment, Conservation, and Parks (MECP)
 - Ministry of Agriculture, Food and Rural Affairs
 - Ministry of Economic Development, Job Creation and Trade
 - Ministry of Municipal Affairs and Housing - Central Municipal Services Office
 - Ministry of Northern Development, Mines, Natural Resources and Forestry - Aurora District
 - Niagara Escarpment Commission (NEC)
 - Ministry of Transportation (MTO)
 - Ministry of Natural Resources (MNR)
 - Ministry of Citizenship and Multiculturalism (MCM)
 - Infrastructure Ontario (IO)
 - Metrolinx / GO Transit
 - Ontario Provincial Police (OPP)
- Regional and Other Agencies
 - Conservation Halton
 - Town of Halton Hills
 - Town of Milton
 - Halton Regional Police
 - EMS: Halton Region Paramedic Services
 - Halton Student Transportation Services
 - Halton Hills Fire Services
- Halton Region Internal Team
 - Infrastructure and Environmental Services
 - Engineering Construction and Transportation Management
 - Development Services
 - Realty Services

- Utilities
 - Hydro One Networks Inc.
 - Enbridge
 - Zazo Canada Inc.
 - Trans-Northern Pipelines Inc.
 - TC Energy Pipelines
 - Inter Pipeline
 - Bell Communications
 - Alectra Utilities
 - Atura Power
 - Cogeco Cable
 - Rogers Cable Communications Inc.
 - AT&T Canada
 - Suncor Energy
 - Halton Hills Hydro
 - Sun Canadian Pipeline
- School Boards
 - Halton District School Board
 - Halton Catholic District School Board
 - Conseil scolaire catholique MonAvenir
- Other
 - Canadian Pacific Kansas City (CPKC)

An External Technical Advisory Committee (TAC) was formed for the study comprising representatives from various agencies. An Internal TAC was also created and included internal staff at Halton Region. TAC meetings were held to discuss input, concerns, and technical details at various decision-making points throughout the study. Members of the committee were also invited to participate at PICs, and individual meetings with agencies were held throughout the duration of the project.

Key agency feedback received, and meeting minutes are summarized in **Appendix B**.

3.2.1 Conservation Halton

The Project team consulted with Conservation Halton throughout the study:

- Wetland Boundary Survey
 - Introductory Meeting - September 20th, 2023 - Discuss the wetland boundaries, subwatershed studies, and natural environment resources along the three study corridors.
 - Three site visits were conducted to determine the wetland boundaries on September 29th, October 2nd and 3rd, 2023.
- Meeting #1 – October 31st, 2023 – Introduce the study and discuss the existing natural environment resources.
- Meeting #2 – September 13th, 2024 - Introduce the design alternatives considered and present the preliminary recommendations.
- Meeting #3 – November 25th, 2024 – Recap the design alternatives and present the recommended design concept.
- Meeting #4 – July 10th, 2025 – Recap the preliminary recommended design concept and present the preliminary drainage recommendations.

Key agency feedback received, and meeting minutes are summarized in **Appendix B**.

3.3 Stakeholder Consultation

Stakeholders including adjacent landowners, residents, businesses, developers, and political representatives were identified and/or by requests submitted to the Project Team. A list of relevant project stakeholders include:

- Residents (adjacent to the study corridor)
- Property Owners (adjacent to the study corridor)
- Developers

Stakeholders were circulated on project notifications and were provided with opportunities to contact the Region's Project Manager to share comments and obtain feedback throughout the study. Key feedback received and project team responses are documented in **Appendix A**.

3.4 First Nations and Indigenous Communities Engagement

As part of the MCEA process, the Region engaged with First Nations and Indigenous Communities that may have an interest in or may potentially be affected by the project.

The Region identified the following First Nations and Indigenous Communities who may have an interest in the study area. In addition, MECP's response letter to the Notice of Commencement dated April 26th, 2023 confirmed the requirement to engage with the Mississaugas of the Credit First Nation (MCFN), the Six Nations of the Grand River (Six Nations of the Grand River Elected Council), and Haudenosaunee Confederacy Chiefs Council. As a result, the list of First Nations and Indigenous Communities identified for engagement for this MCEA study include:

- Mississaugas of the Credit First Nation
- Six Nations of the Grand River
 - Six Nations of the Grand River Elected Council
 - Haudenosaunee Confederacy Chiefs Council
 - Haudenosaunee Development Institute
- Métis Nation of Ontario
- Wendat Nation (added to the contact list on November 22nd, 2023)

The Notice of Commencement was circulated to the aforementioned list of First Nations and Indigenous Communities on April 20th, 2023 and both the Notice of PIC #1 and letters with the draft Stage 1 Archaeological Assessment (AA) Report were sent on November 22nd, 2023. The Region followed-up with the First Nations and Indigenous Communities via email following the Notice of PIC #1 for comments and interest in the work completed to-date. The Notice of PIC #2 and letters were sent on December 9th, 2024.

Table 3-1 provides a summary of the Project Team's efforts to engage with the, First Nations and Indigenous Communities listed above. Letters provided to First Nations and Indigenous Communities can be found in **Appendix C**.

Table 3-1: First Nations and Indigenous Communities Engagement

First Nations and Indigenous Communities Engagement	Date	Notification Details
Mississaugas of the Credit First Nation	April 20, 2023	Sent study commencement letter and notice via e-mail.
Six Nations of the Grand River Elected Council	April 20, 2023	Sent study commencement letter and notice via e-mail.
Haudenosaunee Confederacy Chiefs Council (Haudenosaunee Development Institute)	April 20, 2023	Sent study commencement letter and notice via e-mail.
Métis Nation of Ontario	April 20, 2023	Sent study commencement letter and notice via e-mail.
Mississaugas of the Credit First Nation	November 22, 2023	Sent notice of PIC1 and Stage 1 Archaeological Assessment Report for review and comment via e-mail
Six Nations of the Grand River Elected Council	November 22, 2023	Sent notice of PIC1 and Stage 1 Archaeological Assessment Report for review and comment via e-mail
Haudenosaunee Confederacy Chiefs Council (Haudenosaunee Development Institute)	November 22, 2023	Sent notice of PIC1 and Stage 1 Archaeological Assessment Report for review and comment via e-mail
Métis Nation of Ontario	November 22, 2023	Sent notice of PIC1 and Stage 1 Archaeological Assessment Report for review and comment via e-mail
Wendat Nation	November 22, 2023	Sent notice of PIC1 and Stage 1 Archaeological Assessment Report for review and comment via e-mail
Mississaugas of the Credit First Nation	December 9, 2024	Sent PIC #2 letter and notice via e-mail.

First Nations and Indigenous Communities Engagement	Date	Notification Details
Six Nations of the Grand River Elected Council	December 9, 2024	Sent PIC #2 letter and notice via e-mail
Haudenosaunee Confederacy Chiefs Council (Haudenosaunee Development Institute)	December 9, 2024	Sent PIC #2 letter and notice via e-mail
Métis Nation of Ontario	December 9, 2024	Sent PIC #2 letter and notice via e-mail
Wendat Nation	December 9, 2024	Sent PIC #2 letter and notice via e-mail
Mississaugas of the Credit First Nation	June 3, 2026	Sent Draft Natural Environment and Tree Inventory Report via e-mail.
Six Nations of the Grand River Elected Council	June 3, 2026	Sent Draft Natural Environment and Tree Inventory Report via e-mail.
Mississaugas of the Credit First Nation	September 16 th , 2026	Sent Notice of Completion via e-mail
Six Nations of the Grand River Elected Council	September 16 th , 2026	Sent Notice of Completion via e-mail
Haudenosaunee Confederacy Chiefs Council (Haudenosaunee Development Institute)	September 16 th , 2026	Sent Notice of Completion via e-mail
Métis Nation of Ontario	September 16 th , 2026	Sent Notice of Completion via e-mail
Wendat Nation	September 16 th , 2026	Sent Notice of Completion via e-mail

A summary of correspondence with First Nations and Indigenous Communities is provided in **Appendix C**.

On December 9, 2024 Six Nations of the Grand River inquired about potential impacts the total greenspace being lost, the number of trees anticipated to be cut down, and potential habitat losses. Halton Region outlined the key elements of the Natural Environment investigations and that mitigation measures will be developed and documented in the ESR. The Region provided the Draft Natural Environment and Draft Tree Inventory Report on June 5, 2026 for review and comment.

On January 16, 2024, Mississaugas of the Credit First Nation noted that they reviewed the Stage 1 Archaeological Reports and that they have no comments or concerns with the reports. The Region provided the Draft Natural Environment and Draft Tree Inventory Report on June 5, 2026 for review and comment. On July 23, 2026, the Mississaugas of the Credit First Nation noted that they will not be providing comments at this time.

3.5 Consultation Events

3.5.1 Notice of Commencement

The Notice of Commencement was mailed to the identified stakeholders and property owners / residents adjacent to the study corridor on April 20th, 2023 (total of 79 mailed notices). The notice was e-mailed to Councilors, Halton Staff, agencies, First Nations and Indigenous Communities on April 20th, 2023. The notice was placed on the Region's website on April 20th, 2023 and newspaper advertisements were published in the Milton Canadian Champion and the Independent and New Press to inform the public of the project. The dates for the newspaper advertisements are listed in **Table 3-2**.

Table 3-2: Notice of Commencement Newspaper Advertisements

Newspaper	Date
Milton Canadian Champion	April 20 th and 27 th 2023
The Independent and Free Press	April 20 th and 27 th , 2023

The Notice of Commencement and newspaper advertisements are provided in **Appendix A**.

3.5.2 Public Information Centre (PIC) #1

The Region held the first PIC online from November 23rd, 2023 to December 21st, 2023.

The purpose of PIC #1 was to:

- Introduce the study, study process, study background and supporting policy documents, problem and opportunity for improvements, recommended alternative solution(s);
- Present typical rural cross-section and draft evaluation framework to be developed and considered in the next stage of the study;
- Receive input regarding the project and recommendations; and
- Discuss next steps.

The Notice of PIC was placed on the project webpage (Halton – North Halton Coordinated Municipal Class Environmental Assessment Study) on Halton.ca and circulated to the local businesses and residents on November 23rd, 2023 (total of 164 mailed notices).

Metroland no longer prints local newspapers as of September 2023. To inform the public living in the Towns of Milton and Halton Hills on the upcoming PIC, virtual advertisements were published on Insidehalton.com and theIFP.ca between November 23 to December 7th, 2023.

The PIC was online and separate videos were posted on the Region's project webpage to allow participants to view specific parts of the project or corridors they were interested in. Each video included audio clips. Individuals could visit the webpage anytime during this period to view the material at their leisure, learn about and share their input on the study findings and recommendations. Participants were able to provide comments through the Region's webpage through an online survey. Participants were asked which corridor they are interested in, and the webpage auto-populated the specific corridor survey for participants to provide comments and recommendations.

The PIC#1 Summary Report documenting the communication materials used, detailed comments and project team responses is provided in **Appendix A**.

3.5.3 Public Information Centre (PIC) #2

The Region held the second PIC online from December 9th, 2024 to January 10th, 2025.

The format from PIC #1 was used for PIC#2. The purpose of PIC #2 was to:

- Provide an overview of study process, background, common themes or comments from PIC #1, design considerations, evaluation criteria and the preferred alternative solution(s) for each corridor;
- Present the road and AT alternatives, evaluations and recommendations, preliminary recommended cross-sections, design and renderings for each corridor;
- Receive input regarding the project and recommendations; and
- Discuss next steps.

The Notice of PIC #2 was placed on the project webpage (Halton – North Halton Coordinated Municipal Class Environmental Assessment) on Halton.ca and circulated to the First Nations and Indigenous Communities, agencies and residents via email on December 9th, 2024. Due to the Canada Post strike from November 15th, 2024 to December 17th, 2024, the notices were hand delivered to residents, tenants and local businesses adjacent to the study corridor on December 11th and 12th, 2024. Following the Canada Post strike, notices were mailed to property owners who do not reside along the study corridor on December 23rd, 2024.

To inform the public living in the Towns of Milton and Halton Hills on the upcoming PIC, online advertisements were published in theIFP.ca and Inside Halton between December 9th, 2024 to January 10th, 2025

The PIC#2 Summary Report documenting the communication materials used, detailed comments and project team responses is provided in **Appendix A**.

3.5.4 Filing of the Environmental Study Report

The ESR for the Regional Road 25 corridor documents the decision-making process during the study, The Notice of Completion of this MCEA Study notifies members of the public, agencies and First Nations and Indigenous Communities that the ESR is available for public review for a 30-day period. The ESR will be made available for public review from September 16th, 2026 to October 16th, 2026 on the project website (<https://www.halton.ca/forresidents/roads-construction/municipal-class-environmental-assessment-studies/northhalton-coordinated-mcea-study>).

4. Existing and Future Conditions

4.1 Existing Features

Key features along the Regional Road 25 study corridor from 5 Side Road to 10 Side Road are shown in **Figure 4-1** and include:

1. Paved shoulders along the corridor;
2. Chisholm Homestead (heritage property);
3. St. Mathew's Mar Thoma Church;
4. Chudleigh's Entertainment Farm;
5. Middle Sixteen Mile Creek Crossing and regionally significant woodlands;
6. Glencairn Golf Club; and
7. Towercliffe House (heritage property).

4.2 Local Context

4.2.1 Land Use Assessment

The Regional Road 25 study corridor is located predominantly in a rural area and has a mix of agricultural protected countryside and urban land use (see **Figure 4-2**). Regional Road 25 contains lands designated as Greenbelt lands and Niagara Escarpment lands, both of which fall under the Halton Hills OP Greenlands. Due to this, development along the study corridor must consider Sections B1.2.1 through to B1.2.8 within the Town of Halton Hills OP: Environmental and Open Space Land Use Policies. Within the vicinity of Regional Road 25, there are two areas designated as SPA outlined in red in **Figure 4-2**.

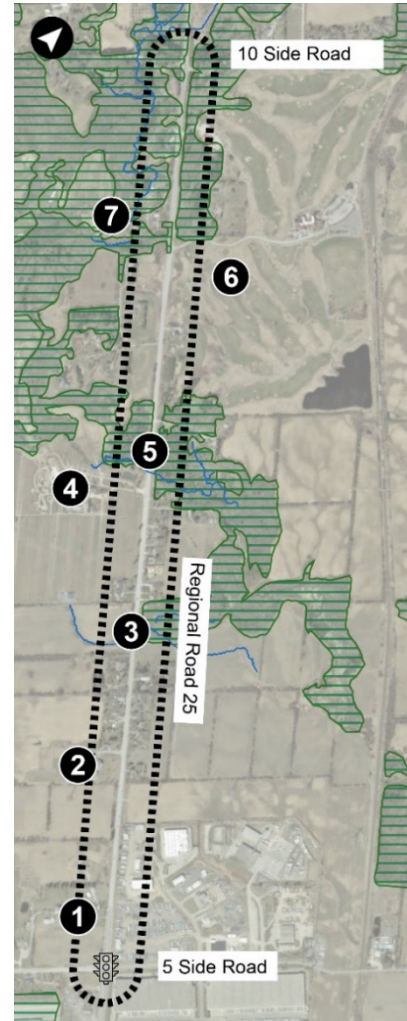


Figure 4-1: Key Features and Constraints

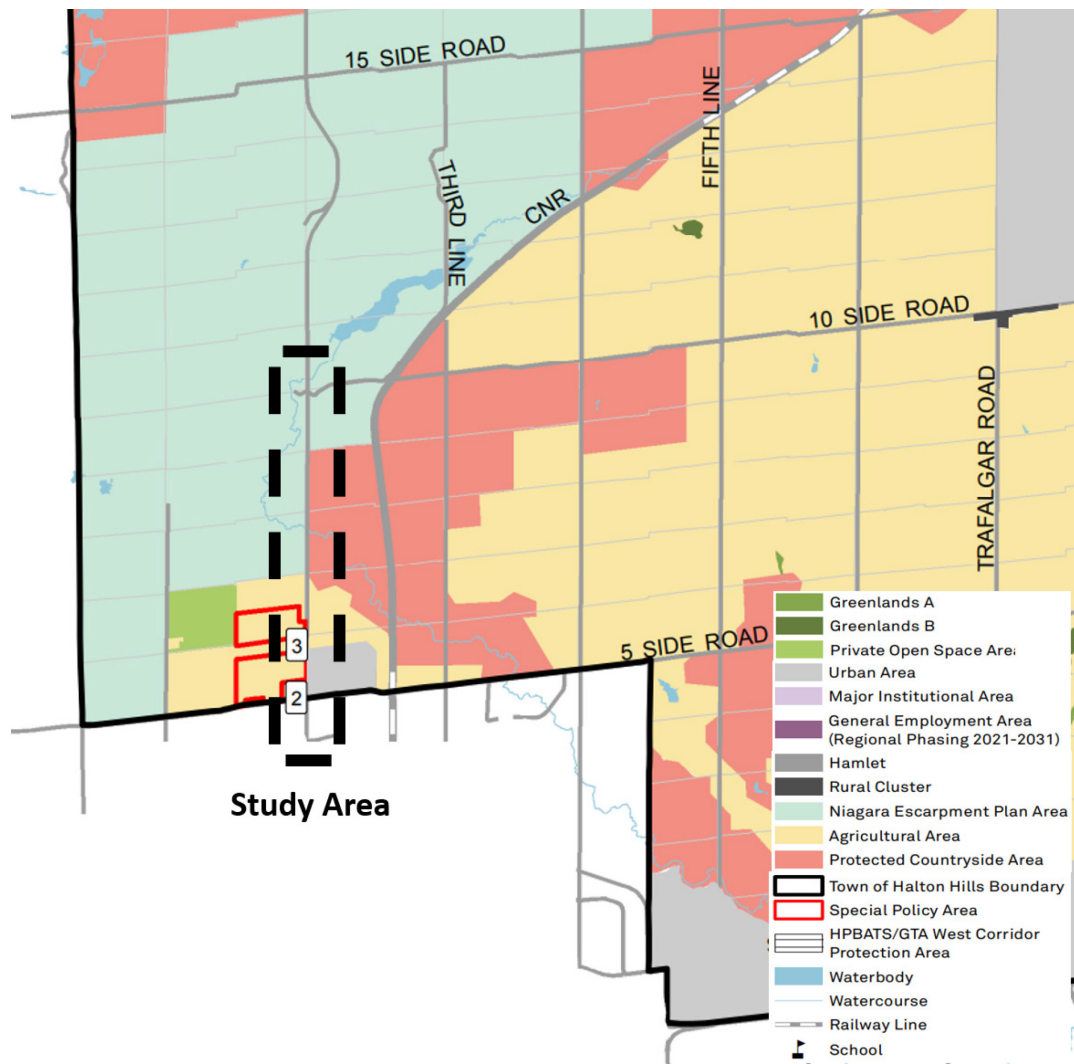


Figure 4-2: Map of Halton Hills Land Use Adjacent to the Study Corridor (Source: Town of Halton Hills OP (2024), Schedule A3)

As the Region was completing the Regional Road 25 MCEA study, Halton Hills Town Council approved an Official Plan Amendment and Zoning By-law Amendment at the June 22, 2026 Town Council Meeting for lands north-west of Regional Road 25 and 5 Side Road, which designates a portion of the subject lands within the Town's urban boundary and permits various commercial uses. See Town of Halton Hills staff Report No. PD-2026-061, dated June 8, 2026.

Halton Region staff will continue to work with the Town and developer through the Implementation process including review of development submissions and technical studies (e.g. Transportation Impact Study).

Infrastructure requirements, such as roadway improvements, identified through the development process will be reviewed and approved by Halton Region staff, including design, timing, and coordination with the Region's MCEA study recommendations for Regional Road 25 from 5 Sideroad to 10 Sideroad, and any other planned projects.

4.2.2 Existing Local Businesses

The locations of the local businesses abutting or having access from Regional Road 25 are shown in **Figure 4-3**. Chudleigh's Entertainment Farm offers public access for apple picking and community events. The area southeast of the intersection of Regional Road 25 and 10 Side Road is occupied by the Glencairn Golf Course. Lands adjacent to the Regional Road 25 and 5 Side Road intersection, south of the study corridor, are classified as rural employment and contain several businesses including Geo-Environmental Drilling Inc., Milton Yard, Amazon fulfillment centre, ARMAAN Freight lines, Kimberly Clark, Permacon Milton, Bob Rumball Canadian Centre of Excellence and the Range Golf Centre.

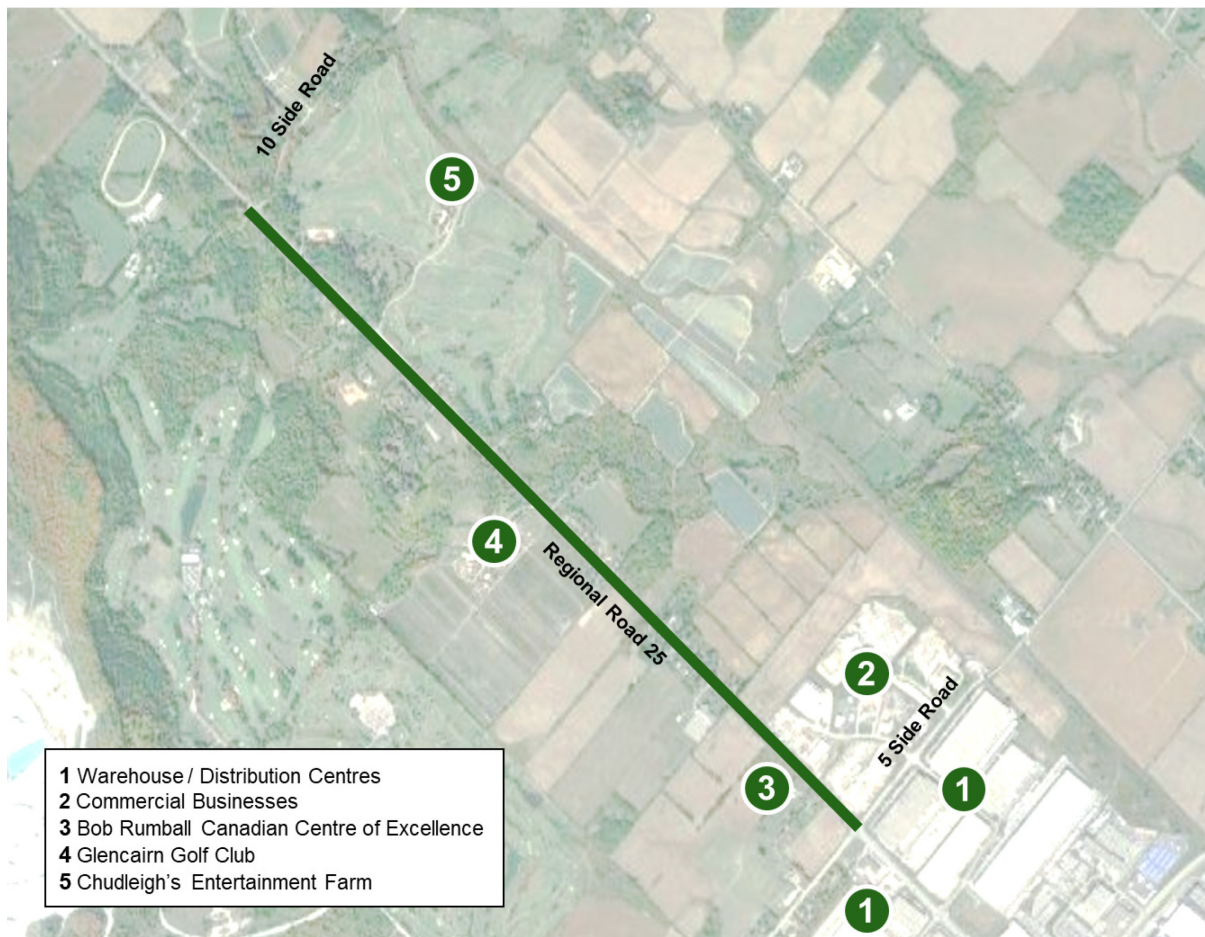


Figure 4-3: Location of Local Businesses

4.3 Transportation Conditions

The existing and future “do nothing” transportation conditions were assessed for the Regional Road 25 study corridor. In addition, a traffic safety review and roundabout feasibility review were completed along Regional Road 25.

4.3.1 Existing Transportation Conditions

4.3.1.1 ROAD NETWORK

Regional Road 25 is a two-way north-south Halton Region Road with a posted speed limit of 80 km/h from 5 Side Road to 10 Side Road. Regional Road 25 within the study limits has a two-lane cross section with paved shoulders on both sides along the majority of the corridor. As per the Town of Halton Hills Consolidated December 31, 2020 OP, 5 Side Road has a planned ROW of 30 m and 10 Side Road has a planned ROW of 26 m. The intersection with 5 Side Road has left turn lanes on all approaches and an auxiliary right turn lane on the northbound approach. Right turn on reds are prohibited on the eastbound approach at this intersection. The intersection with 10 Side Road has stop control on the east-west approaches, and auxiliary right turn lanes on the north-south approaches. Regional Road 25 has two unsignalized access roads (Chudleigh’s Entertainment Farm Access and Glencairn Golf Club Access), one unsignalized intersection (10 Side Road) and one signalized intersection (5 Side Road).

Farming equipment, like tractors, use Regional Road 25, as the lands in the vicinity of the corridor are largely agricultural. As per the National Agricultural Safety Database, tractors have historically been identified as moving 40 km/h or less and can have widths of over 4.6 m. This can cause issues between farming equipment and other vehicles on the road, given Regional Road 25 has a posted speed of 80 km/h and one lane per direction. The MTO’s Farm Guide requires that drivers of farming equipment follow standard rules when encountering other motorists by giving up half of the roadway and stopping to allow vehicles to pass when unable to turn out to the right off the roadway.

There are no truck restrictions on the Regional Road 25 study corridor. The eastbound direction of 5 Side Road to the east of Regional Road 25 has a posted load restriction with an axle weight limit of 5 tonnes and a 7 PM to 7 AM truck restriction is posted in the westbound direction at the intersection of 5 Side Road with Mansewood Court-Peddie Road.

The existing accesses along Regional Road 25 provide connections to residential, commercial, and industrial land uses. The number of access points is summarized in **Table 4-1**.

Table 4-1: Intersections and Driveways on Regional Road 25 (5 Side Road to 10 Side Road)

Distance	Intersecting Roads	Residential	Other Access	Total
3.0 km	2	42	4	48

4.3.1.2 EXISTING ACTIVE TRANSPORTATION NETWORK

The study area has no pedestrian or cycling facilities, with the exception of paved shoulder with inconsistent widths on both sides of Regional Road 25.

Providing dedicated and continuous facilities for pedestrians and cycling along Regional Road 25 would support active transportation.

4.3.1.3 EXISTING TRANSIT SERVICE

There are currently no transit routes within the study area. The industrial zone to the south of 5 Side Road is serviced by Milton Transit's OnDemand service which provides flexible shared-ride service that does not follow a fixed route or schedule. This service is booked via mobile app and connects passengers to and from available fixed route service at key transfer locations.

4.3.1.4 LEVEL OF SERVICE ANALYSIS

An assessment of existing conditions in the study corridor was undertaken based on a Level of Service (LOS), which is based on the scale shown in **Table 4-2**.

Table 4-2: LOS Definitions

Level of Service (LOS)	LOS Recommendations
A	Ideal
B	Acceptable
C	Acceptable
D	Somewhat undesirable
E	Undesirable
F	Unacceptable

To assess the existing traffic operations at the intersections in the study area, a transportation analysis was conducted using the software program Synchro Traffic Signal Coordination Software Version 11. The existing vehicle LOS at roadway intersections for both AM and PM peak hours are illustrated in **Figure 4-4**.

The following observations summarize the key findings from the existing Synchro operations:

- The intersections in the study area generally operate with good levels of service at the intersection and movement levels under existing conditions. All overall intersections operate with an LOS of “A” or “B” during the AM and PM peak hours.
- The EBL movement at Red Delicious Lane and the WBLTR movement at 10 Side Road operate with high delays (LOS of “E”) during the PM peak hour, but both movements are well below capacity. These intersections operate under two-way stop control, with uncontrolled opposing north-south through movements, which results in high delays while the vehicles wait for gaps to complete their turns.

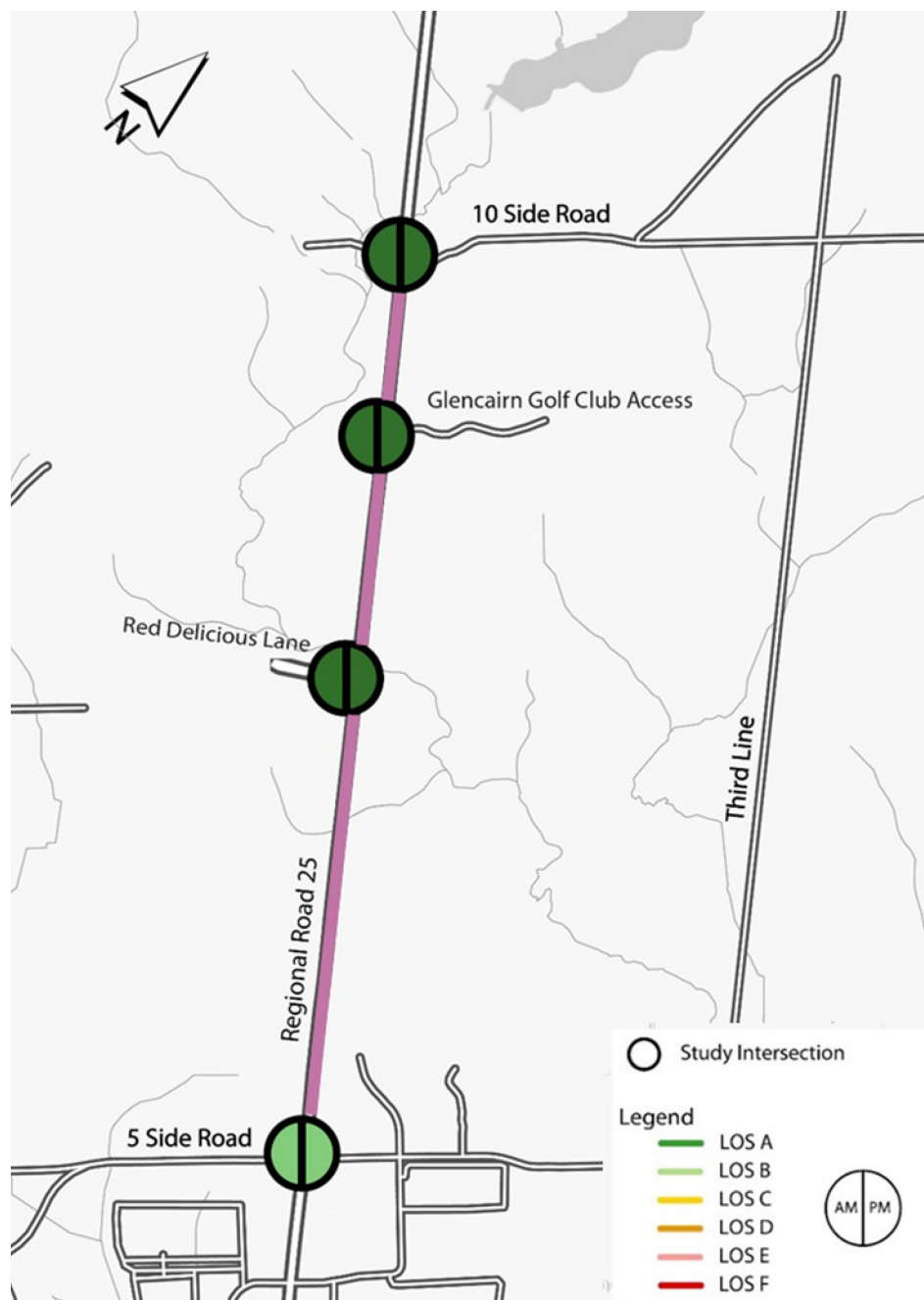


Figure 4-4: Existing Intersection Vehicle LOS (AM and PM)

4.3.2 Road Safety Review

A Road Safety Review was completed to assess the safety conditions of the intersections and mid-block road segments along Regional Road 25 and to recommend mitigation measures if safety concerns were identified. Five years of data from collision reports from 2017 to 2021 (inclusive) were reviewed. The goal of the assessment was to identify trends in collisions and potential opportunities for improvement.

A total of 61 collisions were recorded along Regional Road 25 study corridor from 2017 to 2021. No fatalities were recorded in the five-year period. The number of non-fatal injury collisions has generally declined over time, down to 0 non-fatal injury collisions in 2019 and 2020 compared to seven collisions in 2017. There was a slight rise in non-fatal injuries compared to 2019 and 2020 with three collisions in 2021, but the trend of reduced number of collisions is generally consistent across the five-year period. The number of property damage only collisions has remained consistent over the five years with nine incidents in 2018 and eight incidents in 2021, however there was only one incident in 2017. A slight decrease in incidents in 2020 is observed.

When assessing collision trends along Regional Road 25, varying traffic volumes and the degree of exposure at each intersection or segment should be considered. Collision rates, which account for average yearly collisions and peak hour volumes, were calculated at each intersection and segment to identify locations that may be experiencing a higher-than-normal propensity for collisions. Collision rates below 1.00 generally reflect a normal propensity for collisions that could be attributable to basic human error, however, values above 1.00 may be an indication that other factors are contributing to the higher collision rate and should be considered in further detail to identify potential causes. The collision rate is calculated by the average yearly collisions per million vehicles entering the intersection, which is estimated by assuming that the daily volume is five times higher than the AM and PM peak hour volumes combined.

The assessment identified that most of the collisions along Regional Road 25 appear to be a result of driver error, such as following vehicles too closely, not obeying traffic controls at intersections, failing to yield the ROW, or improperly changing lanes, passing, or turning. The intersection of Regional Road 25 and 5 Side Road experienced collision rates above 1.00 with majority of collisions identified as rear-ends or sideswipes, which may indicate that the collisions. Improving the flow of vehicles at these intersections may reduce the amount of rear-end collisions that occur. A future roundabout is planned at the Regional Road 25 and 5 Side Road intersection, which is part of a separate ongoing Capital project.

4.3.3 Future Transportation Conditions – “Do Nothing”

The 2031 Do Nothing scenario was assessed where no roadway improvements were assumed relative to the existing conditions for Regional Road 25 from 5 Side Road to 10 Side Road. The base future road network improvements that will be incorporated into the Future Do Nothing scenario include:

- Regional Road 25 widening from four to six lanes from Steeles Avenue to 5 Side Road, extending to the Town of Milton and connecting with the Town’s proposed active transportation facilities (i.e. bikeways, boulevard MUP, and sidewalks), as proposed in Halton Region’s ATMP (2015).
- The intersection of Regional Road 25 with 5 Side Road will be converted to a two-lane roundabout, with one through lane east-west; and

A 2031 Do Nothing scenario traffic analysis was completed for Regional Road 25. The key findings of the analysis are:

- The northbound direction of Regional Road 25 between 5 Side Road and 10 Side Road during the PM peak hour is forecasted to operate with a volume to capacity (v/c) ratio of 1.07, indicating that the road will reach capacity. The northbound direction of Regional Road 25 to the north of 10 Side Road is also projected to experience a high v/c ratio, with a v/c of 0.90 during the PM peak hour. It is noted that this link capacity analysis is undertaken at a high-level using planning-level link capacity assumptions, and the detailed intersection operations assessed using Synchro software indicate that the northbound through movements will operate within capacity.

The existing and future do-nothing scenarios arterial LOS was analyzed and compared along Regional Road 25 in both northbound and southbound directions. This was done to estimate the delay and travel time impacts along the study corridor with the existing configuration of Regional Road 25 between 5 Side Road and 10 Side Road.

The segments within the study area intersections are operating with low intersection delays and good north-south travel speeds along the corridor, resulting in LOS of “A”. In the 2031 Do Nothing scenario, operations improve slightly because of the planned roundabout installation at the intersection of 5 Side Road and Regional Road 25.

4.3.4 Future Transportation Conditions – Proposed Improvements

As the network generally exhibits acceptable conditions in the future, it is recommended to maintain one lane per direction along Regional Road 25 in addition to a centre left-turn lane from 5 Side Road to Chudleigh's Entertainment Farm access. This will allow full moves access to be maintained to existing driveways and will minimize disruption to through traffic flow.

4.3.5 Roundabout Feasibility Review

A Roundabout Feasibility Review was completed to determine whether signalized intersections would be viable for conversion to roundabout control types. A Roundabout Feasibility Review Memo was prepared and completed in accordance with Halton Region's Roundabout Guidelines.

The planned roundabout at the intersection of Regional Road 25 and 5 Side Road was identified in the Municipal Class Environmental Assessment (MCEA) Study for Regional Road 25 corridor from Steeles Avenue (Regional Road 8) to 5 Side Road completed in 2020. and is not a part of the study. Based on an assessment of the intersection of Regional Road 25 with 10 Side Road and is not recommended for conversion to a roundabout control type due to stopping sight distance, vertical curves, steep grades, and heavy directional flows along Regional Road 25 at the intersection.

4.4 Existing Environmental Conditions

4.4.1 Socio-Economic Environment

4.4.1.1 DEMOGRAPHICS

According to the 2021 Census, the population of Halton Region was over 596,600 in 2021 with Halton Hills making up 11% of the Region's population (over 132,900 people), increasing 2.9% from 2016 to 2021. In 2021, over 284,700 people were employed in Halton Region where the Town of Halton Hills made up 11% of the employment force (over 30,100 employees).

4.4.1.2 LAND USES

The study area is situated within a rural area and has a mix of residential, commercial, agricultural and protected land use. Along Regional Road 25, there are nine local businesses and institutions.

A bird tree wood carving (**Figure 4-5**) is located on the west side of Regional Road 25, north of Chudleigh's Entertainment Farm. The carving is located within the Regional Road 25 ROW.



Figure 4-5: Bird Tree Carving Located West Side of Regional Road 25, North of Chudleigh's Entertainment Farm

4.4.1.3 NOISE

A noise assessment was undertaken based on MECP Guidelines and the Halton Noise Abatement Guidelines (2014). Noise impacts from transportation projects are evaluated at noise sensitive areas (NSAs). The OLA is the part of an outdoor amenity area provided for the quiet enjoyment of the outdoor environment. The OLA is typically an area at ground level accommodating outdoor living activities. Under the MECP Guidelines, NSAs must have an OLA associated with them when assessing noise impacts.

For the implementation of capital road projects, future noise levels with and without the capital project improvement were assessed through the noise prediction model ORNAMENT from MECP. Where increases in noise levels are predicted greater than 5 dBA, the Region will investigate noise control measures within ROW where a minimum attenuation of 5 dBA can be achieved. Where the predicted noise level increase is 0-5 dBA, no mitigation is required.

When noise mitigation is not warranted on the basis of projected noise levels, an application may be made through a petition process under the Retrofit guideline if existing noise levels are greater than 60 dBA.

The Noise Assessment analysis was undertaken at 26 NSAs identified along the Regional Road 25 corridor to assess potential impacts at sensitive land uses within the study area.

Section 8.13 discusses the findings of the noise assessment based on the proposed improvements to Regional Road 25. The Noise Impact Assessment Report is provided in **Appendix K**.

4.4.1.4 SOURCE WATER PROTECTION

The Clean Water Act, 2006 helps communities protect their drinking water supplies through prevention – by developing collaborative, watershed-based source protection plans that are locally driven and based on science. The project is located in the Halton-Hamilton Source Protection Area, which contains policies to protect existing and future municipal drinking water sources, in accordance with the Clean Water Act.

There are highly vulnerable aquifers within the study area. Consideration will need to be given to significant recharge areas present in the area of 10 Side Road.

4.4.1.5 UTILITIES

The Regional Road 25 study corridor has overhead hydro on both side of the corridor serviced by Halton Hills Hydro and underground Rogers cables. The Hydro One lines cross Regional Road 25 just north of 5 Side Road.

4.4.2 Cultural Environment

4.4.2.1 CULTURAL HERITAGE LANDSCAPES AND BUILT HERITAGE RESOURCES

A Cultural Report: Existing Conditions and Preliminary Impact Assessment was conducted as a part of the MCEA Study. The full report is provided in **Appendix D**.

The results of background historical research and a review of secondary source material, including historical mapping, indicate a study area with a rural land use history dating back to the early nineteenth century. A review of federal, provincial, and municipal registers, inventories, and databases revealed that there are three known built heritage resources (BHRs) and an additional two potential cultural heritage landscapes (CHLs) were identified during the background information review and fieldwork. The locations of the BHRs and CHLs are in **Figure 4-6** and **Figure 4-7**. Further details on the BHRs and CHLs are provided in **Appendix D**.

Of the three identified BHRs, one is designated under Part IV of the *Ontario Heritage Act* and included in the Register of Canada's historic places and two are listed on the Halton Hills Register. The identified BHRs and CHLs are historically, architecturally, and contextually associated with land use patterns in the Town of Halton Hills and more specifically representative of the early settlement of small communities in Halton County.

4.4.2.2 ARCHAEOLOGY

A Stage 1 Archaeological Assessment (AA, under Project Information Form Number P1066-0339-2023) Report was completed as a part of the MCEA Study. The full report can be found in **Appendix E**. A Stage 1 AA consists of a review of geographic, land use and historical information for the property and the relevant surrounding area, a property visit to inspect its current condition and contacting MCM to find out whether, or not, there are any known archaeological sites on or near the property. Its purpose is to identify areas of archaeological potential and further archaeological assessment (e.g. Stage 2-4) as necessary.

Background research determined there are 11 previously registered archaeological sites located within one km of the study area and that part of the study area has been previously assessed (**Figure 4-8** to **Figure 4-11**). One site within 50 m of the study area does not have further archaeological interest. The report found that parts of the Study Area exhibit archaeological potential. If impacted, these lands require Stage 2 archaeological assessment.

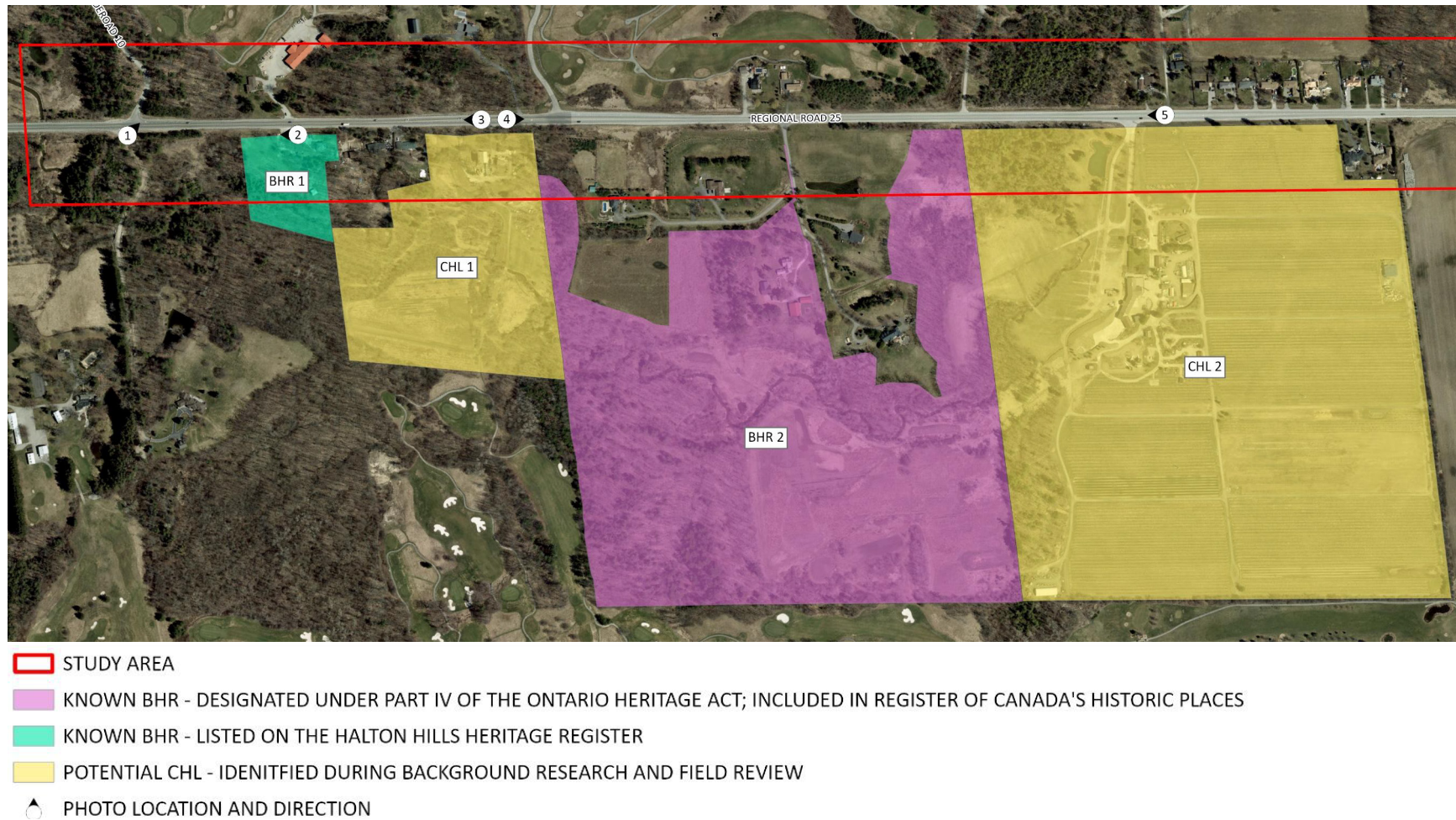


Figure 4-6: Map of Known BHRs and Potential CHLs

There are known BHR (designated under Part IV of the *Ontario Heritage Act* and listed on the Halton Hills Heritage Register) and potential CHL along the stretch of Regional Road 25 from 10 Side Road to Chudleigh's Entertainment Farm Access.



- STUDY AREA
- KNOWN BHR - LISTED ON THE HALTON HILLS HERITAGE REGISTER
- POTENTIAL CHL - IDENTIFIED DURING BACKGROUND RESEARCH AND FIELD REVIEW
- PHOTO LOCATION AND DIRECTION

Figure 4-7: Map of Known BHRs and Potential CHLs

There are known BHR (listed on the Halton Hills Heritage Register) and potential CHL along the stretch of Regional Road 25 from Chudleigh's Entertainment Farm Access to 5 Side Road.

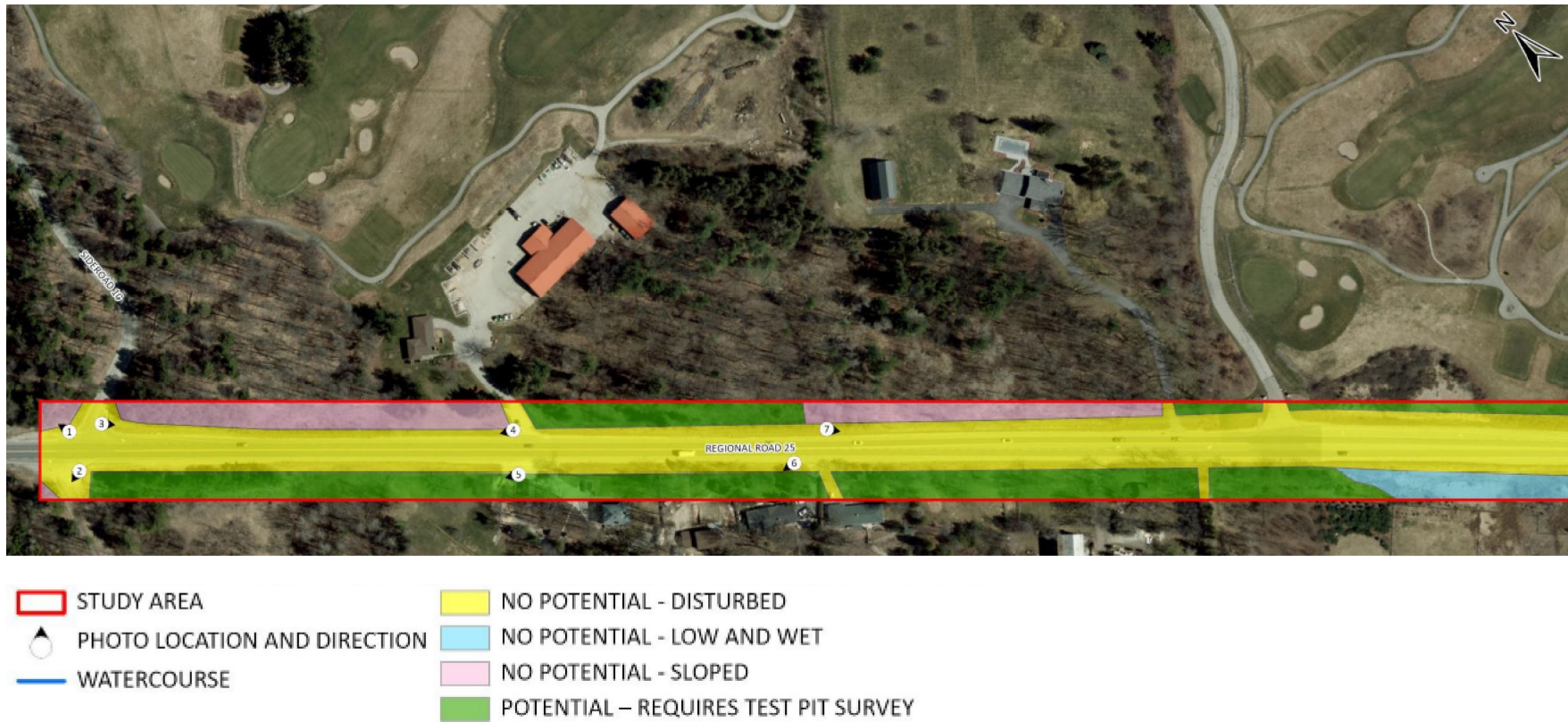


Figure 4-8: Map of Areas with Archaeological Potential

There is archaeological potential along the stretch of Regional Road 25 from 10 Side Road to Glencairn Golf Club access.



- STUDY AREA
- PHOTO LOCATION AND DIRECTION
- NO POTENTIAL - DISTURBED
- NO POTENTIAL - LOW AND WET
- POTENTIAL – REQUIRES TEST PIT SURVEY

Figure 4-9: Map of Areas with Archaeological Potential

There is archaeological potential along the stretch of Regional Road 25 from Glencairn Golf Club access to Chudleigh's Entertainment Farm access.



Figure 4-10: Map of Areas with Archaeological Potential

There is archaeological potential along the stretch of Regional Road 25 from Chudleigh's Entertainment Farm access to St. Matthews Mar Thoma Church access.



Figure 4-11: Map of Areas with Archaeological Potential

There is archaeological potential along the stretch of Regional Road 25 from St. Matthews Mar Thoma Church access to 5 Side Road.

4.4.3 Natural Environment

A Natural Environment Report was conducted as a part of the MCEA Study. The full report is included in **Appendix F**. The natural environment features are summarized as follows (Figure 4-12 to **Figure 4-15**):

- The aforementioned features comprise part of the Regional NHS.
- The study area contains Ministry of Natural Resources (MNR)-evaluated, non-provincially significant Chudleigh Swamp, located centrally within the study area spanning both sides of Regional Road 25. This wetland complex was generally characterized as comprising mixed swamp with smaller areas of meadow marsh.
- Other wetland features, which are not mapped by the MNR, were also mapped along roadside areas within the study area. These comprise meadow marsh and thicket swamp features (**Figure 4-12 to Figure 4-15**).
- Multiple woodlands meet the Regional criteria to be considered Significant Woodlands (**Figure 4-12 to Figure 4-14**).
- The study area includes two crossings of Middle Sixteen Mile Creek or its tributaries within the study corridor (AHP-002 and AHP-004) (**Figure 4-13**), and one crossing just north of the study corridor north of 10 Side Road (AHP-005) (**Figure 4-12**). Direct fish habitat is provided at watercourse reach AHP-002 within the study area and at AHP-005 just north of the study area where they cross the road. These two crossings provide permanent coldwater thermal regime. Restoration works have previously occurred upstream of the AHP-005 watercourse road crossing. The study area watercourses do not provide habitat for aquatic Species at Risk (SAR).
- A portion of the natural features located on the east side of Regional Road 25 comprise part of the Greenbelt NHS.
- The study area wetlands and watercourses and associated floodplain hazard lands are regulated by Conservation Halton.
- One SAR, Black Ash, was confirmed to occur within the study area. Greater than five Black Ash trees were documented within the SWM1-1 mixed swamp community that comprises a part of the Chudleigh Swamp complex. These trees were observed clustered within two general areas; these two observation locations are shown on **Figure 4-13**.

- SCA-protected habitat for Jefferson Salamander and Unisexual Ambystoma salamanders includes areas within 300m of the high-water mark of a breeding pond, wetland or other aquatic feature. Further, due to the potential presence of suitable habitats to the west and east of the study area, there is potential for Jefferson Salamanders and Unisexual Ambystoma salamanders to travel through the study area, including across the Regional Road 25 ROW.
- All of the bat SAR previously protected under the *Endangered Species Act* are now protected under its successor legislation, the *Species Conservation Act* (SCA). Potential habitat for the SAR bats Little Brown Myotis, Northern Myotis, Tri-colored Bat, Silver-haired Bat, Hoary Bat, and Eastern Red Bat was identified for wooded natural features in the study area. A single candidate bat roosting habitat tree was documented within a MAM2 meadow marsh inclusion on the west side of the road as shown in **Figure 4-13**.

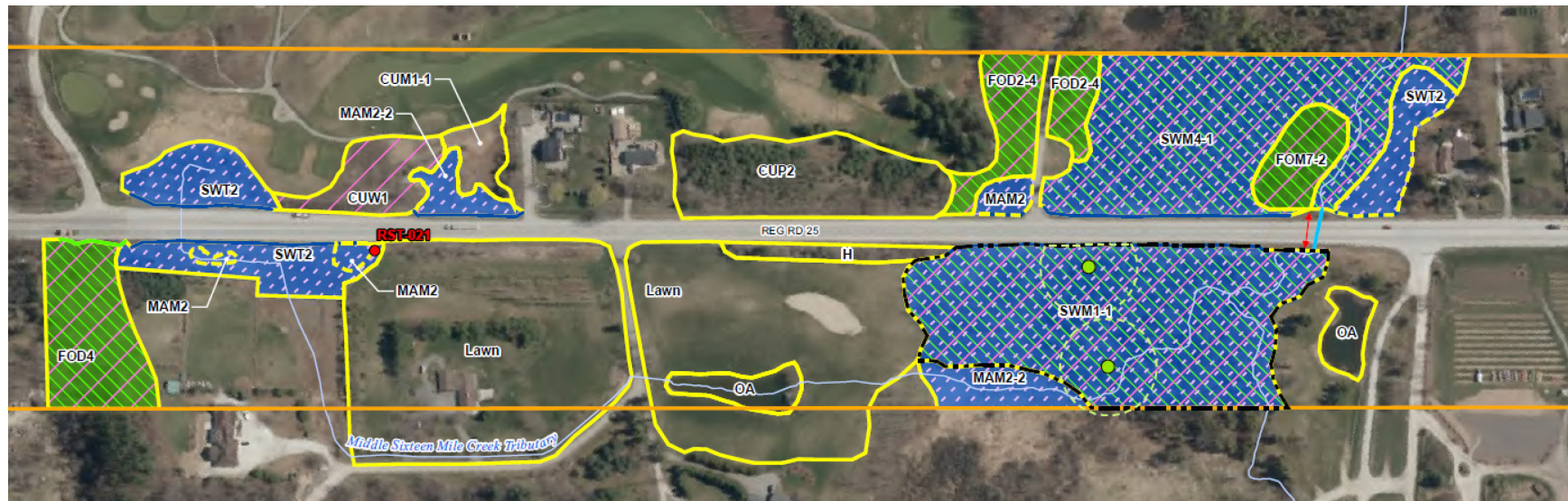


Legend

Project Limits	Terrestrial Woodland	(FOC1-2) Dry - Fresh White Pine - Red Pine Coniferous Forest Type	(FOM2) Dry - Fresh White Pine - Maple - Oak Mixed Forest Ecosite
Wildlife Movement Corridor	Significant Woodland	(FOC4-1) Fresh - Moist White Cedar Coniferous Forest Type	(FOM2-1) Dry - Fresh White Pine - Oak Mixed Forest Type
Fish Habitat	Potential Species at Risk Bat Habitat	(FOD) Deciduous Forest	(FOM2-2) Dry - Fresh White Pine - Sugar Maple Mixed Forest Type
Permanent Watercourse	Ecological Land Classification (ELC)	(FOD4) Dry - Fresh Deciduous Forest Ecosite	(FOM3-2) Dry - Fresh Sugar Maple - Hemlock Mixed Forest Type
Regionally Significant Wetland	(CUM1-1) Dry - Moist Old Field Meadow Type	(FOD5-5) Dry - Fresh Sugar Maple - Hickory Deciduous Forest Type	(MAM2) Mineral Meadow Marsh Ecosite
Wetland	(CUP3) Coniferous Plantations	(FOD7) Fresh - Moist Lowland Deciduous Forest Ecosite	(MAM2-2) Reed-canary Grass Mineral Meadow Marsh Type
Surveyed Wetland Boundary	(CUS1) Mineral Cultural Savannah Ecosite	(FOD8-1) Fresh - Moist Poplar Deciduous Forest Type	(MAS2-1) Cattail Mineral Shallow Marsh Type
Surveyed Dripline Boundary	(CUW1) Mineral Cultural Woodland Ecosite	(FOM / SWM) Mixed Forest / Mixed Swamp	(SA) Shallow Water
			Inclusion (ELC)

Figure 4-12: Map of Natural Environment Features

There are regionally significant wetlands and woodlands, potential SAR bat habitat and fish habitat along the stretch of Regional Road 25 from 10 Side Road to Glencairn Golf Club access.



Legend

Project Limits	Surveyed Wetland Boundary	(CUW1) Mineral Cultural Woodland Ecosite	(SWT2) Mineral Thicket Swamp Ecosite
Potential Bat Roost Tree (RST)	Surveyed Dripline Boundary	(FOD2-4) Dry - Fresh Oak - Hardwood Deciduous Forest Type	Inclusion (ELC)
Black Ash Observation Location	Terrestrial Woodland	(FOD4) Dry - Fresh Deciduous Forest Ecosite	
30m Black Ash Habitat Zone	Black Ash Species at Risk Habitat	(FOM7-2) Fresh - Moist White Cedar - Hardwood Mixed Forest Type	
Wildlife Movement Corridor	Significant Woodland	(H) Hedgerow	
Fish Habitat	Potential Species at Risk Bat Habitat	(MAM2) Mineral Meadow Marsh Ecosite	
Permanent Watercourse	Ecological Land Classification (ELC)	(MAM2-2) Reed-canary Grass Mineral Meadow Marsh Type	
Regionally Significant Wetland	(CUM1-1) Dry - Moist Old Field Meadow Type	(OA) Open Aquatic	
Wetland	(CUP2) Mixed Plantations	(SWM1-1) White Cedar Mineral Mixed Swamp Ecosite	
		(SWM4-1) White Cedar-Hardwood Organic Mixed Swamp Type	

Figure 4-13: Map of Natural Environment Features

There are regionally significant wetlands and woodlands, potential SAR bat habitat and a bat roost tree, fish habitat, and Black Ash SAR habitat and trees along the stretch of Regional Road 25 from Glencairn Golf Club access to Chudleigh's Entertainment Farm access.

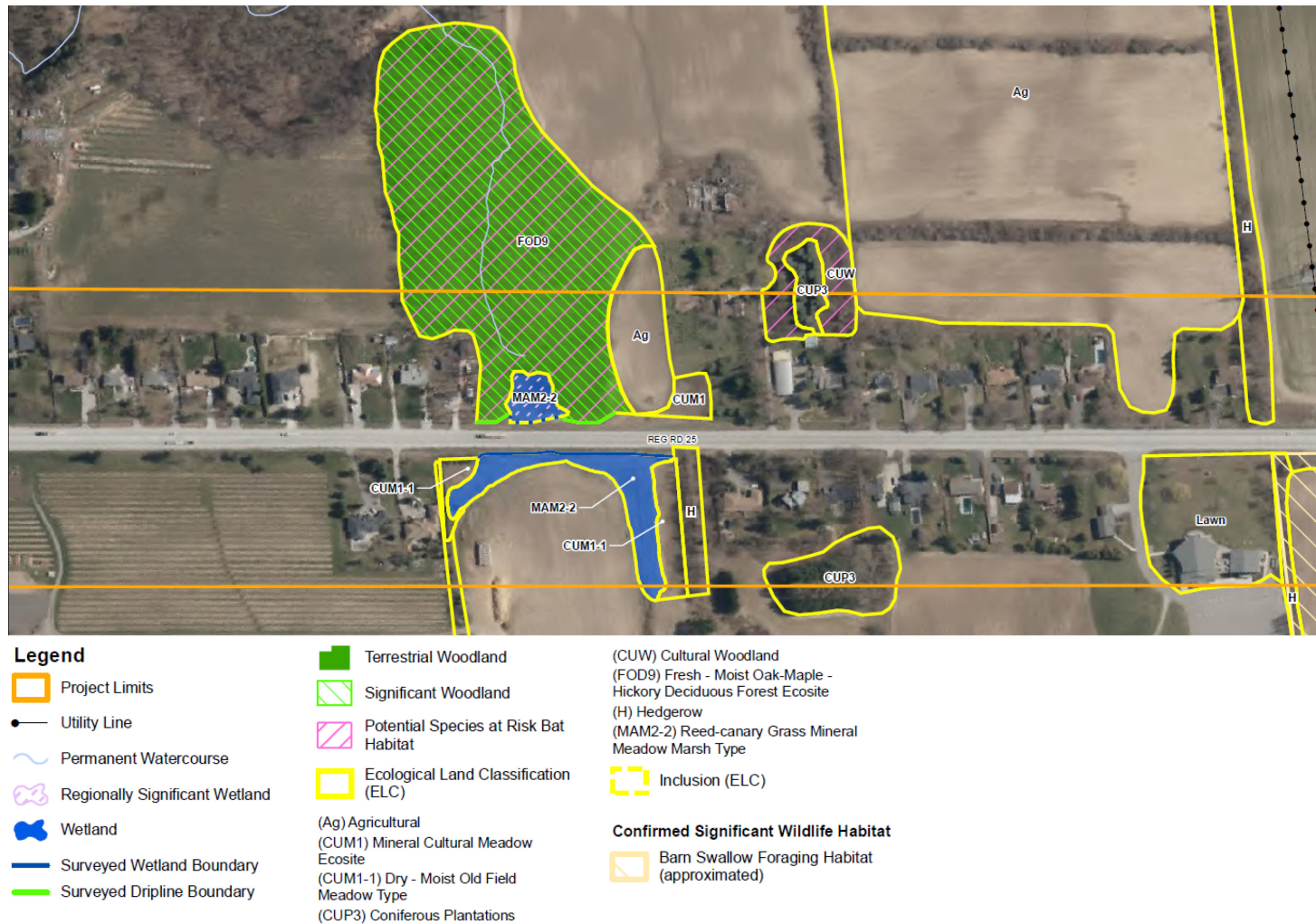


Figure 4-14: Map of Natural Environment Features

There are regionally significant wetlands and woodlands, potential SAR bat habitat and Barn Swallow Foraging Habitat along the stretch of Regional Road 25 from Chudleigh's Entertainment Farm access to St. Matthews Mar Thoma Church access.



Legend

Project Limits

Utility Line

Wetland

Surveyed Wetland Boundary

Ecological Land Classification (ELC)

(Ag) Agricultural

(CUM1-1) Dry - Moist Old Field Meadow Type

(CUT1-1) Sumac Cultural Thicket Type

(H) Hedgerow

(MAM2-2) Reed-canary Grass Mineral Meadow Marsh Type

(MAS2-1) Cattail Mineral Shallow Marsh Type

Confirmed Significant Wildlife Habitat

Barn Swallow Foraging Habitat (approximated)

Figure 4-15: Map of Natural Environment Features

There are wetlands and Barn Swallow Foraging Habitat along the stretch of Regional Road 25 from St. Matthews Mar Thoma Church access to 5 Side Road.

4.4.4 Technical Environment

4.4.4.1 GROUNDWATER / HYDROLOGY

A Hydrogeological investigation was completed for the proposed improvements for Regional Road 25 between 5 Side Road and 10 Side Road. The Hydrogeological Report is provided in **Appendix I**.

Groundwater levels at monitoring wells were measured manually between October 11, 2023, and December 21, 2023. 12 boreholes were drilled to depths ranging from 2.1 m to 111.3 m below ground surface. In total there was an installation of three monitoring wells (RR25-09, RR25-CULV-01, RR25-CULV-02) to permit monitoring of the groundwater levels at the site. The monitoring wells consisted of 50 mm diameter PVC pipe with a slotted screen sealed at a selected depth within the borehole, depths ranging between approximately 4.6 m and 9.9 m below the ground surface.

The monitoring wells were developed on October 26th, 2023. Well development was assessed based on the number of well volumes purged, stabilization of general chemistry parameters of the purged groundwater over time.

4.4.4.2 DRAINAGE AND STORMWATER MANAGEMENT

The Drainage and Stormwater Management Report is provided in **Appendix G**.

Drainage Overview

The Regional Road 25 corridor from 500 m north of 5 Side Road to 10 Side Road has a primarily rural cross-section. The roadway is drained by roadside ditch and transverse culverts with ultimate discharge to the Middle Sixteen Mile Creek and its tributaries. From 5 Sideroad to approximately 500 m north of 5 Side Road, Regional Road 25 drains southward via a combination of ditches and storm sewers with eventual discharge to a tributary of Sixteen Mile Creek.

The Middle Sixteen Mile Creek watershed falls under the jurisdiction of the Ministry of Natural Resources (MNR) Aurora Midhurst Owen Sound District. There is one watercourse crossing within the study limit. The Middle Sixteen Mile Creek originates to the north of Sideroad 22, south of Acton, ON and crosses Regional Road 25 approximately 1.7 km north of 5 Side Road with an external drainage area of 40 sq. km. The Middle Sixteen Mile Creek is a permanently flowing stream and provides a coldwater thermal regime. North of 10 Side Road, the Scotch Block Dam and Reservoir provides flood control to the Middle Sixteen Mile Creek and is also used for recreational fishing and swimming.

Transverse Watercourse Crossing

The Regional Road 25 corridor is situated within the area that is under the jurisdiction of Conservation Halton. There is one watercourse crossing, Middle Sixteen Mile Creek that is regulated by Conservation Halton.

The hydraulic assessment of the existing regulated transverse crossing within the study corridor was undertaken in accordance with the MTO's Highway Drainage Design Standards (2008).

The description and design storm peak flows for the one crossing is presented in **Table 4-3**. The location of this culvert is just north of Chudleigh's Entertainment Farm Access.

Table 4-3: Design Peak Flow for Traverse Crossings

Crossing ID	Watercourse Crossing	Crossing Description ²	Peak Flow (m ³ /s) ¹		
			50-year Storm	100-year Storm	Regional Storm
C-2	Middle Sixteen Mile Creek	7 m span concrete box Culvert ³	37.37	42.63	235.16

¹Based on available HEC-2 model output from Conservation Halton

²Peak flows and water surface elevation for 5-year to 100-year obtained from HEC-2 output, Regional peak flow and water surface elevation provided within GIS data from Conservation Halton

³Based on OSIM report for the crossing

Based on the preliminary hydraulic assessment, the culvert north of Chudleigh's Entertainment Farm access does not fully meet MTO criteria, and overtopping is observed under multiple storm events. Further analysis to determine whether improvements or upgrades at this crossing can be achieved to reduce flooding/overtopping conditions and meet the MTO Drainage Design Standards criteria can be found in **Section 8.12**.

There are a number of smaller transverse crossings with the corridor conveying local drainage, which do not have an established hydraulic model and were not included within the drainage assessment. The culvert crossing located 1.1 km north of 5 Side Road conveys runoff from lands located on the west side of Regional Road 25 (RR25) to the east side. The structure consists of a 0.91 m x 0.91 m concrete box culvert with an approximate length of 24.6 m. While the structure is considered minor in scale, it falls under the regulatory jurisdiction of Conservation Halton (CH).

4.4.4.3 FLUVIAL GEOMORPHOLOGY

A Fluvial Geomorphology Assessment was completed for the Sixteen Mile Creek that crosses Regional Road 25. The assessment included a review of physiography and surficial geology, historic photograph assessment, existing geomorphic conditions, erosion hazard assessment, and crossing recommendations.

The Fluvial Geomorphology Assessment Report is provided in **Appendix H**.

4.4.4.4 GEOTECHNICAL INVESTIGATIONS

A Geotechnical Investigation was completed to explore the subsurface conditions within the project limits to provide preliminary geotechnical recommendations regarding culvert foundation, excavation and groundwater control during construction, backfilling, pavement design, subgrade preparation, earthworks, and slope stability.

The field investigation was completed in September 2023 and included twelve boreholes along Regional Road 25. The monitoring wells consisted of 50 mm diameter PVC pipe with a slotted screen sealed at a selected depth within the borehole.

The subsurface stratigraphy encountered in the boreholes generally consisted of a pavement structure (asphalt over granular) overlying clay fill and localized alluvial deposits, overlying native cohesive deposits of silty clay to clayey silt and cohesionless deposits of slit to silt and sand underlain by clay till, locally grading to clayey silt till with depth.

The future traffic data was used to determine the pavement requirements for the anticipated traffic volumes over the design life of the pavement. Using axle load equivalency factors, different axle loads and axle groups are converted to a standard axle load known as an Equivalent Single Axle Load (ESAL). The Design ESALs calculation was completed in accordance with the MTO Procedures for Estimating Traffic Loads for Pavement Designs. Based on the results of the investigation, the pavement design is recommended for reconstruction and if grades permit, strengthening and rehabilitation of the existing pavement structure should be considered.

The geotechnical investigation did not indicate a preliminary assessment on slope stability or mitigation recommendations for the road improvements proposed within the area regulated for slope erosion.

Section 8.11 discusses the findings of the geotechnical investigations based on the proposed pavement design improvements to Regional Road 25. The Geotechnical Report is provided in **Appendix J**.

5. Problem and Opportunity

The problem and opportunity statement for the study includes:

*Regional Road 25 is a Major Arterial north-south link providing connections within the Towns of Halton Hills and Milton. Without localized improvements, traffic operations are expected to experience increasing delays (**Figure 5-1**). The future ROW will consider the unique rural characteristics of Regional Road 25 and will accommodate all road users, including farm vehicles and AT.*



Figure 5-1: Regional Road 25 Queuing

6. Identification and Evaluation of Alternative Solutions

Alternative Solutions (planning alternatives) are functionally different ways of approaching and addressing a problem or opportunity. The MCEA process requires documentation and examination of reasonable alternatives to address the problem; these are referred to as Alternative Solutions.

6.1 Identification of Alternative Solutions

A variety of alternative solutions were developed for the Regional Road 25 study area. These alternatives range in complexity, cost and their ability to address the study area issues and are listed as follows:

- **Alternative 1 – “Do Nothing”:** The “Do Nothing” alternative provides a benchmark against which the other alternatives are compared. This alternative solution represents a continuation of existing conditions and would involve no changes or improvements to the existing Regional Road 25 study corridor but includes planned improvements to the Halton Region transportation network.
- **Alternative 2 – AT Facilities:** This alternative involves constructing new AT facilities to improve pedestrian and cyclist connectivity in the network and promote walking and cycling in the study area. Potential AT facilities include paved shoulders or bike lanes.
- **Alternative 3 – Intersection and Operational Improvements:** This alternative focuses on increasing capacity of the existing road network through changes to signal timings and phasing, intersection geometric improvements, and / or new traffic signals, if warranted.
- **Alternative 4 – Improvements to Regional Road 25:** As noted in Section 4.3, the transportation and traffic assessment determined that localized improvements are recommended.
- **Alternative 5 – Improve Other Roadways:** This alternative focuses on improving other north-south roadways, instead of Regional Road 25, to improve transportation in the study area.
- **Alternative 6 – Travel Demand Management (TDM):** This alternative focuses on managing travel demand rather than infrastructure improvements. This alternative applies strategies and policies (such as carpool initiatives) to reduce or redistribute the travel demand around the road network.

6.2 Evaluation of Alternative Solutions

The Alternative Solution were evaluated against how they address the problem and opportunity to determine which Alternative Solutions would be carried forward as part of the overall project strategy. The evaluation of the Alternative Solutions is shown in **Table 6-1**.

6.3 Preferred Alternative Solution

To support future travel demand and a transportation system that is safe, continuous, connected, and coordinated for all users and all abilities, the recommended solution for Regional Road 25 is proposed to consist of a combination of the following alternative solutions:

- Enhance facilities for pedestrians, cyclists, mobility device users and other non-vehicular travel to create a safe and accessible network; and
- Improve overall operations including intersections, as well as localized improvements for example turn lanes.

The preferred solution (combination of alternatives) is carried forward to the next phase of the MCEA for the development and evaluation of Design Alternatives. A closer look at intersection and corridor operations was reviewed to better understand future needs.

Table 6-1: Evaluation of Alternative Solutions

Alternatives	Description	Evaluation Summary	Recommendation
1. Do Nothing	No improvements to Regional Road 25. Only planned improvements to 2031 will be in place.	Does not address the multi-modal needs within the study area.	Do not carry forward (for comparison purposes only).
2. Active Transportation Improvements	Enhance active transportation facilities throughout the corridor and at intersections.	On their own, these measures do not fully address the problem, while part of the Region's overall transportation strategy.	Carry forward as part of overall Project strategy.
3. Intersection / Operational Improvements	Improve traffic operations at intersections through physical and operational modifications.	On their own, these measures do not fully address the problem, while part of the Region's overall transportation strategy.	Carry forward as part of overall Project strategy.
4. Improvements to Regional Road 25	Localized improvements to Regional Road 25	Needs identified Transportation Master Plan, Mobility Management Strategy, and Defining Major Transit Requirements in Halton to support future growth.	Carry forward localized improvements, for example, turn lanes.
5. Improvements to Other Roadways	Undertake capital improvements to widen other north-south roadways in the immediate study area.	Does not address the multi-modal needs within the study area.	Do not carry forward.
6. Transportation Demand Management (TDM)	Measures to manage travel demand by encouraging carpooling; shifting travel demand to off-peak hours, telecommute, etc.	On their own, TDM measures do not fully address the transportation needs and are already part of the Region's overall transportation strategy.	Continue to be supported by local program and initiatives.

7. Alternative Design Concepts

Phase 3 of the MCEA process requires examination of alternative methods of implementing the Preferred Solution, referred to as Alternative Design Concepts. The advantages and disadvantages of each were assessed.

This section discusses the development of Alternative Design Concepts, the evaluation criteria, evaluations and recommendations.

7.1 Development of Alternative Design Concepts

The Preferred Solution was confirmed as a combination of active transportation facilities, intersection and operational improvements, and improvements to Regional Road 25. The following section discusses the development of the Alternative Design Concepts for the corridor.

To address the preferred solution for Regional Road 25, the following design alternatives were developed and evaluated for the following improvements:

1. Localized improvements (travel lane configuration); and
2. Enhance active transportation facilities (for pedestrian and cyclists).

7.1.1 Corridor Segmentation

The existing ROW for Regional Road 25 generally ranges between 30 m and 36 m as shown in **Figure 7-1**. The TMP identified a Right-of-Way of 42 m for the study corridor.

Based on the existing adjacent land-use, the corridor was divided into two segments to develop and assess the alternative designs:

- **Segment 1: Regional Road 25 from 5 Side Road to Chudleigh's Entertainment Farm Access** – There is a planned roundabout at 5 Side Road and Regional Road 25. This segment is characterized by light industrial land uses closer to 5 Side Road (on the east side), select locations with existing residential properties on both sides with direct access (approximately 30 properties), two wetlands on the west side and one smaller regionally significant wetland on the east side, woodlands, agricultural properties, Chudleigh's Entertainment Farm and access road.

- Segment 2: Regional Road 25 from Chudleigh's Entertainment Farm Access to 10 Side Road** - This segment is characterized by watercourse crossings (one crossing is located just north of Chudleigh's Entertainment Farm and provides direct fish habitat, and the second watercourse crossing located just north of the study area, north of 10 Side Road, providing direct fish habitat), regionally significant wetlands on both sides, significant woodlands on both sides, select locations with existing residential properties with direct access on both sides (approximately 10), Glencairn Golf Club and access road, and the intersection to 10 Side Road (with no planned Active Transportation connections).

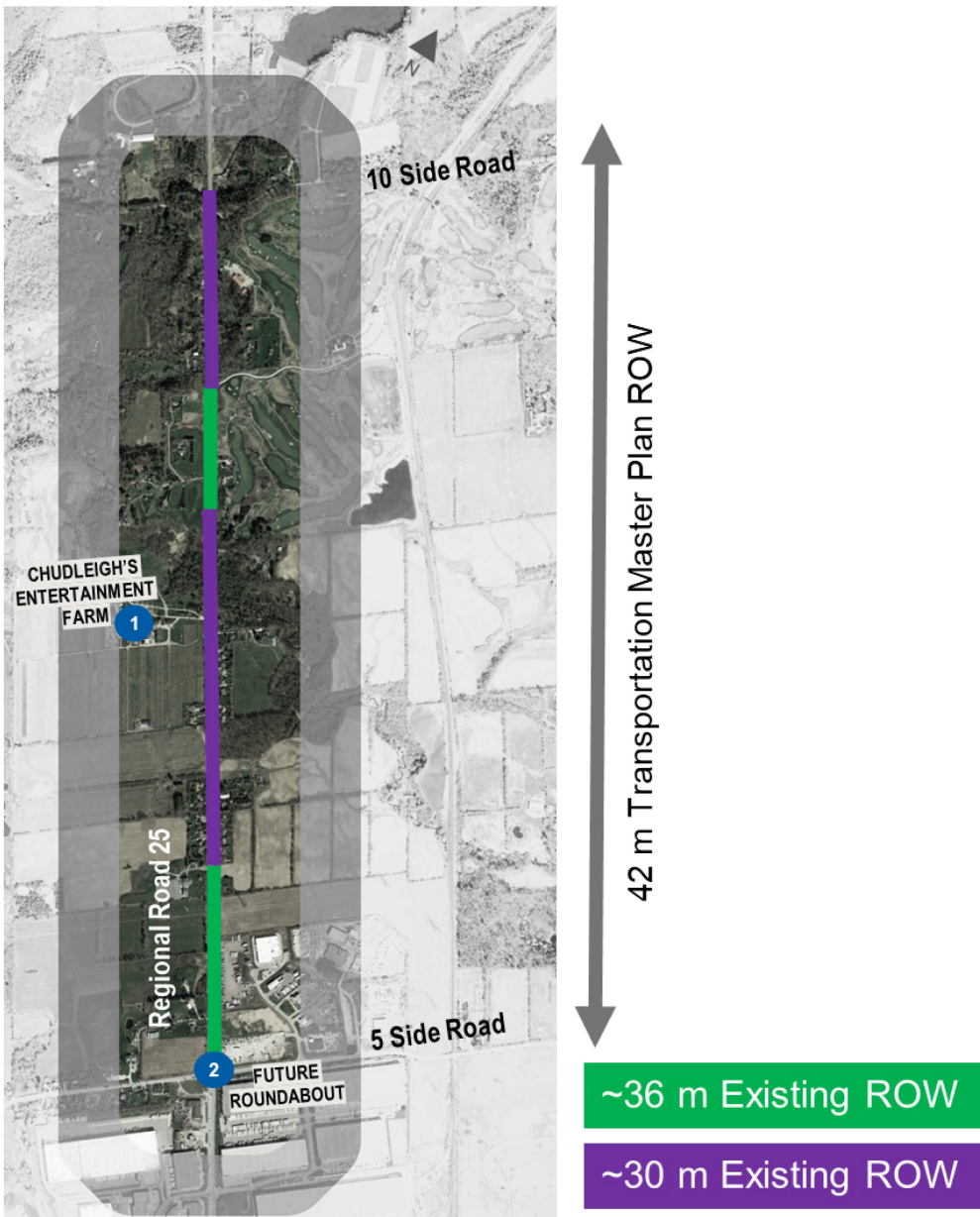


Figure 7-1: Existing ROW along Regional Road 25 from 5 Side Road to 10 Side Road

7.1.2 Cross-Section Elements

A summary of the potential road cross-section improvements for the preferred solution is shown in **Figure 7-2**. Placement of elements within the cross-section (including AT facility types, vegetation, stormwater and drainage, light / hydro poles, vehicle lanes, etc.) is assessed in **Section 8**.

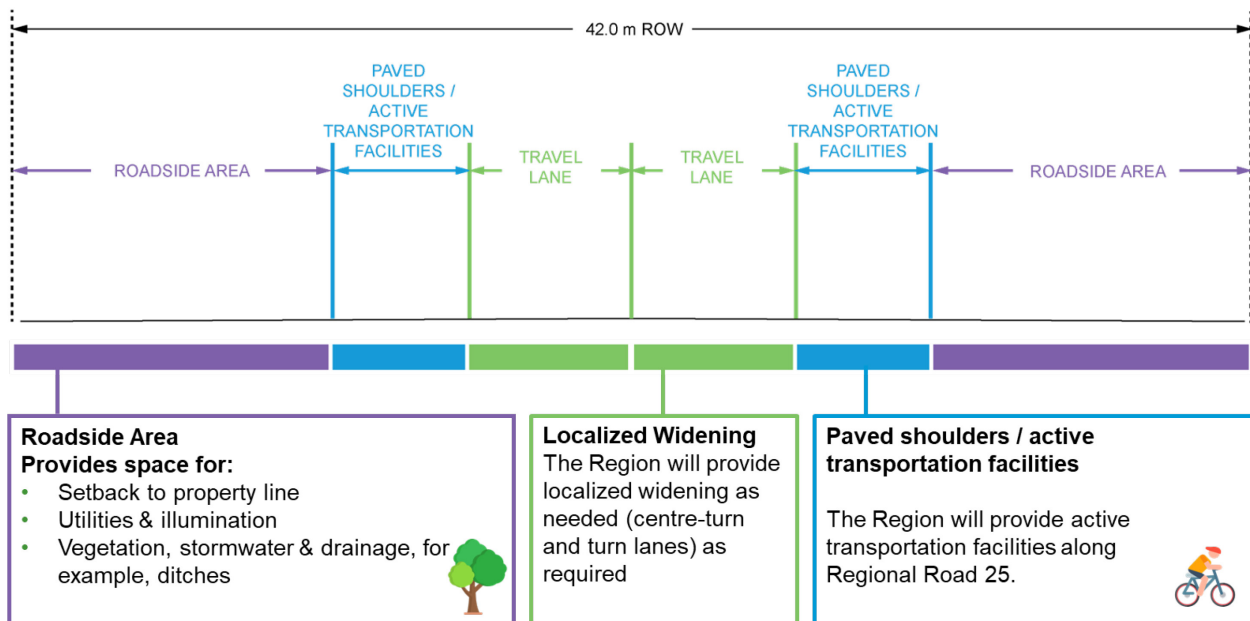


Figure 7-2: Summary of Improvements Preferred Solution (Rural)

To develop the alternative designs, recommended widths for key elements were referenced using established guidelines and standards as documented in **Table 7-1**.

Table 7-1: Key Design Parameters

Element	Width / Clearance	Source/Notes
Existing ROW	30 m to 36 m (varies)	
Planned ROW Width (m)	42 m	Halton Region IMP, Figure 15
Posted Speed (km/h)	80 km/h	
Design Speed (km/h)	90 km/h	TAC Geometric Design Guide for Canadian Roads, 2017, Chapter 2 – Table 2.6.2, page 47
Through Lane Width (Rural)	3.3m - 3.65 m, one in each direction	TAC Geometric Design Guide for Canadian Roads, 2017
Two-Way Centre Left-Turn Lane (m)	4.0 m	TAC Geometric Design Guide for Canadian Roads, 2017, Chapter 8 – Section 8.6.2, page 29
Left Turn Lane	Width: 3.5 m	
Boulevard Width (m)	0 m – 5.0 m (varies)	
Buffered Paved Shoulder	3.0m (2.0m operating space + 1.0m buffer)	Ontario Traffic Manual, Book 18, Table 4.11
Multi-use Path (MUP) Width (m)	Minimum 3.0 m Enhanced 4.0 m Provide minimum 0.6 m wide shoulder or graded area (flatter than 1:6) on both sides of the path. Provide a clear zone of 0.9 m wide on both sides of the path.	OTM Book 18: Cycling Facilities - 2021

7.1.3 Localized Improvements

The Transportation and Traffic analysis informed the recommendations for localized operational improvements along the Regional Road 25 corridor. Key findings from the assessment are:

- Traffic signal warrants were completed for the intersections with 10 Side Road and Chudleigh's Entertainment Farm access and were not warranted for conversion to signalized intersection control.
- Maintain the auxiliary left and right-turn lanes currently provided at the intersections with 10 Side Road and the Glencairn Golf Club access.. The current storage lengths are expected to be adequate to accommodate future demands and will be confirmed during detailed design.
- A two-way centre left-turn lane on Regional Road 25 is required for vehicles turning left between 5 Side Road and Chudleigh's Entertainment Farm access given the high number of accesses.
- Support active transportation including buffered paved shoulders and boulevard Multi-use paths.

Segment 1 Regional Road 25 from 5 Side Road to Chudleigh's Entertainment Farm Access

Based on the assessment above, the localized operational improvements for Segment 1 are shown in **Figure 7-2** and involve:

- Maintain two lanes (one in each direction)
- Addition of continuous two-way centre left-turn lane
- 3.0 m paved shoulders with painted buffer on both sides

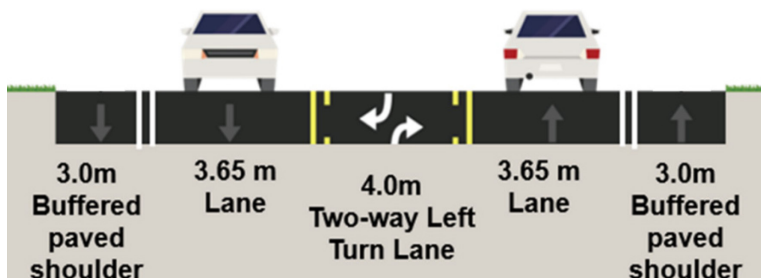


Figure 7-2: Recommended Localized Improvements for Segment 1

Segment 2 Regional Road 25 from Chudleigh's Entertainment Farm Access to 10 Side Road

Based on the assessment above, the localized operational improvements for Segment 2 are shown in **Figure 7-3** and involve:

- Maintain two lanes (one in each direction)
- Localized improvements (turn lanes at intersections)
- 3.0 m paved shoulders with painted buffer on both sides

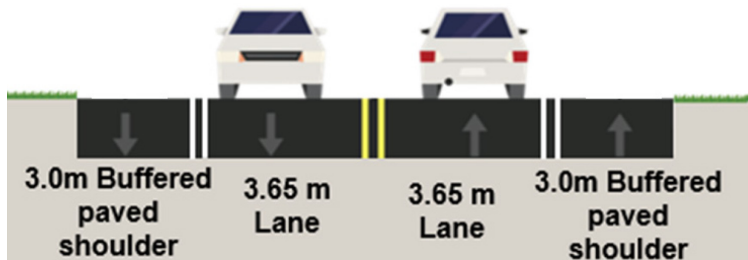


Figure 7-3: Recommended Localized Improvements for Segment 2

7.1.4 Active Transportation Alternative Designs

To encourage and support a transportation system that is continuous, connected, and coordinated for all users and abilities, different combinations of active transportation facilities were reviewed for each segment of the corridor.

Segment 1 Regional Road 25 from 5 Side Road to Chudleigh's Entertainment Farm Access

Four active transportation alternative designs were considered for Segment 1. The four AT alternatives are presented in **Figure 7-4** to **Figure 7-7** and listed as follows:

- **Alternative A** – Buffered paved shoulders on both sides;
- **Alternative B** - Buffered paved shoulders on both sides, MUP on west side;
- **Alternative C** - Buffered paved shoulder and MUP on both sides; and
- **Alternative D** – MUP on the west and buffered paved shoulder on the east, semi-urban.

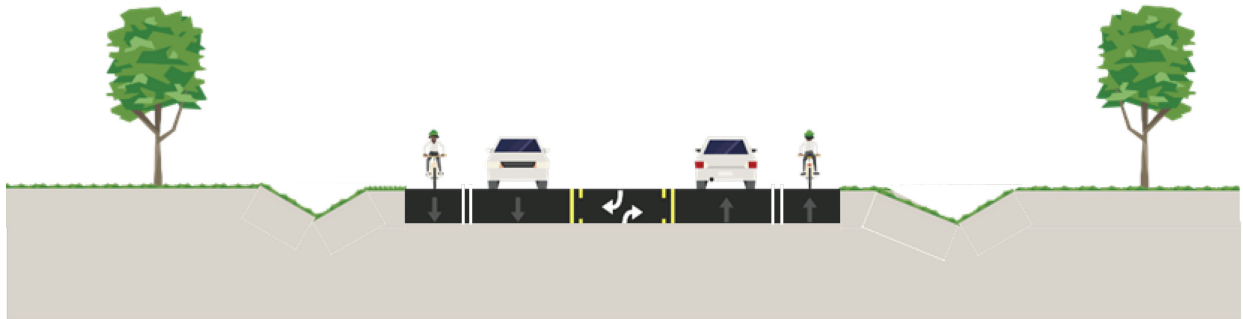


Figure 7-4: Alternative A – Buffered Paved Shoulders on Both Sides

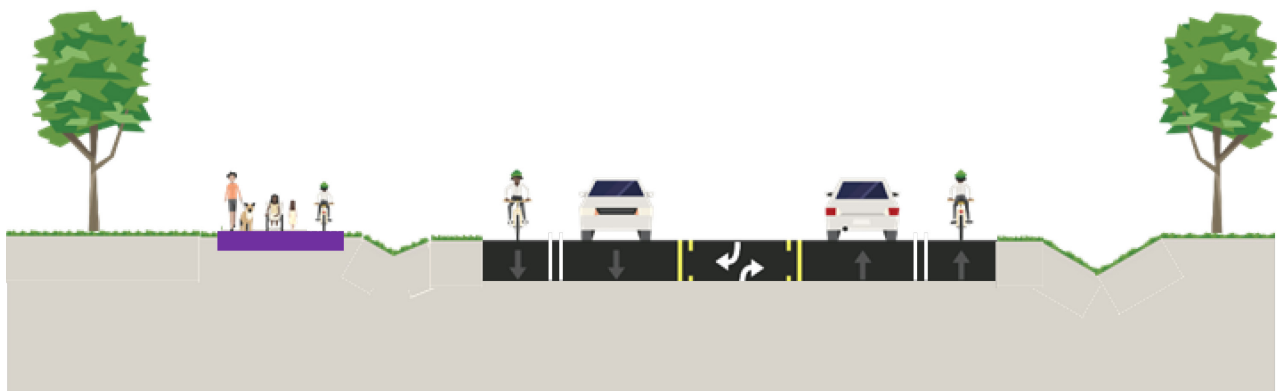


Figure 7-5: Alternative B - Buffered paved shoulders on both sides, MUP on west side

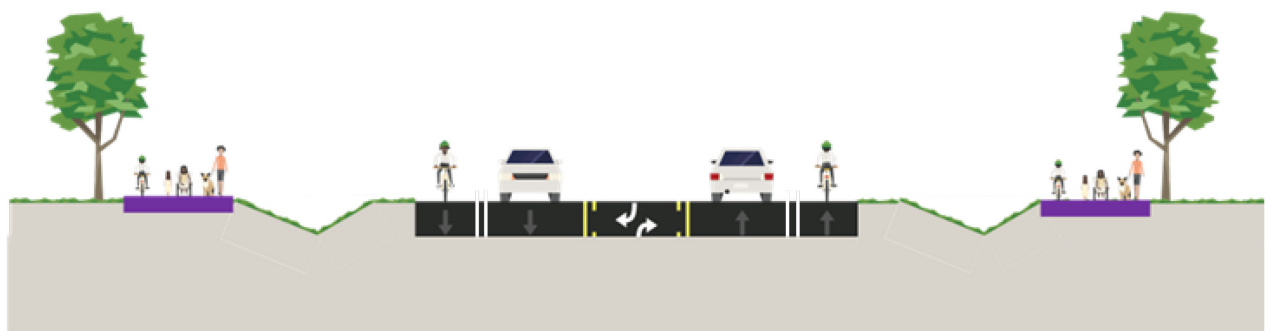


Figure 7-6: Alternative C - Buffered paved shoulder and MUP on both sides

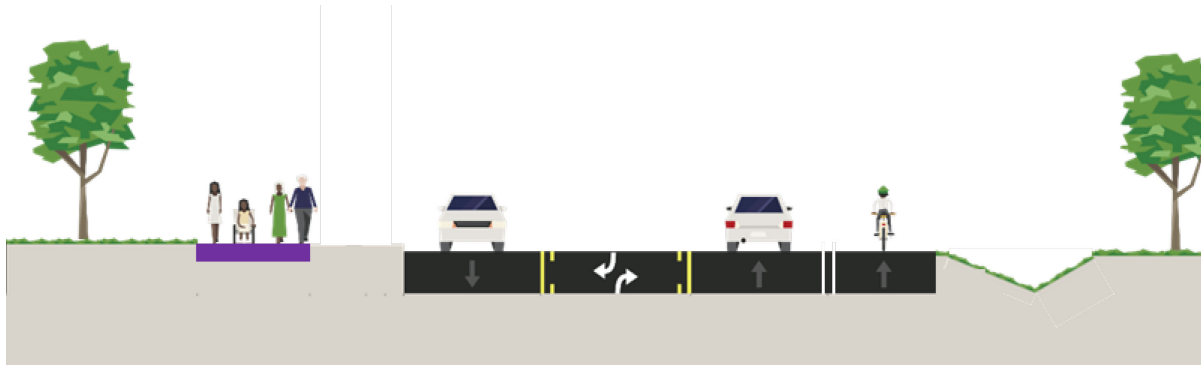


Figure 7-7: Alternative D – MUP on the west and buffered paved shoulder on the east, semi-urban

Segment 2 Regional Road 25 from Chudleigh’s Entertainment Farm Access to 10 Side Road

Four active transportation alternative designs were considered for Segment 2. The four AT alternatives are presented in **Figure 7-8** to **Figure 7-11** and listed as follows:

- **Alternative A** – Buffered paved shoulders on both sides;
- **Alternative B** – Buffered paved shoulders on both sides, MUP on west side;
- **Alternative C** – Buffered paved shoulder and MUP on both sides; and
- **Alternative D** – MUP on the west and buffered paved shoulder on the east, semi-urban.

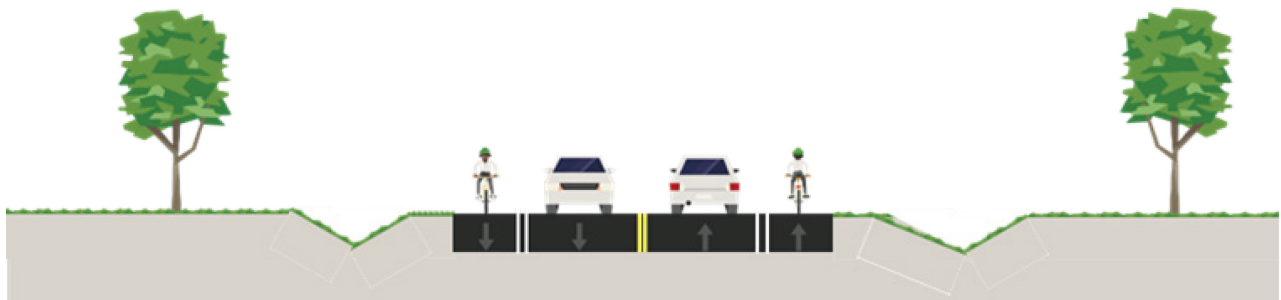


Figure 7-8: Alternative A – Buffered paved shoulders on both sides

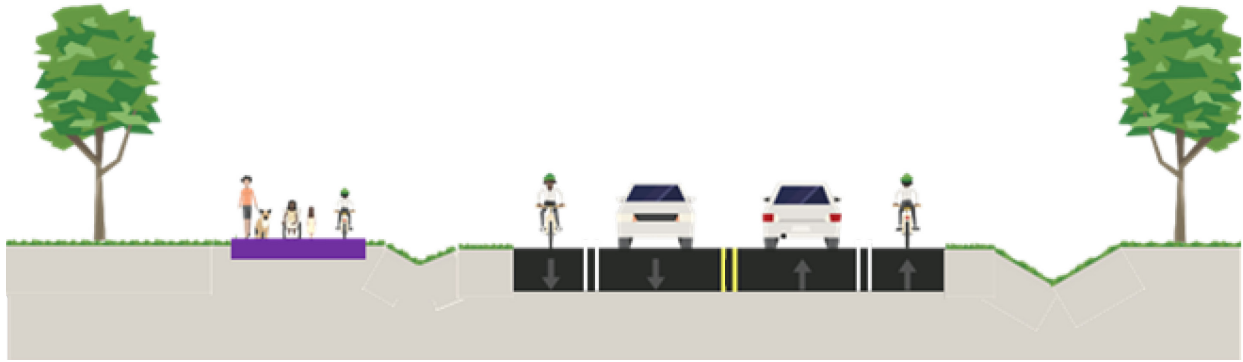


Figure 7-9: Alternative B - Buffered paved shoulders on both sides, MUP on west side

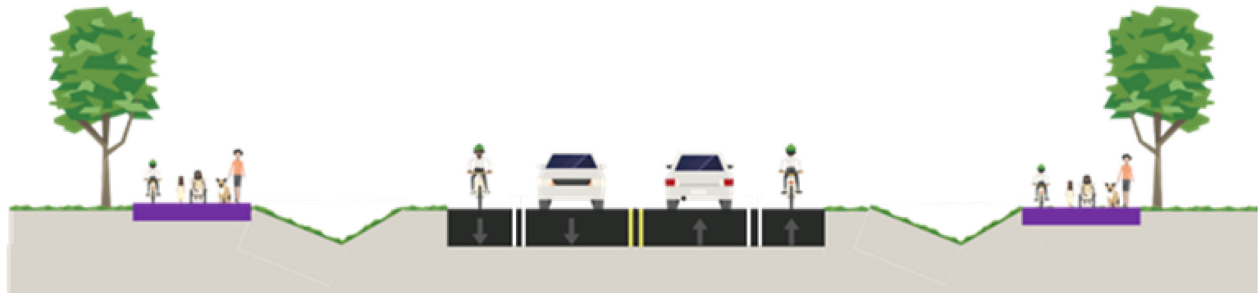


Figure 7-10: Alternative C - Buffered paved shoulder and MUP on both sides

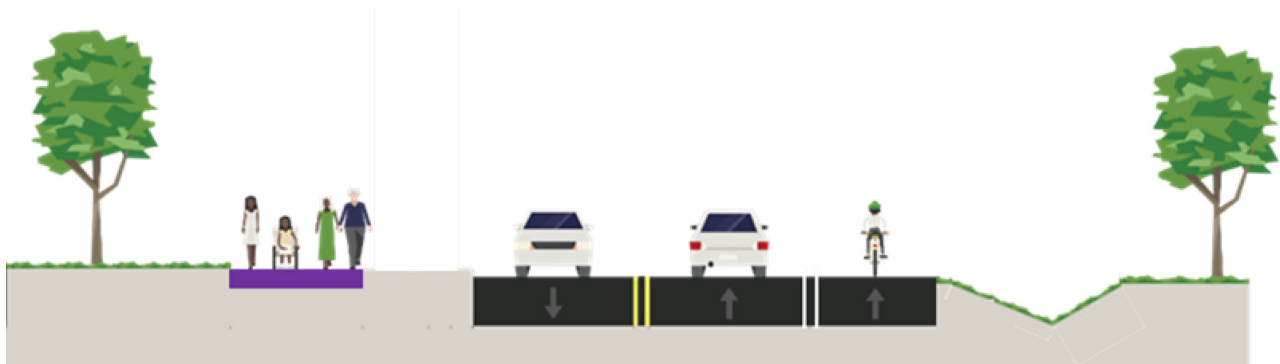


Figure 7-11: Alternative D – MUP on the west (semi urban) and buffered paved shoulder on the east

7.2 Evaluation Criteria

The evaluation of alternative design concepts included the formulation of evaluation criteria. The evaluation criteria were developed based on transportation considerations as well as impacts to the natural, cultural, and socio-economic environments. The alternative design concepts identified were evaluated based on criteria as detailed in **Table 7-2** and **Table 7-3** and summarized below. Where possible and appropriate, a Reasoned Argument approach to screen out alternatives to select the recommended design concept was also applied.

- **Transportation** – ability to accommodate future travel demand, active transportation, safety, emergency services, impacts to structures;
- **Socio-economic Environment** – existing and planned land uses, property impacts, access, traffic noise, air quality / climate change;
- **Natural Environment** – vegetation, wildlife, aquatic habitat, species at risk (SAR), surface water, groundwater, minimize impacts to flooding;
- **Cultural Environment** – cultural heritage resources; and
- **Preliminary Cost** – construction-related costs, property costs, utility relocation.

7.3 Evaluation of Alternative Design Concepts

Localized improvement alternatives were considered for Regional Road 25. Based on the assessment presented in **Section 7.1.3**, the localized improvements include:

- **Segment 1 - Regional Road 25 from 5 Side Road to Chudleigh's Entertainment Farm Access**
 - Maintain two lanes (one in each direction)
 - Addition of continuous two-way centre left-turn lane
 - 3.0 m paved shoulders with painted buffer on both sides
- **Segment 2 - Regional Road 25 from Chudleigh's Entertainment Farm Access to 10 Side Road**
 - Maintain two lanes (one in each direction)
 - Localized improvements (turn lanes at intersections)
 - 3.0 m paved shoulders with painted buffer on both sides

The evaluation of active transportation alternatives was carried out based on the preferred localized improvements.

7.3.1 Evaluation of Active Transportation Alternatives

Four active transportation alternative designs were considered for Regional Road 25 (refer to **Section 7.1.4** for figures):

- **Alternative A** – Buffered paved shoulders on both sides;
- **Alternative B** – Buffered paved shoulders on both sides, MUP on west side;
- **Alternative C** – Buffered paved shoulder and MUP on both sides; and
- **Alternative D** – MUP on the west (semi-urban) and buffered paved shoulder on the east.

The results of the detailed analysis for the AT evaluation are provided in **Table 7-2** for Segment 1 (from 5 Side Road to Chudleigh's Entertainment Farm access) and **Table 7-3** for Segment 2 (from Chudleigh's Entertainment Farm access to 10 Side Road).

Table 7-2: Segment 1 Regional Road 25 from 5 Side Road to Chudleigh's Entertainment Farm Access

Criteria	Alternative A Buffered paved shoulder on both sides	Alternative B Buffered paved shoulders on both sides, MUP on west side	Alternative C Buffered paved shoulder and MUP on both sides	Alternative D MUP on the west and buffered paved should on the east, semi-urban
Transportation	Least Preferred × Buffered paved shoulders provide space for AT users, but does not provide a physical separation to vehicles ✓ Accommodates passage of agricultural vehicles ✓ Consistent with a rural cross-section	Less Preferred × Buffered paved shoulders provide space for AT users, but does not provide a physical separation to vehicles ✓ Pedestrians and cyclists are provided with shared MUP with separation from vehicles on west side × Shared facility (MUP) in one boulevard may result in potential conflicts with pedestrians and cyclists in a shared space as well as travelling in opposing directions ✓ Accommodates passage of agricultural vehicles ✓ Provides connection with planned MUPs along Regional Road 25 south of 5 Side Road to Chudleigh's Entertainment Farm access	Most Preferred × Buffered paved shoulders provide space for cyclists and pedestrians, but does not provide separation to vehicles ✓ Pedestrians and cyclists are separated from vehicles. MUP separated by roadway ditch on both sides. ✓ Reduces potential conflicts between cyclists and pedestrians in opposing directions by providing MUPs on both sides. ✓ Accommodates passage of agricultural vehicles ✓ Provides connection with planned MUP along Regional Road 25 north of 5 Side Road to Chudleigh's Entertainment Farm access	Less Preferred × Buffered paved shoulders provide space for AT users, but does not provide a physical separation to vehicles ✓ Pedestrians and cyclists are separated from vehicles on the west side × Agricultural vehicles may encroach on the two-way centre left turn lane or opposing vehicular travel lane where buffered paved shoulder is not provided ✓ Provides connection with planned MUPs along Regional Road 25 north of 5 Side Road to Chudleigh's Entertainment Farm access
Socio -Economic	Most Preferred ✓ No property requirements. Temporary grading easements may be required in areas where localized improvements are proposed ✓ Driveway impacts (re-profiling / re-grading) in select areas ✓ Cyclists have direct access to adjacent lands / destinations on both boulevards, however there are limited destinations in the corridor	Less Preferred × Greater property requirements / temporary grading easements on the west side × Greater driveway impacts (re-profiling / re-grading) on the west side ✓ Minimizes property and driveway impacts on east side ✓ Cyclists have direct access to adjacent lands / destinations on both boulevards and pedestrians have direct access on one side only, however there are limited destinations in the corridor	Least Preferred × Greatest property requirements / temporary grading easements × Greatest driveway impacts (re-profiling / re-grading) on both sides ✓ Cyclists and pedestrians have direct access to adjacent lands / destinations on both boulevards, however there are limited destinations in the corridor	Less Preferred × Greater property requirements / temporary grading easements on the west side. × Greater driveway impacts (re-profiling / re-grading) on the west side ✓ Minimizes property and driveway impacts on east side ✓ Cyclists have direct access to adjacent lands / destinations on both sides of the road; pedestrians have direct access on one side only, however there are limited destinations in the corridor

Criteria	Alternative A Buffered paved shoulder on both sides	Alternative B Buffered paved shoulders on both sides, MUP on west side	Alternative C Buffered paved shoulder and MUP on both sides	Alternative D MUP on the west and buffered paved should on the east, semi-urban
Natural Heritage	Most Preferred ✓ Less encroachment / grading to sensitive natural features (regionally significant wetlands, wetlands, significant woodlands and fishery and snapping turtle habitat) in areas where localized improvements is proposed	Less Preferred × Greater encroachment to sensitive natural features on west side × Minimizes encroachment to natural features on east side	Least Preferred × Greatest encroachment to sensitive natural features with greater impacts on both sides	Less Preferred × Greater encroachment to sensitive natural features with greater impacts on west side × Minimizes encroachment to natural features on east side
Cultural Heritage	Most Preferred ✓ No impacts to cultural heritage resources	Less Preferred × Minor impacts to one built heritage resource and one cultural heritage landscape × Less requirement for Stage 2 archaeological survey	Least Preferred × Moderate impacts to one built heritage recourse and one cultural heritage landscape × Greater requirements for Stage 2 archaeological survey	Less Preferred × Minor impacts to one built heritage resource and one cultural heritage landscape × Less requirement for Stage 2 archaeological survey
Preliminary Costs	Most Preferred ✓ Lowest construction and maintenance costs ✓ Minimal utility relocation	Most Preferred ✓ Low construction and maintenance costs × Minor to moderate utility relocation	Least Preferred × Moderate construction and maintenance costs × Significant utility relocation	Least Preferred × Moderate construction and maintenance costs × Minor to moderate utility relocation
Overall Summary		Recommended This alternative is recommended for the following reasons: ✓ Provides a shared MUP for pedestrian and cyclists separated from vehicles on the west side and providing a connection from the planned MUPs north of 5 Side Road to Chudleigh's Entertainment Farm access. ✓ Provides greater space for agricultural vehicles with centre-turning lane and buffered paved shoulders. ✓ Minimizes impacts to the socio-economic environment, natural environment, and cultural environment on the east side.		

Table 7-3: Segment 2 Regional Road 25 from Chudleigh's Entertainment Farm Access to 10 Side Road

Criteria	Alternative A Buffered paved shoulder on both sides	Alternative B Buffered paved shoulders on both sides, MUP on west side	Alternative C Buffered paved shoulder and MUP on both sides	Alternative D MUP on the west and buffered paved should on the east, semi-urban
Transportation	Least Preferred × Buffered paved shoulders provide space for AT users, but does not provide a physical separation to vehicles ✓ Accommodates passage of agricultural vehicles ✓ Consistent with a rural cross-section	Less Preferred × Buffered paved shoulders provide space for AT users, but does not provide a physical separation to vehicles ✓ Pedestrians and cyclists are provided with shared MUP with grade separation from vehicles on west side × Shared facility (MUP) in one boulevard may result in potential conflicts with pedestrians and cyclists in a shared space as well as travelling in opposing directions ✓ Accommodates passage of agricultural vehicles ✓ Provides connection with planned MUPs along Regional Road 25 north of 5 Side Road to Chudleigh's Entertainment Farm access	Most Preferred × Buffered paved shoulders provide space for AT users, but does not provide a physical separation to vehicles ✓ Pedestrians and cyclists are provided with grade separation from vehicles. MUP separated by roadway ditch on both sides. ✓ Reduces potential conflicts between cyclists and pedestrians in opposing directions by providing MUPs on both sides. ✓ Accommodates passage of agricultural vehicles ✓ While it provides a connection with planned MUPs to the south, it does not provide connections to any destinations to the north of Chudleigh's Entertainment Farm access	Less Preferred × Buffered paved shoulders provide space for AT users, but does not provide a physical separation to vehicles ✓ Pedestrians and cyclists are provided with grade separation from vehicles on the west side ✓ Agricultural vehicles may encroach on the two-way centre left turn lane or opposing vehicular travel lane where buffered paved shoulder is not provided ✓ While it provides a connection with planned MUPs to the south, it does not provide connections to any destinations to the north of Chudleigh's Entertainment Farm access
Socio -Economic	Most Preferred ✓ No property requirements. Temporary grading easements may be required in areas where localized improvements are proposed ✓ Driveway impacts (re-profiling / re-grading) in select areas ✓ Cyclists have direct access to adjacent lands / destinations on both boulevards, however there are limited destinations in the corridor	Less Preferred × Greater property requirements / temporary grading easements on the west side × Greater driveway impacts (re-profiling / re-grading) on the west side ✓ Minimizes property and driveway impacts on east side ✓ Cyclists have direct access to adjacent lands / destinations on both boulevards and pedestrians have direct access on one side only, however there are limited destinations in the corridor	Least Preferred × Greatest property requirements / temporary grading easements × Greatest driveway impacts (re-profiling / re-grading) on both sides ✓ Cyclists and pedestrians have direct access to adjacent lands / destinations on both boulevards, however there are limited destinations in the corridor	Less Preferred × Greater property requirements / temporary grading easements on the west side. × Greater driveway impacts (re-profiling / re-grading) on the west side ✓ Minimizes property and driveway impacts on east side ✓ Cyclists have direct access to adjacent lands / destinations on both sides of the road; pedestrians have direct access on one side only, however there are limited destinations in the corridor

Criteria	Alternative A Buffered paved shoulder on both sides	Alternative B Buffered paved shoulders on both sides, MUP on west side	Alternative C Buffered paved shoulder and MUP on both sides	Alternative D MUP on the west and buffered paved should on the east, semi-urban
Natural Heritage	Most Preferred ✓ Less encroachment / grading to sensitive natural features (regionally significant wetlands, wetlands, significant woodlands and fishery and snapping turtle habitat) in areas where localized improvements is proposed	Less Preferred × Greater encroachment to sensitive natural features on west side × Minimizes encroachment to natural features on the east side	Least Preferred × Greatest encroachment to sensitive natural features with greater impacts on both sides	Less Preferred × Greater encroachment to sensitive natural features with greater impacts on the west side × Minimizes encroachment to natural features on the east side
Cultural Heritage	Most Preferred ✓ No impacts to cultural heritage resources	Less Preferred × Minor impacts to one built heritage resource and one cultural heritage landscape × Less requirement for Stage 2 archaeological survey	Least Preferred × Moderate impacts to one built heritage resource and one cultural heritage landscape × Greater requirement for Stage 2 archaeological survey	Less Preferred × Minor impacts to one built heritage resource and one cultural heritage landscape × Less requirement for Stage 2 archaeological survey
Preliminary Costs	Most Preferred ✓ Lowest construction and maintenance costs ✓ Minimal utility relocation	Most Preferred ✓ Low construction and maintenance costs × Minor to moderate utility relocation	Least Preferred × Moderate construction and maintenance costs × Significant utility relocation	Least Preferred × Moderate construction and maintenance costs × Minor to moderate utility relocation
Overall Summary	Recommended This alternative is recommended for the following reasons: ✓ Minimizes impacts to the socio-economic environment, natural environment, and cultural environment on both sides. ✓ Consistent with a rural cross-section			

7.4 Evaluation of Alternative Design Concepts Summary

The following summarizes the Preferred Design Concept for the Regional Road 25 for the two segments, as well as the constrained area found in Segment 1. The Preferred Design Concept includes the road improvements as well as the AT improvements.

Segment 1 – Region Road 25 from 5 Side Road to Chudleigh’s Entertainment Farm Access

- Continuous centre left turn lane is recommended as it improves traffic operations and reduces congestion from queuing, especially at Chudleigh’s Entertainment Farm, where the centre turn lane provides agricultural vehicles with more space to turn and allows vehicles to safely pass agricultural vehicles and into their properties.
- For active transportation, buffered paved shoulders on both sides and a MUP on the west was recommended. This accommodates on-road cyclist travel and provides a shared AT facility on one side of the boulevard while accommodating the passage of agricultural vehicles.
- To minimize property and grading impacts residential properties along Segment 1 (constrained areas), a storm sewer will be added west of the MUP instead of a drainage ditch.

Segment 2 – Regional Road 25 from Chudleigh’s Entertainment Farm Access to 10 Side Road

- Maintain existing two lanes with localized improvements as it improves traffic operations and reduces congestion from queuing as needed, has less impacts to properties and natural and cultural heritage resources and lower costs.
- For active transportation, buffered paved shoulders on both sides was recommended as it provides cyclists with direct access / connections on both sides of the road, has no property requirements, lower costs and accommodates passage of agricultural vehicles. A MUP was not recommended as there are fewer key destinations for pedestrians through Segment 2.

8. Recommended Design

8.1 Description of the Recommended Design

The recommended design for Regional Road 25 between 5 Side Road and 10 Side Road was selected with consideration of the evaluation criteria listed in **Section 6.2**. The recommended design addresses the problem/opportunity statement, while also minimizing impacts.

The recommended design is illustrated in the preliminary design drawings in **Appendix L**. The specific elements included in the recommended design are detailed in **Section 8.4**

As the Region was completing the Regional Road 25 MCEA study, Halton Hills Town Council approved an Official Plan Amendment and Zoning By-law Amendment at the June 22, 2026 Town Council Meeting for lands north-west of Regional Road 25 and 5 Side Road, which designates a portion of the subject lands within the Town's urban boundary and permits various commercial uses. See Town of Halton Hills staff Report No. PD-2026-061, dated June 8, 2026.

Halton Region staff will continue to work with the Town and developer through the Implementation process including review of development submissions and technical studies (e.g. Transportation Impact Study).

Infrastructure requirements, such as roadway improvements, identified through the development process will be reviewed and approved by Halton Region staff, including design, timing, and coordination with the Region's MCEA study recommendations for Regional Road 25 from 5 Sideroad to 10 Sideroad, and any other planned projects.

8.2 Design Criteria

The Design Criteria for the Study Corridor is summarized in **Table 8-1** to **Table 8-3**. The standards and guidelines referenced in preparation of the Design Criteria include:

- OTM Book 18: Cycling Facilities – 2021; and
- TAC Geometric Design Guide for Canadian Roads - June 2017.

At the time of Detailed Design, any changes to design standards and/or industry's best practices are to be considered.

Table 8-1 : Preliminary Design Criteria - Road Design Parameters

ROAD DESIGN PARAMETERS	EXISTING CONDITIONS	DESIGN STANDARDS	PROPOSED STANDARDS	SOURCE
Road Classification	Major Arterial	Major Arterial	Major Arterial	Halton Region IMP
ROW Width (m)	30 – 40 m	42 m (will be mitigated at constrained locations)	-	Halton Region IMP
Posted Speed (km/h)	80 km/h	80 km/h	80 km/h	-
Design Speed (km/h)	-	RAU90 – 100 km/h	90 km/h	TAC Chapter 2 – Table 2.6.2, page 47
Minimum Radius (m)	N/A (Straight segment)	Rural Superelevation Rate = 4.0% Min R = 380 NC: 2620 m RC: 530 m	N/A (Straight segment)	TAC Chapter 3 – Table 3.2.8, page 23
Minimum Sag Curve (k)	65.26	15-20	46	TAC Chapter 3 – Table 3.3.5, page 63
Minimum Crest Curve (k)	41.77	39	39	TAC Chapter 3 – Table 3.3.2, page 59
Grades Maximum	3.0%	3 - 5%	3.7%	TAC Chapter 3 – Table 3.3.2.4, page 55
Minimum Grade	0.48%	0.5% - 0.60% (desired) 0.4% (absolute minimum)	0.4%	TAC Chapter 3 – Section 3.3.2.5, page 55-56



ROAD DESIGN PARAMETERS	EXISTING CONDITIONS	DESIGN STANDARDS	PROPOSED STANDARDS	SOURCE
Through Lane Width	3.2 – 4.3 m	3.65 m	3.65 m	TAC Chapter 4 – Table 4.2.2, page 9
TWLTL (m)	3.3 m	4.0 m	4.0 m	TAC Chapter 8 – Section 8.6.2, page 29
Median Width	~1.2 – 1.5 m	0 m – 5.0 m (Varies)	0 m – 4.0 m	TAC Chapter 4 – Section 4.5.3, Point 5, page 33

Table 8-2: Design Criteria - Intersections Design: Turning Lane Design Parameters

TURNING LANE		PRESENT CONDITIONS	DESIGN STANDARDS	PROPOSED STANDARDS	SOURCE
Right Turn Lane	Width	3.3 – 3.8 m	Same as adjacent lane width or 0.2 to 0.25 m less	3.5 m	TAC Chapter 4 – Section 4.3.2.2, Page 13
	Storage	60 – 80 m	From Traffic Analysis	From Traffic Analysis	Traffic Analysis
	Taper	27:1 – 18:1 60 – 80 m	80 m	80 m	TAC Chapter 10 – Table 10.6.2, Page 31
Left Turn Lane	Width	2.7 – 3.5 m	Same as adjacent lane width or 0.2 to 0.25 m less	3.5 m	TAC Chapter 4 – Section 4.3.2.2, Page 13
	Storage	72 – 160 m	From Traffic Analysis	From Traffic Analysis	Traffic Analysis
	Taper	52:1 – 19:1	27:1 – 54:1	70 m – 115 m	TAC Chapter 9 – Table 9.17.1, Page 123

Table 8-3: Design Criteria – Other Cross-section and Active Transportation Elements

BOULEVARD ELEMENTS	EXISTING CONDITIONS	DESIGN STANDARDS	PROPOSED STANDARDS	SOURCE
Buffered Paved Shoulder (m)	2 - 2.3 m	1.5 m	3.0 m	TAC Chapter 4
Minimum Curb Radii (m)	8.0 m	8.0 – 15.0m	8.0m – 15.0 m	TAC Chapter 9 – Section 9.13.2, page 90
Multi-Use Path Width (m)	N/A	Minimum 3.0 m Enhanced 4.0 m Provide minimum 0.6 m wide shoulder or graded area (flatter than 1:6) on both sides of the trail. Provide a clear zone of 0.9 m wide on both sides of the trail.	3.0 m (Typical) 2.4m absolute minimum for short stretch in highly constrained area	OTM Book 18: Cycling Facilities - 2021

8.3 Road Geometry

8.3.1 Horizontal Alignment

The horizontal alignment for the preliminary preferred design (with a 90 km/h design speed) generally follows the existing centreline of Regional Road 25.

Minor adjustments in the horizontal alignment are proposed at some locations to address geometric requirements and meet minimum design. The proposed horizontal alignment is illustrated on the preliminary design drawings in **Appendix L**.

8.3.2 Vertical Alignment

With localized improvements along the study corridor, minor vertical alignment adjustments are made at localized improvements locations to minimize impacts to existing entrances and driveways, minimize impacts on watercourse crossings, and reduce grading impacts to adjacent properties and features. To meet geometric requirements and meet the geometric standards required for the class of the road, the design follows the design criteria identified in **Section 8.2**.

The proposed vertical alignment is illustrated on the preliminary design drawings in **Appendix L**.

8.4 Typical Cross-Section

The typical cross-sections for Regional Road 25 between 5 Side Road to Chudleigh's Entertainment Farm Access, including the constrained locations in Segment 1 from 5 Side Road to Chudleigh's Entertainment Farm access by the residential cluster, and Chudleigh's Entertainment Farm access to 10 Side Road are illustrated in **Figure 8-1** and **Figure 8-3** and consist of:

Segment 1 – 5 Side Road to Chudleigh's Entertainment Farm Access

- 42 m right-of-way (varies locally near intersections and at constrained locations);
- Two general purpose lanes (one in each direction) being 3.65 m wide;
- 4.0 m two-way centre left turn lane;
- Two 3.0 m buffered paved shoulders, one on each side
- 3.0 m MUP on the west side of the road;
- Storm sewer at constrained locations (at residential cluster), west of the MUP to reduce property requirements / grading impacts to residential properties; and

Segment 2 – Chudleigh’s Entertainment Farm Access to 10 Side Road

- 42 m right-of-way (varies locally near intersections and at constrained locations);
- Two general purpose lanes (one in each direction) being 3.65 m wide; and
- Two 3.0 m buffered paved shoulders, one on each side;

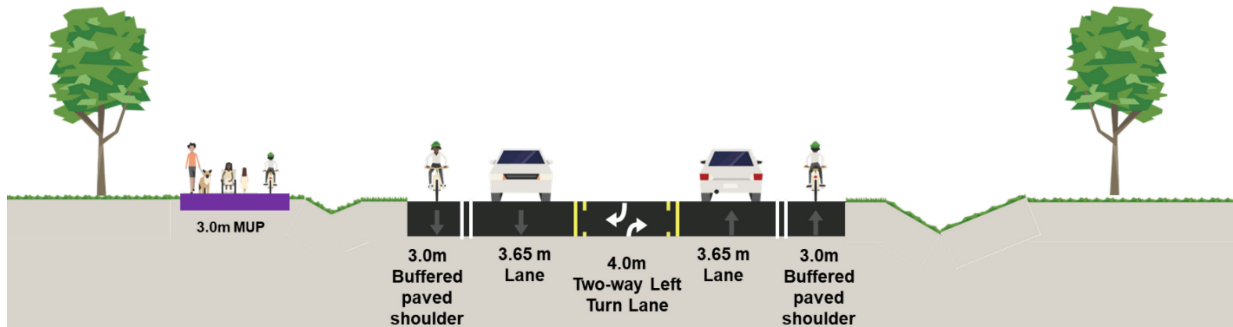


Figure 8-1: Typical Cross-section for Segment 1 - Regional Road 25 from 5 Side Road to Chudleigh's Entertainment Farm Access

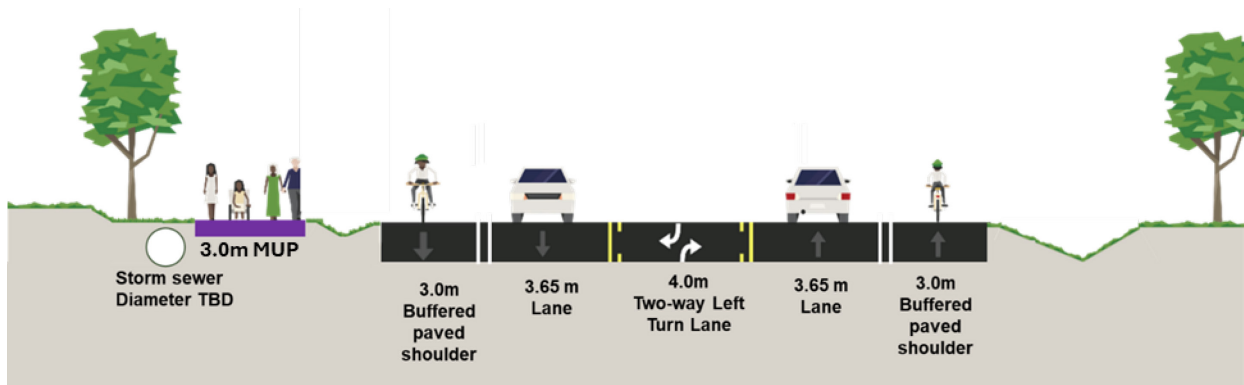


Figure 8-2: Typical Cross-section for Segment 1 - Constrained Locations

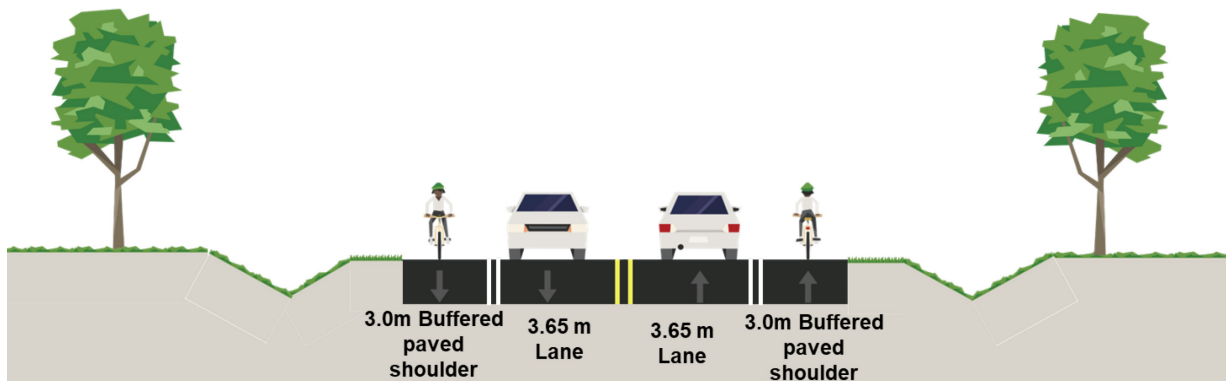


Figure 8-3: Typical Cross-sections for Segment 2 - Chudleigh's Entertainment Farm to 10 Side Road

8.5 Cycling and Pedestrian Facilities

The recommended design includes 3.0 m buffered paved shoulders on both sides of Regional Road 25 for the entire study corridor. A 3.0 m MUP is only recommended on the west side of Regional Road 25 from 5 Side Road to Chudleigh's Entertainment Farm access to provide residents living along the corridor to walk and cycle to and from Chudleigh's Entertainment Farm and locations to the south of the study area. The MUP reduces to 2.4 m at a constrained location by the residential cluster to avoid impacts to residential properties. A proposed storm sewer and catch basins are proposed between the MUP and the residential properties to avoid impacts to residential properties due to grading. The location of the proposed MUP separates pedestrians and cyclists from roadway vehicles with a ditch in between to provide greater comfort. The proposed AT facilities will tie into the planned roundabout and AT facilities at the 5 Side Road intersection.

The material type, treatment and pavement markings / signage for the MUP and buffer paved shoulders will be confirmed during Detailed Design.

The planned roundabout at the intersection of Regional Road 25 and 5 Side Road was identified in the Municipal Class Environmental Assessment (MCEA) Study for Regional Road 25 corridor from Steeles Avenue (Regional Road 8) to 5 Side Road completed in 2020 and is not a part of the study.

8.6 Intersection Designs, Traffic Signals and Accesses

Intersections have been designed in accordance with AODA standards and to facilitate the movement of road users, including pedestrians and cyclists.

There are no traffic signals proposed for Regional Road 25 within the study limits. The planned roundabout at the intersection of Regional Road 25 and 5 Side Road was identified in the Municipal Class Environmental Assessment (MCEA) Study for Regional Road 25 corridor from Steeles Avenue (Regional Road 8) to 5 Side Road completed in 2020. and is not a part of the study. A new two-way centre left-turn lane from 5 Side Road to Chudleigh's Entertainment Farm access provides refuge for left-turning vehicles. New dedicated, exclusive left-turn lanes have been added to Regional Road 25 at 10 Side Road from both directions. Existing dedicated, exclusive left and right-turns have been maintained along the study corridor.

Some driveways along the corridor will require re-grading to accommodate the proposed road improvements. Property owners will be notified of temporary impacts to driveway access through detailed design prior to construction and in advance of work related to their access.

8.7 Illumination

As the study corridor is a rural road, illumination will be provided only at intersections. Illumination to be confirmed during Detailed Design for the MUP. Details will be based on Halton Region's illumination standards and will be confirmed during Detailed Design, at which time the type and location of poles and luminaires will be confirmed in consultation with roadway, traffic, and electrical engineers. Lighting levels based on final traffic volumes for both cyclists and vehicles is also required to determine if pedestrian scale lighting is needed.

8.8 Tree Inventory

A preliminary tree inventory was completed as part of the EA. Additional details of the tree inventory are provided the Tree Inventory Report in **Appendix M**.

Compensation tree plantings will be required and should be planted within the Regional Road 25 ROW as part of natural feature edge restoration and landscape plan designs, to the extent feasible. Landowner permission will be required to accommodate removal of an estimated 33 boundary or privately owned inventoried trees. This will be further defined at Detailed Design.

Halton Region recognizes the intrinsic value of trees and woodlands in both urban and rural environments, including their role in supporting biodiversity, enhancing community well-being, and helping to offset greenhouse gas emissions. To maintain or increase woodland and tree cover, the Region's Tree-Canopy Replacement Policy on Regionally Owned Lands (LPS31-08) outlines requirements for the removal and replacement of these resources on Regionally owned lands. This policy applies to all Region-led capital projects, including water, wastewater, and transportation infrastructure.

Where infrastructure projects may result in the removal or disturbance of existing trees, Halton Region is committed to minimizing impacts and implementing appropriate mitigation measures during the detailed design and implementation phases. In accordance with the Tree-Canopy Replacement Policy, the following measures will be implemented for all Region-led infrastructure projects where tree removal or disturbance may occur:

- A Tree Protection and Preservation Plan will be prepared by a certified arborist or qualified professional during the detailed design and implementation phases. The plan will:
 - Include a comprehensive tree inventory documenting the location, species, size, and condition of trees within the study area;

- Provide an impact assessment identifying which trees are to be removed, retained with injury, or retained with no injury;
- Outline mitigation measures to minimize impacts to existing trees during construction;
- Include an analysis of compensation requirements for trees affected by the project, based on the policy;
- Be tailored to site-specific conditions and identify appropriate strategies for tree protection, preservation, and replacement;
- Tree replacement will be based on the canopy cover lost, rather than the number of trees removed, and will follow the Canopy Replacement Schedule outlined in the policy; and
- Replacement species will be native and ecologically appropriate, excluding invasive species. Planting may occur on-site or off-site, depending on feasibility.

Halton Region is committed to implementing the mitigation measures identified in the Tree Protection and Preservation Plan and will engage with relevant and interested parties, including First Nations and Indigenous Communities, as projects advance through design and construction.

8.9 Streetscaping and Landscaping

The preferred design considers maximizing the available space for plantings and streetscaping along the roadway corridor, AT facilities, and property line while minimizing impacts to the adjacent sensitive natural features. Considerations for other landscaping treatments such as grass or other small vegetation should be considered during Detailed Design.

During Detailed Design, streetscaping opportunities will be confirmed and a streetscaping planting plan including individual tree planting locations will be developed.

Photo renderings were prepared and presented in PIC #2 to illustrate the preliminary preferred design in **Figure 8-3** and **Figure 8-4**.



Figure 8-4: Regional Road 25, South of Chudleigh's Entertainment Farm Access (Facing North)



Figure 8-5: Regional Road 25, South of 10 Side Road (Facing North)

8.10 Property Requirements

The Region's IMP identified a ROW of 42 m for improvements to the Regional Road 25 corridor. Additional land may be acquired to accommodate intersection requirements, culvert crossings, etc. The preliminary preferred design minimizes property requirements where feasible.

Permanent property requirements are not required for the recommended preliminary design. Area required for temporary easement is approximately 0.37 ha. In general, grading has been contained within the existing ROW but easements will be required to accommodate final grading limits determined during detailed design. Temporary and permanent easements will be considered for construction, maintenance, and grading purposes. During Detailed Design, opportunities to reduce temporary easements should be reviewed where feasible.

8.11 Pavement Design

The preliminary pavement investigation recommendations are detailed in **Appendix J**.

Based on the results of the investigation, the following preliminary pavement design is recommended for reconstruction of the roadway:

- HL1 – 50 mm
- HDBC (2 lifts) – 135 mm
- OPSS Granular A Base – 150 mm
- OPSS Granular B Type II Subbase – 500 mm

If grades permit, strengthening and rehabilitation of the existing pavement structure for reuse in the final pavement could be considered. Based on the findings of the preliminary pavement analysis, the rehabilitation strategy could entail a hot mix overlay or partial depth reconstruction.

Partial depth reconstruction would involve removal of the existing asphalt followed by grading of the exposed granular and the placement of new asphalt. Pavement design analysis indicates that a new asphalt thickness of 215 mm is required over the existing granular materials to support the 20-year traffic loading.

The pavement design recommendations will need to be reviewed and confirmed during Detailed Design by a geotechnical engineer.

8.12 Drainage / Stormwater Management Plan

The Drainage and Stormwater Management Report including the Drainage Area Plans is provided in **Appendix G**.

Transverse Watercourse Crossing

The Middle Sixteen Mile Creek crosses Regional Road 25 approximately 1.6 km north of 5 Side Road and is regulated by Conservation Halton. The crossing structure is a 7.1 m span concrete open-footing structure. A hydraulic assessment of this crossing was undertaken in accordance with the Ontario Ministry of Transportation's Highway Drainage Design Standards (2008). Regional Road 25 is classified as a Rural Arterial roadway. Hydraulic models of the Middle Sixteen Mile Creek were provided by Conservation Halton.

Based on the preliminary hydraulic assessment results, the culvert north of Chudleigh's Entertainment Farm access does not fully meet MTO criteria (i.e. freeboard or clearance), and overtopping is observed under the Regional storm event. Halton Region's Road Operations confirmed that no incidents of any historical flooding at this crossing location have been observed.

Based on the existing condition assessment, natural heritage considerations, fluvial geomorphologic evaluations, proposed roadway geometry, grading impacts, and hydraulic performance, no upgrades or extensions are required for the Middle Sixteen Mile Creek structure crossing to support the proposed roadway improvements. The hydraulic analysis indicates minimal benefit in reducing roadway overtopping by modeling a larger structure span. Furthermore, improving hydraulic performance by raising the road profile is prohibitive due to grading constraints imposed by accesses to adjacent properties and businesses. Therefore, it is recommended to maintain the existing bridge structure and road profile, with no extensions needed. As a result, no changes to the hydraulic conditions at this crossing location are anticipated.

Based on the proposed roadway improvements as part of this MCEA study, no impacts on the watercourse crossing at Culvert C-2 are anticipated as a result of the proposed improvements, as the road improvements do not require a culvert extension or replacement at this crossing location north of Chudleigh's Entertainment Farm access. Consequently, there are no anticipated impacts to water surface elevations upstream or downstream of the Regional Road 25 crossing or changes to flow overtopping depths under the Regional Storm event.

Culverts C-2 and D are classified as high erosion risk and therefore require hard engineering erosion controls (e.g. armourstone, riprap) to mitigate this risk. At Crossing C (C-2), scour noted at the culvert inlet should be addressed and the existing erosion controls (riprap and sheet pile) should be repaired or replaced at detailed design. Erosion protection should also be installed at the culvert outlet to mitigate the high erosion risk at this crossing. The extent of erosion control works, and stone sizing should be confirmed at detailed design. Given the evaluation of erosion risk, erosion mitigation works at Crossing D are also recommended at detailed design.

Drainage and Stormwater Management Plan

The overall drainage pattern will generally remain consistent with existing conditions. To accommodate the proposed changes within the right-of-way, roadway runoff will be collected and conveyed via roadside ditches to the existing drainage outlet locations.

Since the increase in impervious surface area is anticipated to be approximately 19%, stormwater management measures, including enhanced roadside ditches, Low Impact Development (LID) features where feasible, and check dams as required, are proposed to address potential increases in runoff, peak flows, and erosion potential associated with the roadway improvements..

To meet stormwater management (SWM) objectives related to quantity control, water quality, water balance, and erosion control, the following enhancements are proposed within the roadside ditch system:

- Flatter, wider-bottom ditches will be incorporated along the corridor to improve infiltration and reduce flow velocities;
- Opportunities for implementing Low Impact Development (LID) features such as bioswales or rain gardens should be investigated during future phases of design. Specifically, opportunities to integrate LID's within the ditches to promote water quality treatment and water balance restoration through enhanced infiltration and evapotranspiration should be considered. LID features should be situated where soil permeability is favourable for infiltration and where groundwater levels are at least 1 metre below the base of the LID; and
- Check dams will be installed within the ditches as required to slow runoff, promote sedimentation, and provide additional quantity control by reducing peak flows.

These measures are intended to maintain or improve pre-development hydrologic conditions while complying with applicable stormwater management criteria.

The Stormwater Management (SWM) strategy is to be refined and finalized at the Detailed Design stage to include a comprehensive assessment demonstrating how the proposed measures will achieve the required water quality and quantity control objectives. This will be supported by detailed design information and quantitative analyses, confirming that all applicable performance targets are met under post-development conditions.

Formulation of final recommendations will be based on detailed technical assessments, site-specific constraints, and stakeholder feedback.

The Stormwater Management (SWM) facilities are to be designed at the Detailed Design stage in accordance with applicable MECP guidelines, including the Stormwater Management Practices Planning and Design Manual (2003) and the Low Impact Development Stormwater Management Guidance Manual (2022). Site-specific infiltration testing is to be completed to confirm the feasibility of any proposed infiltration-based LID measures and to support the final design.

8.13 Noise

A noise assessment was undertaken to determine potential noise impacts resulting from the proposed road improvements based on the MECP / MTO Noise Protocol and Halton Region Noise Abatement Guideline (2014). The noise modelling was carried forward for future noise level with and without improvements. Traffic volumes from the 2031 year were used to assess potential noise impacts, which was the best available data as outlined in the joint MECP / MTO Noise Protocol. The roadway noise prediction model used is the ORNAMENT road noise prediction algorithms produced by the MECP. The MECP “STAMSON” highway noise prediction model is a computerized version of this method.

Based on this noise modelling, the potential change in noise levels as a result of the proposed improvements to the Regional Road 25 study corridor when compared to the future without roadway improvements condition were predicted to not exceed the 5 dBA criteria as outlined in the Halton Region’s noise guideline. If traffic volumes were used for 10 years after construction or based on ultimate capacity, a change in noise levels is not predicted to warrant the review of noise mitigation based on Regional Policy since there is no increase in travel lanes.

Construction noise impacts are temporary in nature but may be noticeable at times in nearby noise sensitive areas. Methods to mitigate construction noise impacts should be followed as outlined in **Table 9-1**. The noise assessment is provided in the Noise Impact Study included in **Appendix K**.

8.14 Air Quality

An Air Quality Impact Assessment was undertaken to assess the local air quality impacts due to the proposed Regional Road 25 improvements. The study also includes an overview of construction impacts and a screening level assessment of Greenhouse Gas (GHG). The 2023 Existing No Build and 2031 Future Build were assessed to determine the need for mitigation measures.

With the improved traffic flow resulting in less idling and improved fuel combustion conditions, the cumulative concentrations for the Future Build emissions scenario were below their respective MECP guidelines or Canadian Ambient Air Quality Standards (CAAQS), with the exception of the annual $PM_{2.5}$, annual benzene, and 24-hr and annual Benzo(a)Pyrene. The overall contribution from the roadway emissions to the combined concentrations was generally below 10%. The exceptions were the roadway contribution to 1-hour carbon monoxide (CO) and 24-hour TSP which were 16% and 23% of the predicted cumulative concentrations, respectively. Mitigation measures are not warranted as the project does not introduce new exceedances to the guideline, in comparison to background concentrations.

In addition to the contaminants of interest assessed in the local air quality assessment, GHG emissions were predicted from the project. The contribution of GHG emissions from the study corridor will represent 0.00265% of the provincial target and 0.00086% of the Canada-wide target. The contribution of GHG emissions from the project is small in comparison to these provincial and national targets.

During construction, dust is the primary contaminant of concern. It is recommended that best management practices outlined in **Table 9-1** be followed during construction of the roadway to reduce air quality impacts that may occur.

The air quality assessment is included in **Appendix N**.

8.15 Utilities

Existing utilities along the corridor were identified based on available information provided by the utility companies. These utilities include, but are not limited to, luminaire poles, gas lines, hydro lines, and telecommunication lines. Throughout the development of design alternatives, considerations have been made to minimize impact to existing utilities. Furthermore, catch basins are proposed along the outer edge of the multi-use pathway between 9260 Regional Road 25 and 9340 Regional Road 25. This is proposed to capture precipitation run-off from the MUP without affecting the existing residential properties. Utility providers are included as a stakeholder in Technical Advisory Committee and are consulted at key milestones as outlined in Section 3.2 and are invited to provide comments through the study process.

Despite implementing strategies to minimize utility impacts, the preferred design alternative may necessitate utility relocations. Hydro poles may require relocation if they are positioned near proposed infrastructure or fall within the grading limits of the planned improvements. Similarly, buried utility lines may require relocation depending on their depth and proximity to the proposed works. Ultimately, existing utilities along the Regional Road 25 corridor will be relocated as necessary to accommodate the preliminary preferred design.

The location and alignment of existing municipal services is to be confirmed during Detailed Design, which may result in changes to utilities. Impacts on utilities will be confirmed during Detailed Design, in consultation with individual utility companies. Property requirements for the impacted utilities including supporting infrastructure (such as guy wires) should be determined early in the next phase of design to allow for property acquisition to commence well in advance of construction. During Detailed Design, meetings should be held with utility companies as required where potential impacts to existing or future services are identified. All utility information should be updated prior to construction to confirm that the data is accurate and to finalize relocation requirements as necessary.

8.16 Preliminary Cost Estimate

The preliminary cost of the recommended improvements is estimated to be **\$24M**. This preliminary cost estimate includes costs of removals, road work, utility relocation, streetlights, traffic signals, structures, landscape, traffic control, and engineering services.

The estimated costs are preliminary only and shall be confirmed during Detailed Design.

8.17 Constructability, Staging and Detour Considerations

Construction staging and traffic management plans will be developed during detailed design to facilitate the safe and efficient implementation of the proposed works on Regional Road 25, while maintaining operations for all road users. The Traffic Management Plan will seek to maintain pedestrian, cyclist, and vehicle operations at levels comparable to existing conditions where practical and identify how access to properties and businesses adjacent to the road will be maintained during construction.

However, the nature of the required work is such that traffic disruption and delays cannot be entirely avoided. If deemed necessary, temporary, short-term lane closures may be permitted during off-peak/night-time hours only.

Impacts will be temporary and the Region will attempt to mitigate impacts as much as possible.

8.18 Construction Monitoring and Maintenance Considerations

The reconstruction of Regional Road 25 should be staged to maintain both local and through traffic within the study area. Any necessary interruptions to traffic should be kept brief and to a minimum. In particular, there should be close coordination with EMS operations to minimize impacts on Regional Road 25 traffic.

Property owners and tenants may experience temporary interruptions to their property access during construction. To reduce this impact, all property owners should be notified prior to construction and in advance of work related to their access. Detailed Design plans should include details to describe how temporary accesses will be maintained, and contract specifications should specify the allowable lengths of closures and the notification requirements to property owners. Construction of the improvements has the potential to create noise and dust for the adjacent property owners.

Construction noise is temporary noise and will vary periodically during the construction depending on the specific activities being performed. Contract specifications will include provisions to define the allowable work hours, in accordance with local ordinances, to minimize impacts to the adjacent landowners in the evenings. However, some considerations will be given to the ability of completing the work in a lesser duration by allowing longer work hours. The impact of construction noise will vary based on the type of equipment used, number of pieces of equipment, time and duration of operation, and the proximity to noise sensitive receivers in question. Construction noise will be kept to a minimum through the use of well-maintained equipment with appropriate noise controls by the contractors.

Removal of existing paved surface and existing landscaping will expose native soils to wind and rain erosion, and result in a temporary increase in dust in the project area. This dust can become airborne as construction traffic runs on the exposed ground and may be noticeable by the adjacent property owners. This increase in dust levels will be temporary, and the application of best management practices, including the application of non-chloride dust suppressants, by the contractor during his normal operations can help to minimize the exposure of native soils to wind and rain erosion.

All waste generated during construction must be disposed of in accordance with ministry requirements and best management practices. Contractors must be made aware of all environmental considerations so that all environmental standards and commitments for both construction and operation are met.

Throughout all phases of the project implementation, Halton Region's standard communications processes for capital construction projects will be followed. These activities may include, but are not limited to, construction notices, project web updates, public outreach and engagement initiatives, project signage and social media communications. The Halton Region project team will serve as the primary point of contact for all project-related inquiries and will coordinate responses in accordance with established Regional capital project communications protocols. The public is encouraged to contact Halton Region by calling 311 or 905-825-6000, available 24 hours a day, seven days a week, including holidays, or by emailing accesshalton@halton.ca. All inquiries will be logged and directed to the appropriate members of the project team for review and follow-up.

Construction and post-construction monitoring plans should be developed during Detailed Design in consultation with MECP and other regulatory agencies.

9. Potential Environmental Impacts and Mitigation

9.1 Greenbelt Plan, 2017

The Greenbelt Plan (GBP), 2017 identifies environmentally and agriculturally protected lands within the GGH, where urbanization should not occur, to provide permanent protection to these ecological features and functions, and agricultural lands.

Section 6.2.3 (3) of the Greenbelt does allow for infrastructure projects within natural heritage features subject to approvals under the EAA Section 4.2.1(1) and 4.2.1(2) of the GBP outlines the general policies for infrastructure projects.

The Greenbelt Plan designated areas is located on both sides of Regional Road 25 from just south of the Chudleigh's Farm access to 10 Side Road within the study limits.

Localized improvements on Regional Road 25 and active transportation facilities will help accommodate growth within the Town and Region by providing different travel options and creating better connections to support goods and people movement. The culvert north of Chudleigh's Entertainment Farm access will be maintained. The preferred alternative minimizes the amount of Greenbelt traversed with the proposed works essentially being along the existing alignment.

There are no Provincially designated Specialty Crop areas in the study area. There will be minimal net loss of lands which has been kept to a minimum with localized improvements and alignment shifts in a context sensitive manner to minimize impacts to the protected countryside and agricultural areas.

Section 9.4 provides details on anticipated impacts and proposed mitigation measures to be used to minimize impacts on vegetation, wildlife, fisheries and aquatic habitat, surface water, ground water and other factors.

9.2 Niagara Escarpment Plan, 2017

The Niagara Escarpment Plan (NEP), 2017 identifies geological and ecological features along the Niagara Escarpment where the NEP areas would be protected.

During the study duration, the project team consulted with NEC on the design alternatives and evaluation as well as the preliminary preferred design to discuss potential impacts to NEP lands. The evaluation criteria were revised during the first NEC TAC meeting to add, protect scenic and landform of the NEP area and development.

A Niagara Escarpment Permit (NEP) is anticipated during Detailed Design and will require further consultation with NEC to determine the work activities that would be covered by an NEC Permit and the work activities that would be exempt. During the NEP application process, NEC will require the following information, but not limited to, during Detailed Design:

- Stage 2 Archaeological Assessment Report
- Vibration Assessment
- Cultural Heritage Report
- Natural Environment Report, including updated inventory and Species at Risk identification
- Restoration Planting Plan (RPP)
- Invasive Species Management Plan
- Landscape Planting Plan
- Monitoring Plan

9.3 Climate Change

The MECP guide, Consideration of Climate Change in the EA Process, sets out Ministry expectations and supports the province's Climate Change Plan by outlining climate change considerations for EA studies. The guide notes "climate consideration" within a project means that consideration has been given methods to reduce GHG emissions and developing a design that is more resilient to future changes in climate and helps maintain the ecological integrity of the local environment in the face of a changing climate. The preliminary preferred design minimizes impacts to natural features as well as provides AT facilities (MUP and buffered paved shoulders) for both cyclists and pedestrians to encourage residents to travel through the corridor with active modes of transportation and reducing GHG emissions from private vehicles.

Climate change impacts related to this study are related to operations and maintenance as the transportation sector is one of the biggest contributors to CO², a key GHG. Climate Change will also impact the study area in the future as extreme weather conditions will affect the conditions of the roadways and will require more frequent repairs and updates as time passes. As a result, mitigation measures will be considered for stormwater management and conveyance of major event flow routes.



9.4 Anticipated Impacts and Mitigation Measures

A summary of the potential impacts to socio-economic, natural and cultural environments, together with recommended mitigation measures, is provided in **Table 9-1**.

Table 9-1: Summary of Potential Environmental Impacts, Mitigation Measures and Commitments to Future Work

Factor	Details/Anticipated Impact	Proposed Mitigation
Socio-Economic Environment		
1. Land Use and Socio-Economic Impacts	a. Impacts on residents during construction, including increased travel time or possible detours. b. Impacts to driveway access during and post-construction. c. Some driveways will need to be re-graded.	i. Develop a detailed traffic management plan and staging concept to determine how vehicular and AT traffic will be accommodated during construction and how access to properties adjacent will be maintained. ii. Prior to construction, specific notices and contact information will be delivered to area residents and property owners informing them of construction details, including temporary impacts to driveway access prior to construction and in advance of work related to their access.
2. Property Requirements	a. Temporary construction easements are required at some locations as a result of the recommended preliminary design described in Section 8.10 and shown in Appendix L.	i. Consult with affected property owners including those where property is required or where access to their property will be impacted. ii. Property requirements to be confirmed during Detailed Design. iii. Temporary easements, modifications to grading slopes (in accordance with geotechnical recommendations) to reduce the amount of area required.
3. Noise	a. Construction noise impacts are temporary in nature.	i. Methods to minimize construction noise impacts should be included in the contract documents: a. Construction hours should be abided by Town of Halton Hills noise control by-law 2010-0030 and 2023-0067. If construction activities are required outside of these hours, the Contractor should minimize the amount of noise being generated. b. Provide explicit indication that the Contractor is expected to comply with applicable requirements of the contract. c. Maintain all equipment to limit noise emissions and operate with effective muffling devices that are in good working order. d. Contractor should assess for potential vibration impacts from their planned activities prior to the start of construction and mitigate accordingly. e. If the presence of persistent noise complaints, sound emission standards for the various types of construction equipment used on the project should be checked to confirm that they meet the specified limits contained within MECP Publication NPC-115 – “Construction Equipment”. f. Construction practices should abide by Ontario Provincial Standard Specification (OPSS) MUNI 120 vibration limits. g. Contractor should abide to the following MECP vibration document requirements when constructing this undertaking: Noise Pollution Control Publication 207 (NPC-207) and Impulse Vibration in Residential Buildings, (November 1983).

Factor	Details/Anticipated Impact	Proposed Mitigation
4. Climate Change	a. Increased CO ² levels.	i. Opportunities for tree planting within the boulevard and minimizing adverse impacts the existing tree line where feasible. ii. Provision of dedicated active transportation improvements (buffered paved shoulders on both sides and MUP on the west side from 5 Side Road to Chudleigh's Entertainment Farm access). iii. Intersection improvements to minimize idling and delays. iv. Providing two-way centre left-turn lane from 5 Side Road to Chudleigh's Entertainment Farm access to minimize idling and delays. v. The proposed improvements make use of an existing transportation route and propose to accommodate road users in such a way that minimizes impacts to surrounding areas including residences, businesses, and the natural environment.
5. Air Quality	a. The cumulative concentrations for the Future Build emissions scenario were below their respective MECP guidelines or CAAQS, with the exception of the annual PM_{2.5}, annual benzene, and 24-hr and annual Benzo(a)Pyrene. Note that background concentrations alone exceeded the guideline for these contaminants and averaging periods. The overall contribution from the roadway emissions to the combined concentrations was generally below 10%. The exceptions were the roadway contribution to 1-hour CO and 24-hour TSP, which were 16% and 23% of the predicted cumulative concentrations, respectively. b. GHG emissions on Regional Road 25 and 5 side Road represent 0.00265% of the provincial target and 0.00086% of the Canada-wide target. The contribution of GHG emissions from the project is minimal in comparison to these provincial and national targets. c. During construction of the roadway, dust is the primary contaminant of concern. Other contaminants including nitrogen oxides (NO_x) and Volatile Organic Compounds (VOCs) may be emitted from equipment used during construction activities.	i. Best Management Practices should be followed during construction to reduce air quality impacts such as material wetting or use of non-chloride dust suppressants to reduce dust, use of wind barriers, and limiting exposed areas which may be a source of dust and equipment washing. ii. Additional mitigation measures such as planting vegetation (for example coniferous species and shrubs) should be considered to minimize particulate impacts at nearby sensitive receptors.
6. Source Water Protection	a. The Clean Water Act, 2006 helps communities protect their drinking water supplies through prevention – by developing collaborative, watershed-based source protection plans that are locally driven and based on science. The proposed project is located in the Halton-Hamilton Source Protection Area. There are no immediate source water protection areas within the vicinity of the study corridor.	i. The preliminary stormwater management strategy identified in Section 8.13 will be further developed in Detailed Design and will address infiltration of stormwater runoff from the road ROW.
7. Streetscaping/ Urban Design	a. Impact to existing trees and landscaped features.	i. The preferred design considers minimizing impacts to the adjacent sensitive natural features. ii. During Detailed Design, streetscaping opportunities will be confirmed and a streetscaping planting plan including individual tree planting locations will be developed.

Factor	Details/Anticipated Impact	Proposed Mitigation
8. Utilities	a. Existing utilities in conflict with proposed improvements. These utilities include, but are not limited to, luminaire poles, gas lines, hydro lines, and telecommunication lines.	i. A utility relocation plan will be developed during Detailed Design as necessary. ii. All utility information will be updated prior to construction to finalize relocation requirements as necessary, in consultation with utility companies.
9. Construction Detours/ Temporary Lane Restrictions	a. Inconvenience during construction.	i. During Detailed Design, a traffic management plan will be developed to determine how traffic will be accommodated during construction and how access to properties adjacent to Regional Road 25 will be maintained.
10. Soil Removal and Contaminants	a. Excess soils will be generated during construction.	i. During Detailed Design, an Earth Management Plan describing the management of earth and proposing measures to minimize earth borrow and excess material generation and maximize reuse of excess material on the project. The Earth Management Plan shall also include recommendations on how any Excess Soil, as defined by O. Reg. 406/19, is to be managed to meet the requirements of the regulation.

Cultural Environment

11. Archaeology	a. The majority of the Study Area is previously disturbed, but the Study Area exhibits areas of archaeological potential that will require Stage 2 Archaeological Assessment (AA) if the lands are impacted. See Appendix E for the potential areas for Stage 2. b. AjGx-148 are within 50 m of the Study Area and is a registered archaeological site.	i. Stage 2 AA by test pit at five m intervals, (and any further stages of AAs, if recommended) will be completed as early as possible during detailed design and prior to any construction ground disturbing activities. Should the proposed work extend beyond the current Study Area, further Stage 1 AA should be conducted to determine the archaeological potential of the surrounding lands. ii. The results of the Stage 2 archaeological assessment, when completed, may trigger further stages of assessment for parts of the area it covers. The outstanding archaeological assessment work will take place as early as practical in the Detailed Design stage and will be in accordance with the Ontario Heritage Act. iii. The Stage 2 Archaeological Assessment will be completed in accordance with the Ontario Heritage Act. First Nations and Indigenous Communities will be advised and afforded the opportunity to have field liaison representative participation. iv. Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the Ontario Heritage Act. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out an archaeological assessment, in compliance with Section 48(1) of the Ontario Heritage Act. v. The Funeral, Burial and Cremation Services Act requires that any person discovering human remains must cease all activities immediately and notify the police or coroner. If the coroner does not suspect foul play in the
-----------------	---	---

Factor	Details/Anticipated Impact	Proposed Mitigation
		disposition of the remains, in accordance with Ontario Regulation 30/11 the coroner shall notify the Registrar, Ontario Ministry of Public and Business Service Delivery and Procurement, which administers provisions of that Act related to burial sites. In situations where human remains are associated with archaeological resources, the Ministry of Citizenship and Multiculturalism should also be notified to ensure that the archaeological site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act.
12. Built Heritage Resources and Cultural Heritage Landscapes	a. Direct impacts to BHR3 are anticipated to include grading extending into a portion of the northeastern property line. However, as the grading at the property line is minimal and are at a considerable distance from the structure and its heritage attributes, these impacts are not considered to be adverse. b. Direct impacts to CHL2 are anticipated to include grading extending into the and removal of mature trees at the property line. However, as the grading at the property line is minimal and will not encroach on any identified potential heritage features, these impacts are not considered to be adverse. c. There are indirect impacts to BHR1 and CHL1, resulting from potential construction-related vibration within 50 m of the proposed work. No other indirect impacts are anticipated. d. There are no impacts anticipated to BHR2 but the proposed work is directly adjacent to BHR2.	i. Construction activities and staging should be suitably planned and undertaken to avoid unintended negative impacts to identified BHRs and CHLs. Avoidance measures may include, but are not limited to, erecting temporary fencing, establishing buffer zones, issuing instructions to construction crews to avoid identified features, etc. ii. As direct impacts are anticipated to BHR3 and CHL2, where feasible the proposed work should be designed in a manner that avoids all impacts to the BHR and CHL. The removal of trees and other features should be limited to the extent possible. Where removal cannot be avoided, post-construction rehabilitation with sympathetic plantings should be implemented. iii. To address the potential for indirect impacts due to construction related vibration, undertake a baseline vibration assessment during detailed design to determine potential vibration impacts for BHR1. iv. Undertake a Heritage Impact Assessment for BHR2 and BHR3 as early as possible during detailed design. The HIA should be submitted for review and comment to MCM, Town of Halton Hills heritage planning staff and other interested parties.
Natural Environment		
13. Vegetation and Vegetation Communities	Direct impacts to vegetation removal and site grading are: a. Roadside grading limits are expected to extend into the outer edges of non-significant Reed Canary Grass Mineral Meadow Marsh (MAM2-2) features at the south end of the study area, west of the road, and regionally significant wetland communities such as the White Cedar Mineral Mixed Swamp (SWM1-1) and Mineral Thicket Swamp (SWT2) communities of the Chudleigh Swamp complex, and additional SWT2 thicket swamp to the north. b. Unevaluated wetland that is presumed PSW at approximately Stations 2-960 to 3-060 (0.15ha encroachment) which comprises the Mineral Meadow Marsh (MAM2) ecosite. c. Woodland edge encroachment effects are expected at the Fresh-Moist Oak-Maple-Hickory Deciduous Forest (FOD9), Dry-Fresh Deciduous Forest (FOD4), as	i. Efforts should be made during the Detailed Design stage, including the review of minimizing grading and use of retaining walls, to further reduce natural feature encroachment requirements, including the Chudleigh Swamp wetland features, and Significant Woodland located at the north end of the study area. ii. An updated and detailed inventory and assessment of Black Ash tree growth and health should be completed by a qualified biologist during the Detailed Design stage to confirm whether SCA protections and development constraints apply in this location. iii. Restoration of these disturbed feature edges will be necessary to mitigate the associated negative effects, such as the colonization and spread of non-native/invasive species, erosion of disturbed soils, and increases in negative edge effects within wooded natural features.

Factor	Details/Anticipated Impact	Proposed Mitigation
	well as the Dry-Fresh Sugar Maple-Hickory Deciduous Forest (FOD5-5) and some woodland communities immediately north of the 10 Side Road intersection. d. The maximum width of natural feature encroachment is 10.0m, located at the MAM2-2 meadow marsh to the west of the ROW, while the majority of encroachments are <5m from the existing road footprint. At the level of individual vegetation communities, development encroachments as a proportion of total vegetation community area range from 0.01% (Fresh-Moist White Cedar-Hardwood Mixed Forest (FOM7-2) to 20.4% (MAM2-2 meadow marsh on west side of ROW). e. Of these areas of development encroachment, only two areas will require encroachment of impervious road infrastructure, both of which comprise encroachment of the proposed MUP. These include a very small encroachment area at the southernmost MAM2-2 wetland and a larger area at the MAM2-2 wetland to the north (west side of the road). At MAM2-2 wetland, the maximum impervious development encroachment extends 5.6 m and represents a maximum 9.7% of the total vegetation community area. Unlike graded slopes, impervious road infrastructure represents a permanent removal of habitat. Significant Vegetation Species Impacts a. Anticipated grading encroachment into the SWM1-1 swamp community on the west side of the ROW will come into close proximity to one of the two plotted locations of SAR Black Ash growth. The grading limits will encroach within the 30 m habitat zone of the plotted tree location. Tree Removal a. Of the 389 inventoried trees, 214 are recommended for removal to accommodate the Preliminary Preferred Design. Many of these trees are in direct conflict with the proposed road construction or are situated in close proximity to the grading limit and would incur severe root damage as a result of grading. b. Of these 389 trees to be removed, 33 are assumed to be boundary or off-property trees. Indirect impacts to vegetation removal and site grading are: a. Potential indirect impacts to natural features and wildlife may also arise from noise, vibrations, human presence, dust and artificial lighting associated with construction activities. b. During construction activities such as vegetation clearing and grubbing, dust can potentially change vegetation due to increased heat absorption and decreased transpiration and impact immediate visual impacts.	iv. The Restoration Planting Plan (RPP) should be completed as part of an Edge Management Plan that will focus recommended measures to restore and improve the condition and resiliency natural feature edges that have been disturbed through road construction activities. v. As part of the Edge Management Plan, an updated assessment of invasive species cover along natural feature edges should be completed, and an Invasive Species Management Plan should be implemented post-construction. vi. Disturbed areas should be stabilized with seed mix selection and application rates must meet Town of Halton Hills and/or Conservation Halton guidelines where applicable. vii. ROW plantings, including the requirements for tree compensation, will be detailed in a future Landscape Planting Plan and/or RPP to be prepared during the Detailed Designs stage meeting Town of Milton and Conservation Halton guidelines where applicable. viii. Please refer to Section 8.10 for more information on the tree protection and preservation plan

Factor	Details/Anticipated Impact	Proposed Mitigation
	c. Increased stormwater surface flow and erosion processes may cause the deposition of sediments onto down-slope vegetation, ultimately causing vegetation die-back or impaired health.	
14. Fisheries and Aquatic Habitat	a. Middle Sixteen Mile Creek provides sensitive coldwater habitat and direct fish habitat within the study area. Under its current state, a 6.5m span concrete box culvert facilitates flow of water and nutrients from upstream (west) to downstream (east). The existing box culvert north of Chudleigh's Entertainment Farm access will remain unchanged following construction. Therefore, based on the extent of the proposed work and the current condition of the watercourse, it is expected that the harmful alteration, disruption and/or destruction of fish and fish habitat can be avoided when mitigation measures are employed. b. Sedimentation to the watercourses where they approach the road and at the road crossings must also be considered and mitigated appropriately to prevent fish/fish habitat impact and water quality degradation.	i. Sediment and erosion control measures must be implemented prior to the commencement of work and will be monitored and maintained throughout construction to prevent erosion and subsequent sedimentation downstream within Middle Sixteen Mile Creek. ii. Disturbances to riparian vegetation must be avoided or minimized during construction. iii. Construction works should maintain a footprint above the Middle Sixteen Mile Creek Tributary high-water mark and adhere to the Fisheries and Oceans Canada (DFO)'s Measures to Protect Fish and Fish Habitat. If this cannot be achieved, a DFO Request for Review may be required.
15. Wildlife and Wildlife Habitat	Direct impacts to wildlife and wildlife habitat are: a. All of the bat SAR previously protected under the <i>Endangered Species Act</i> are now protected under its successor legislation, the SCA. A single potential bat roosting habitat tree was documented along the study area roadsides. This tree will not require removal based on the Preliminary Design and proposed grading limits. However, treed natural features are considered potential habitat for SAR bats since they were not fully investigated for habitat suitability. Furthermore, and for the same reason, the forest and swamp Ecological Land Classification (ELC) communities of the study area are considered possible Significant Wildlife Habitat (SWH) for Bat Maternity Colonies in accordance with MNR criteria. b. Barn Swallow foraging habitat removal associated with roadside grading activities is negligible in terms of area lost, and disturbed graded slopes will be vegetatively restored post-construction. Therefore, no impacts to Barn Swallow SWH are anticipated as a result of the undertaking. c. Based on the Preliminary Design, impacts to this potential Green Heron habitat are considered negligible, based on very minor grading encroachments into the edges of the SWM4 and adjacent SWT2 features. Given this species' preference for secluded nesting sites, it is unlikely that nesting habitat would be located immediately adjacent to the road and directly impacted by the proposed road works. No negative impacts to this Candidate SWH type are therefore anticipated. d. The proposed road works will cause negligible, if any, direct impacts to suitable habitat for these species and will be restricted to natural feature edges. Therefore, direct impacts to these Species of Conservation Concern (SCC) habitats are not expected. e. Construction footprint impacts within woodland and wetland features will be negligible in terms of their overall sizes, and the road infrastructure improvements itself are not anticipated to render these habitat areas unsuitable to the woodland-	i. To avoid impacts to individual bats, tree removals must be undertaken outside of the bat active period of April 1-September 30. ii. If tree removals are required to occur within the bat active season, additional studies (e.g., bat passive acoustic monitoring) will be required, and pending the results of the additional studies, permitting under the SCA may be required. iii. MECP to be consulted at the Detailed Design stage to determine the need for additional actions or field surveys to comply with the SCA. This may include submission of an Information Gathering Form. iv. It is further recommended that a supplementary bat habitat assessment be completed at the Detailed Design stage to more fully characterize potential habitat for the newly-listed SAR Hoary Bat and Eastern Red Bat. v. Vegetation clearing should therefore occur outside the bird nesting season of April 1-August 31 so as to limit disturbances to nesting activities of birds and to avoid destruction of active nests. vi. The destruction of migratory birds and their nests is prohibited under the federal Migratory Birds Convention Act.

Factor	Details/Anticipated Impact	Proposed Mitigation
	and wetland-dependent species. Short-term disturbances to these species may occur during construction. f. Vegetation clearing has the potential to directly impact bird breeding activity through damage and destruction of nests, eggs and young, or avoidance of the area by breeding adults. Indirect impacts to wildlife and wildlife habitat are: a. Wildlife impacts resulting from dust, noise, and vibrations are expected to be temporary, minimal and localized during the road construction works. Significant effects on wildlife are not anticipated and it is expected that displaced wildlife species will return to the vicinity of the roadside features following construction.	
Technical Environment		
16. Groundwater / Hydrogeology	a. The culvert north of Chudleigh's Entertainment Farm access is not recommended to be modified or replaced as part of the improvements. As a result, construction dewatering is not anticipated.	i. Erosion and sediment control plans must be implemented to avoid excess sediment being stirred up or into the surface water and causing erosion. ii. A Spill Response Plan should be prepared and should be employed as necessary in the event of any contaminant spills during construction activities. iii. Further review if dewatering is required for the culvert extensions during Detailed Design. If required,, erosion and sediment control plans will be implemented to prevent dewatering into regulated areas.
17. Surface Water	a. During vegetation removal and site grading activities, areas of bare soil will be exposed along roadside areas which have the potential to erode during rainfall events and impact adjacent lands and vegetation. b. Reduced vegetation cover along the roadsides in combination with the presence of exposed soils during construction activities may also increase the potential for stormwater flow to down-slope areas, such as into the adjacent woodland, wetland and watercourse features if not appropriately mitigated. c. No recommendation of works required for the culvert located north of Chudleigh's Entertainment Farm access.	i. Runoff from the paved roadway area on Regional Road 25 will be conveyed by existing and proposed roadside ditches, proposed dry swales (bio-swales), and existing culverts. ii. Where practical, the ditch systems on Regional Road 25 will include segments with underground bio-filter (dry swales), to provide the required water quality treatment within the project limits. iii. V-shaped ditches will be incorporated along the corridor due to right-of-way constraints, and flat-bottom ditches will be used where space is available to provide more effective water quality treatment. They will continue to collect and convey drainage from external lands along the roadway corridor to the respective culvert crossing locations. iv. Dry swales were selected for stormwater management quality control to treat the roadway runoff corresponding to the additional asphalt area resulting from the roadway improvements. v. It is recommended to review the recommendations during the next phases of design in consultation with the Town of Halton Hills and Conservation Halton to provide compatibility of dry swale implementation into the roadway drainage design, meeting the requisite criteria for soil hydraulic conductivity and clearance to the groundwater table.

10. Detailed Design Commitments for Future Work

The ESR identifies specific items to be reviewed and confirmed during Detailed Design. Some of these commitments will address specific concerns raised by property owners and review agencies during the MCEA process. Appendices A to C outline key comments and how they were addressed during the study. Key commitments are summarized below:

1. Property Requirements

- a. Property requirements identified in this report and shown on the preliminary design drawings are preliminary and will be finalized during Detailed Design. Where feasible, review opportunities for easements.
- b. Obtain Permission to Enter Agreements from landowners where access to their property is required.
- c. Obtain construction easements as required.
- d. Consult with property owners during the development of construction staging plans to maintain access to properties and minimize impacts as feasible.

2. Noise

- a. Minimize construction noise impacts as outlined the Noise Impact Assessment Report in **Appendix K**.

3. Roadway Design

- a. Consider feasibility and location of retaining walls to minimize grading impacts. Detailed Design of retaining structures are proposed on valley slopes are to incorporate the guidance and documentation requirements provided in the CH Guidelines for Slope Stability Assessments for Valleys.
- b. Proposed re-grading at driveways to be confirmed during Detailed Design once each driveway design is developed.
- c. Signage and pavement markings to be confirmed during Detailed Design.

- d. During Detailed Design, opportunities to optimize design and cross-sectional elements will be reviewed to identify potential to minimize impacts at constrained locations.
- e. If required, above road level retaining wall design to be reviewed using materials that are visually harmonious with the escarpment landscape to meeting Niagara Escarpment Commission infrastructure policies.
- f. Review a 3 m buffer for shoulders and grading within CH's regulated area associated with the valley slopes during Detailed Design.

4. Development Coordination

- a. As the Region was completing the Regional Road 25 MCEA study, Halton Hills Town Council approved an Official Plan Amendment and Zoning By-law Amendment at the June 22, 2026 Town Council Meeting for lands north-west of Regional Road 25 and 5 Side Road, which designates a portion of the subject lands within the Town's urban boundary and permits various commercial uses. See Town of Halton Hills staff Report No. PD-2026-061, dated June 8, 2026.
- b. Halton Region staff will continue to work with the Town and developer through the Implementation process including review of development submissions and technical studies (e.g. Transportation Impact Study).
- c. Infrastructure requirements, such as roadway improvements, identified through the development process will be reviewed and approved by Halton Region staff, including design, timing, and coordination with the Region's MCEA study recommendations for Regional Road 25 from 5 Sideroad to 10 Sideroad, and any other planned projects.

5. Active Transportation Facilities

- a. Material type and treatment for the MUP to be confirmed during Detailed Design.
- b. Illumination along MUP to be confirmed during Detailed Design.

6. Utilities

- a. Location of existing utilities impacts and required relocations are to be confirmed.
- b. Coordination of utilities, including, but limited to, hydro pole relocation and overhead wiring, to be reviewed during Detailed Design.

- c. All utility information will be updated prior to construction to confirm that the data is accurate and to finalize relocation requirements as necessary. Constructability, Staging and Detours

7. Constructability, Staging and Detours

- a. Develop a traffic management plan and staging concept to determine how vehicular (maintain one lane in each direction) and AT traffic will be accommodated during construction and how access to properties adjacent will be maintained.
- b. The recommended construction staging strategy will be further developed during Detailed Design.

8. Archaeology

- a. Undertake a Stage 2 Archaeological Assessment in the areas having archaeological potential that will be impacted by the proposed improvements to Regional Road 25 and any further stages as required.

9. Cultural Heritage

- a. Undertake baseline vibration assessment during Detailed Design to determine potential vibration impacts from indirect impacts from construction-related vibration to BHR1 (9920 Regional Road 25) and CHL1 (9826 Regional Road 25).

10. Natural Environment

- a. Efforts should be made during the Detailed Design stage to avoid or minimize encroachments into natural features, with a focus on identified significant woodland and wetland features.
- b. An updated tree inventory will be required to update the preliminary tree inventory data collected for the EA, and an updated Tree Protection and Preservation Plan should be prepared based on the Detailed Design by a certified arborist or qualified professional. Tree protection fencing locational details will be determined and mapped during the Detailed Design phase.
- c. An updated and detailed inventory and assessment of Black Ash tree growth and health should therefore be completed by a qualified biologist during the Detailed Design stage to confirm whether SCA protections and development constraints apply in this location.

- d. An updated bat habitat assessment of the study area wooded natural features should be completed during the Detailed Design stage to assess their potential for use by the SAR Hoary Bat and Eastern Red Bat.
- e. A Restoration Planting Plan (RPP) should be prepared during the Detailed Design stage to direct the species types, locations, quantities, and other parameters associated with all restoration and enhancement zones within the study area.
- f. Based on these results, an Invasive Species Management Plan targeted to the non-native/invasive species at issue should be developed and incorporated into the RPP.
- g. ROW plantings, including the requirements for tree compensation, will be detailed in a future Landscape Planting Plan and/or RPP to be prepared during the Detailed Designs stage.
- h. The Monitoring Plan should be prepared in consultation with the Region, Conservation Halton and other stakeholders as warranted (e.g., Town of Halton Hills) during the Detailed Design stage.

11. Geotechnical Investigation

- a. A slope stability assessment will be undertaken in Detailed Design with a final geotechnical assessment (soils and slope stability) report.
- b. A fluvial geomorphic assessment of the new storm outlet north of Crossing D.

12. Drainage and Stormwater Management

- a. Impacts to Culvert C-2 located north of Chudleigh's Entertainment Farm access are not anticipated, but will need to be reconfirmed during Detailed Design.
- b. Further develop the stormwater management plan during Detailed Design.
- c. Exploring opportunities of using Low Impact Development (LID) treatment to store drainage during storm events beyond the minimum requirements will be reviewed during Detailed Design.
- d. The recommended mitigation measures identified in the Fluvial Geomorphic Assessment will be incorporated into the detailed design.

- e. A flood hazard assessment will be completed for the regulated crossing at Culvert C-2 to demonstrate that the proposed works will not result in unacceptable impacts to the floodplain.
- f. The drainage and stormwater management design will be refined to incorporate final design details, including inlet and outlet erosion protection measures as required, and grading modifications necessary to support roadway improvements while maintaining drainage functionality.
- g. Hydrologic analyses and supporting calculations will be conducted to confirm compliance with post-development to pre-development flow targets and achievement of stormwater quantity control requirements.
- h. The proposed locations for recommended drainage and SWM measures in the regulated areas will be assessed during the detailed design phase.
- i. A summary of the key hydrologic modelling parameters, assumptions, inputs, and methodologies will be provided to support the detailed design analyses.
- j. Through Detailed Design, the Region will look for opportunities to integrate and coordinate the drainage and stormwater management strategy for the area.
- k. Erosion and Sediment Control plans should incorporate best management practices from the current version of the Erosion and Sediment Control Guide and Urban Construction.

13. Summary of Anticipated Permits and Approvals

- a. Near the completion of the Regional Road 25 MCEA study, the Ontario's Species Conservation Act was introduced to replace the Endangered Species Act. As of March 30, 2026, the Province of Ontario has legislated the replacement of the Endangered Species Act with the Species Conservation Act. The Species Conservation Act and its regulations will be reviewed and confirmed during Detailed Design in relation to the proposed work on Regional Road 25 to confirm the requirements for permitting and registration of activities.
- b. Environmental Compliance Approval (ECA) will be required from MECP for stormwater management facilities.

- c. The existing culvert north of Chudleigh's Entertainment Farm access spanning the Middle Sixteen Mile Creek Tributary within the study area will not require alteration or replacement. Therefore, negative effects on fish or aquatic habitats are not anticipated provided standard construction mitigation measures are implemented and work is maintained outside of the high-water mark. A DFO Request for Review submission is not expected to be required provided these measures are implemented.
- d. For any works proposed in the regulated area including any proposed culvert upgrades, roadways, new storm sewer outlet, stormwater management measures, grading and retaining structures, a permit from CH under Conservation Halton Authorities Act and Ontario Regulation 41/24 are required.
- e. A Niagara Escarpment Permit (NEP) is anticipated during Detailed Design and will require further consultation with NEC to determine the work activities that would be covered by an NEC Permit and the work activities that would be exempt. During the NEP application process, NEC will require the following information, but not limited to, during Detailed Design:
 - Stage 2 Archaeological Assessment Report
 - Vibration Assessment
 - Cultural Heritage Report
 - Natural Environment Report, including updated inventory and Species at Risk identification
 - Restoration Planting Plan (RPP)
 - Invasive Species Management Plan
 - Landscape Planting Plan
 - Monitoring Plan