FINAL DRAFT

Town of Oakville
Lakeshore Road West Improvements
(Mississaga Street to Dorval Drive)

Municipal Class Environmental Assessment
Environmental Study Report

Submitted to:

Town of Oakville

1225 Trafalgar Road

Oakville, ON L6H 0H3

Submitted by:

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited
3450 Harvester Road, Unit 100
Burlington, ON L7N 3W5

April 2018

Project No. TPB166147

Executive Summary

Wood Environment & Infrastructure Solutions (Wood), formally Amec Foster Wheeler Environment & Infrastructure, was retained by the Town of Oakville in the fall of 2016 to undertake a Class "C" Environmental Assessment (EA) for Lakeshore Road West improvements between Mississaga Street and Dorval Drive. Through the Town's Official Plan "Livable Oakville" (2009) the object of this study is to provide a safe, efficient and accessible transportation corridor with choices of mobility; to foster the use and development of a sustainable transportation network; and to provide a network of on and off-road pedestrian and cycling facilities that allows for the use of active transportation modes as an alternative to the automobile. Much of this section of Lakeshore Road West is in poor structural condition and the Town's Capital Works Program, based on the conclusions of the Transportation Master Plan, plans for this section of roadway to be reconstructed over the next five years.

The purpose of this EA study is to determine what improvements are required for Lakeshore Road West, to select the preferred alternative and to identify any measures needed to mitigate impacts of the works.

Lakeshore Road is the only east-west roadway south of the Queen Elizabeth Way (QEW) that extends from one end of Oakville to the other, providing connections to Mississauga in the east and Burlington in the west. It is designated in the Town's Official plan as a minor arterial roadway. Lakeshore Road West from Mississaga Street to Bronte Road has a four-lane cross-section, including the Bronte Creek Bridge. Lakeshore Road, from Bronte Road to East Street is a three-lane cross-section with the centre lane being used for left turns. Between East Street and Dorval Drive, Lakeshore Road West is currently a tree-lined two-lane arterial road.

As part of the needs assessment conducted in Phase 1 of this EA, the Project Team considered the aggregate traffic impacts of recent new development and planned developments within, and in close proximity to, the study area. Horizon years of 2021 (short term) and 2031 (longer term) were considered and based on the review of the operational performance, including signalized intersections within the Study Area, the results for the Lakeshore Road West corridor concluded that Lakeshore Road West as a three-lane roadway will be able to accommodate the growth in east-west travel demand anticipated to the year 2031 and beyond.

The findings of the 2021 and 2031 assessment confirmed that the critical year is 2021 with marginally lower volume expected by 2031. Preliminary analysis indicates that a four-lane Wyecroft Road extension would create sufficient additional capacity to satisfy 2031 travel needs and result in a diversion of some through traffic from the Lakeshore Road West corridor.

A full set of planning level alternatives were evaluated in Phase 2 of this EA to determine the preferred planning solution. Based on a comprehensive assessment of the alternatives using a common set of criteria in the areas of transportation service, conformity with existing Town policies and plans, the socio- economic environment, the natural environment and capital costs, the preferred planning alternatives representing a hybrid solution, were identified as follows:

- Multi-Modal Improvements
- Additional Improvements to the Lakeshore Road West Corridor, including turning lanes
- Widen Lakeshore Road West to 3 lanes (two-way left turn center turning lane) with active transportation facilities (bike lanes, multi-use trails and sidewalks)

Phase 3 of the EA study investigated alternative design concepts for achieving the above noted improvements. Alternatives for the three-lane cross-section included a continuous two-way left turn lane.

A high-level screening assessment for roundabouts was completed for the following intersections:

- Mississaga Street
- Bronte Road
- East Street
- Third Line
- Fourth Line
- Dorval Drive

The assessment concluded that none of the intersections within this section of Lakeshore Road are considered appropriate for roundabouts.

Three major un-signalized intersections were analyzed to determine if a traffic control signal was warranted under future conditions (critical year 2021):

- Lakeshore Road West @ Westminster Drive
- Lakeshore Road West @ Suffolk Avenue
- Lakeshore Road West @ Morden Road

For the critical year 2021, using the Justification 7 warrant, traffic signals were not warranted at any of the three intersections.

Left Turn warrants were completed for Morden Road and Suffolk Avenue In both cases a left turn is warranted.

Pedestrian improvements include 2m sidewalks from Mississaga Street to East Street, 1.5m sidewalks on the north side of Lakeshore Road from East Street to Dorval Drive, and a shared use 3.0m multi-use trail on the south side of Lakeshore Road from East Street to Dorval Drive. Further pedestrian improvements include pedestrian crossings at several locations within the corridor.

Cycling improvements include a 1.5m on-road bike lane with a 0.5m painted buffer making the connections with the existing on-road bike lanes at Mississaga Street to the west and to Dorval Drive in the east. The shared 3m multi-use trail mentioned above will support recreational cyclists. Transit-related improvements include the relocation of stops if required and better sidewalk access to stops.

The estimated capital cost of the preferred design concept is $31,655,000. The cost of property and utility relocation are not include in the estimate.

As part of the Class EA study, public and stakeholder consultation was completed. Two (2) Public Information Centres, three (3) Stakeholder Group meetings and two (2) Technical Agency Committee meetings were held during the course of the study. Generally speaking, the preferred design concept has been well received. The majority of the comments received can be addressed through the detailed design process.

Preliminary design plans have been prepared as part of the final phase of the Class EA study. Upon approval, the recommended phasing is proposed to be as follows:

Phase 1 – Lakeshore Road West from Fourth Line to Dorval Drive (including replacement of McCraney Creek Bridge)

Phase 2 – Lakeshore Road West from Fourth Line to Sandwell Drive

Phase 3 – Lakeshore Road West from Sandwell Drive to Third Line

Phase 4 – Lakeshore Road West from Mississaga Street to Third Line

*Note: Phase 4 section includes the Bronte Mall redevelopment and coordination of construction activity is recommended.

The preliminary streetscape design for the Bronte Village area strives to preserve existing trees while providing a safe and attractive pedestrian precinct along this section of Lakeshore Road. The design elements include: raised planter beds with concrete 'sitting' wall sections, median planting beds, new street trees, and a two-metre wide concrete sidewalk. This sidewalk is flanked by colour/texture contrasting unit pavers where space is available. Street furnishings for this urban section of Lakeshore Road will include: benches, bike racks, waste receptacles, bollards, and wayfinding signage.

Streetscape 'greening' will be provided in the planting beds and other available spaces, with the installation of native trees, shrubs, perennials and ornamental grasses.

East of Bronte Village the streetscape will be more typical of the existing roadway. The proposed design will include several median planting beds and a multi-use path extending along the south side of Lakeshore Road. Benches will be provided at strategic locations along the multi-use path. Where Lakeshore Road passes beside Coronation Park, the multi-use path has the opportunity to pass through the parkland, providing a more attractive and safer route, with more separation from the roadway.

The existing trees located along the Lakeshore Road corridor will be preserved where possible. Where tree removals are required these trees will be replaced. Additional native trees will be installed where space is available.

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Wood Environment & Infrastructure Solutions is committed to achieving sustainability through balancing economic growth, social responsibility and environmental protection.

1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

The Town of Oakville (Town) is completing a Schedule 'C' Municipal Class Environmental Assessment (Class EA) for improvements to Lakeshore Road West from Mississaga Street to Dorval Drive (ref. Figure 1.1 Key Plan). The improvements are required to meet the needs of the Town to the year 2031. The Town is considering a wide range of options to satisfy travel demand, operational requirements, active transportation, drainage, structural, pavement and other deficiencies within the Lakeshore Road West Corridor. Wood was retained by the Town to complete the study.

1.2 Environmental Assessment

1.2.1 Class Environmental Assessment Process

The Class Environmental Assessment process is a mechanism by which planning and approval of municipal servicing is provided in an efficient, timely, economical and environmentally responsible manner. It represents a consistent, streamlined and easily understood process for planning and implementing municipal infrastructure projects. Under the Provincial Environmental Assessment (EA) Act, projects are classified as approved, subject to screening, subject to a Class Environmental Assessment (Class EA), or subject to a full Environmental Assessment. This project is classified as being subject to the Class EA process. It is being conducted according to the requirements outlined in the Municipal Engineers Association document titled *Municipal Class Environmental Assessment (October 2000, as amended in 2007, 2011 & 2015)* (Municipal Class EA).

Consistent with the Municipal Class EA, the study approach has been designed to meet the following objectives:

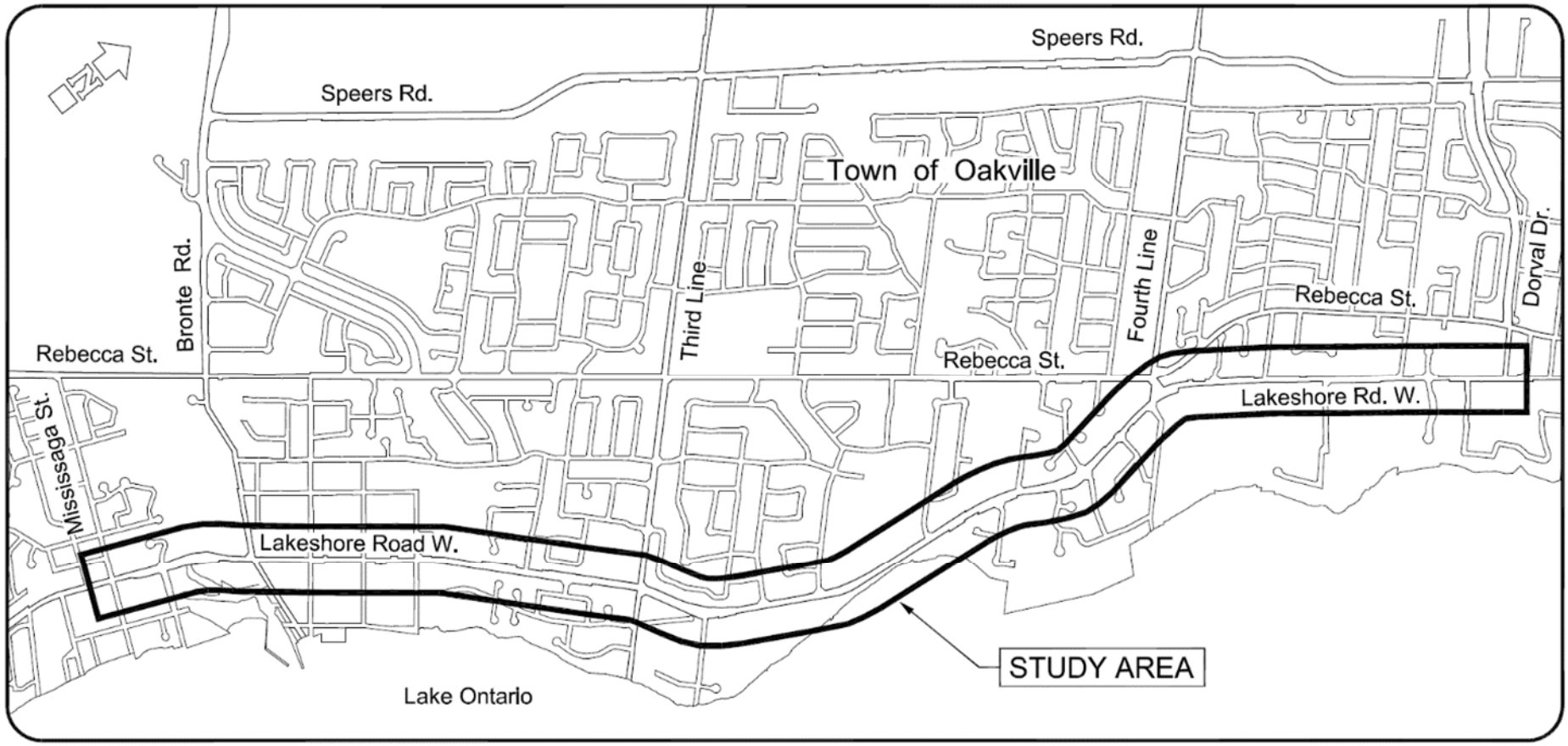
i. Protection of the environment, including natural, social and economic components of the environment.
ii. Participation of a broad range of stakeholders in the study process to allow for sharing of ideas, education, testing of creative solutions and developing alternatives.
iii. Documentation of the study process in compliance with all phases of the Municipal Class EA process.

The Class EA process classifies projects according to their level of complexity and potential environmental impacts. These are termed "Schedules," and are summarized below:

Schedule A and A+ projects involve minor modifications to existing facilities. Environmental effects of these projects are generally small; therefore, the projects are considered pre-approved.

Schedule B includes improvements and minor expansion to existing facilities. There is potential for some adverse environmental impacts and, therefore, the proponent is required to proceed through a screening process, including consultation with those affected. Schedule B projects are required to proceed through Phases 1, 2 and 5 of the Municipal Class EA process.

Figure 1.1. Key Plan



Schedule C includes the construction of new facilities and major expansion of existing facilities. These projects proceed through the full environmental assessment planning process outlined in the Municipal Class EA document. These projects are required to fulfill the requirements of all five phases of the Municipal Class EA process.

This project is being completed under the requirements of a Schedule C Class EA. The following Schedule C trigger applies to this project:

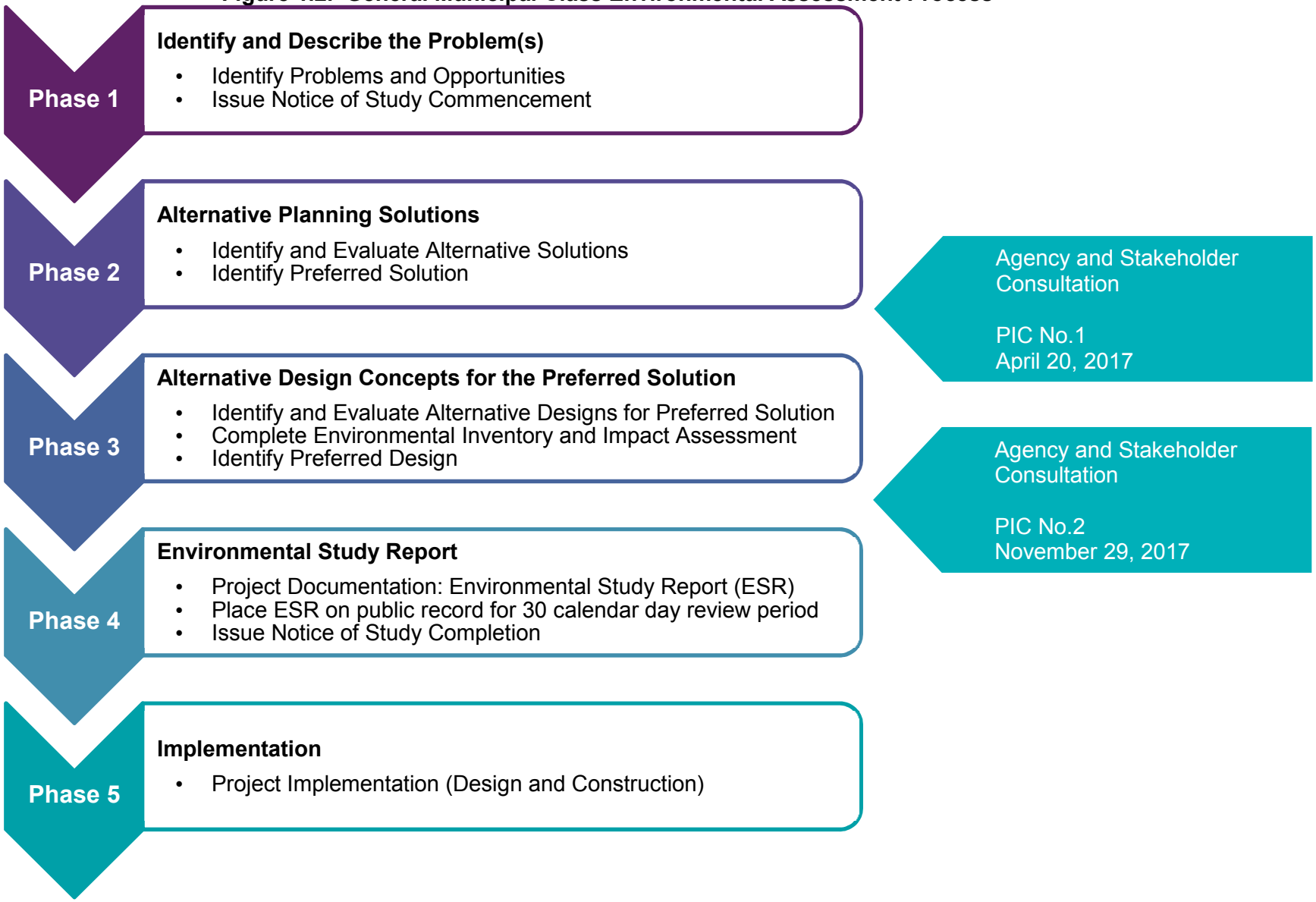
- Reconstruction or widening where the reconstructed road or other linear paved facilities (e.g. HOV lanes) will not be for the same purpose, use, capacity or at the same location as the facility being reconstructed (e.g. additional lanes, continuous centre turn lane) where the estimated cost is greater than $2.4 million.

The following Class EA planning phases apply:

- **Phase 1** - Identify the problem (deficiency) or opportunity.
- **Phase 2** - Identify and evaluate alternative solutions to address the problem or opportunity by taking into consideration the existing environment, and establish the preferred solution taking into account public and review agency input.
- **Phase 3** - Identify Alternative Design Concepts for the preferred solution implementation by taking into consideration the existing environment, and establish the preferred design concept by taking into account public and review agency input.
- **Phase 4** - Document the Environmental Assessment process that includes the design and consultation process, in an Environmental Study Report for public review.
- **Phase 5** - Complete contract drawings and documents, and proceed to construction and operation; monitor construction for adherence to environmental provisions and commitments. Where special conditions dictate, also monitor the operation of the completed facility.

The Phases of the Municipal Class EA process that will be used in this project are illustrated in Figure 1.2.

Figure 1.2. General Municipal Class Environmental Assessment Process



1.2.2 Environmental Study Report

This Environmental Study Report (ESR) documents the rationale for the project, the background to the study, existing and future conditions within the study area, the planning, design and consultation process leading to the preferred alternative, anticipated positive and negative impacts, and proposed mitigation measures.

1.2.3 Filing of the ESR

All parties having expressed an interest in the project will be notified by letter, regarding the completion of the project and filing of the ESR. In addition, a Notice of Study Completion will be placed in the local newspaper, the Oakville Beaver in accordance with the requirements of the Class EA.

Copies of the ESR will be made available at the following locations:

Town of Oakville	**Town of Oakville Public Library**
1225 Trafalgar Road Oakville, ON L6H 0H3 Hours: Mon-Fri: 8:30 a.m. to 4:30 p.m.	Woodside Branch 1274 Rebecca St. Oakville, L6L 1Z2 Hours: Sun: 1:00 p.m. to 5:00 p.m. Mon-Thurs: 9:30 a.m. to 8:00 p.m. Fri-Sat: 9:30 a.m. to 5:00 p.m.

A review period of not less than thirty (30) days will be provided, during which comments will be received from stakeholders and agencies. Should stakeholders raise issues that cannot be resolved through discussion with Town of Oakville and consultant staff, the stakeholder may request the Minister to require the Town of Oakville to complete an individual EA in accordance with Part II of the of the Environmental Assessment Act, R.S.O. 1990. This is known as a Part II Order Request. However, it is anticipated that all concerns will be resolved through discussion between the Town of Oakville and the concerned party.

All requests need to be made in writing to:

Minister - Ministry of the Environment and Climate Change
Floor 11, 77 Wellesley Street West
Toronto ON M7A 2T5
Fax: 416-314-8452

Director, Environmental Approvals Branch
Ministry of the Environment and Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto ON M4V 1P5

MOECCpermissions@ontario.ca

1.3 Project Organization

The Project Team consisted of staff from the following organizations:

Proponent: **Town of Oakville**
Syed Rizvi, Town of Oakville
Jill Stephen, Town of Oakville
Dan Cozzi, Town of Oakville
Mark Covert, Town of Oakville
Melissa Dalrymple, Town of Oakville
Rita Juliao, Town of Oakville
Rakesh Mistry, Town of Oakville
Joanne Phoenix, Town of Oakville
Donna Doyle, Town of Oakville
Paul Allan, Town of Oakville
Martin Maguire, Town of Oakville
Sue Schappert, Town of Oakville
Jana Kelemen, Town of Oakville
Brad Sutherland, Town of Oakville
Kristina Parker, Town of Oakville

Prime Consultant: **Wood Environment & Infrastructure Solutions**
David Sinke, Project Manager
Bob Felker, Assistant Project Manager / Senior Environmental Planner
Neal Smith, Senior Transportation Technologist
Derek Kulyk, Transportation EIT
Andre Lower, Senior Traffic Engineer
Louise McAndrew, Environmental Planner
Mary Kelly, Public Consultation Specialist
Steve Chipps, Water Resources Engineer
Daryl Rideout, Fisheries Biologist
Jeff Balsdon, Terrestrial Ecologist
Shaun Austin, Senior Archaeologist
Linda Axford, Built and Cultural Heritage Specialist
Mohammed Salim, Acoustic Specialist

Sub Consultants: Intus Road Safety: Gerry Forbes – Traffic Safety
McWilliams Landscaping: James McWilliams – Landscape Architect
AquaLogic Consulting: Bill de Geus – Fluvial Geomorphology
U Tech Engineers Inc.: Upul Padmanath – Illumination Report

1.4 Project Purpose

In order to best address deficiencies (short term and long term issues related to future growth, operational, geometric and capacity issues) along Lakeshore Road, a number of road improvement alternatives will be examined as part of the study, including widening of the roadway, cross-section improvements, intersection improvements, accommodation of pedestrians and cyclists, and enhancement of traffic control. In addition, the impact of such improvements on the social and natural environments will be examined.

A major objective of the study is to undertake consultation with a wide range of stakeholders in order to identify and resolve or mitigate issues of concern, while meeting the requirements of the Municipal Class EA process to permit the Town of Oakville to proceed to detail design, and ultimately, construction. A number of factors have influenced the need to undertake a Municipal Class EA Study for this corridor. The study addresses the following specific deficiencies and concerns:

- Improve intersection operations
- Accommodate transit where required;
- Improve roadway geometrics to meet current design standards;
- Provide and improve pedestrian and cyclist facilities;
- Improve pavement conditions;
- Improve traffic, pedestrian and cyclist safety;
- Improve existing drainage stormwater management;
- Improve creek crossings and structures and
- Accommodate future municipal services and utilities within the ultimate right-of-way.

The need and justification for roadway improvements will be discussed in section 4.0 of this report.

1.5 Project Background

Lakeshore Road begins below the QEW Skyway Bridge between Burlington and Hamilton and extends along the north shore of Lake Ontario to Toronto. Within the Town of Oakville, Lakeshore Road West is a minor arterial roadway that begins at Burloak Drive in the west, extends to Sixteen Mile Creek where it then becomes Lakeshore Road East, and continues to the east boundary of Oakville. Lakeshore Road West within the study area extends through Bronte Village, and provides access to the Bronte Harbour.

1.6 Previous Studies and Adjacent Projects

The Project team reviewed the following planning documents, guideline and other reports relevant to the Lakeshore Road West corridor. The list below are the key documents being referenced by the project and is not inclusive.

- Switching Gears – Town of Oakville Transportation Master Plan (2013 and 2017 TMP review)
- Livable Oakville – Official Plan (2009)
    - Bronte Village Revitalization Study (2009)

- Official Plan Review (ongoing)
  - Bronte Village Growth Area Review (ongoing)
  - Urban Structure Review (ongoing)
- Town of Oakville Active Transportation Master Plan (2009 and 2017)
- Region of Halton Transportation Master Plan 2031 (2011)
- Halton Region Active Transportation Master Plan
- Town of Oakville Town-Wide Flood Study (2008)
- Pedestrian Crossing Study (2017)
- Livable by Design Part A – Urban Design Direction for Oakville (2014)
- Bronte Village Commercial Parking Implementation (2010)
- Transit Strategy Study (2010)
- Town of Oakville Growth Areas Transportation Report (2009)
- Fourteen Mile Creek and McCraney Creek Study (Wood, ongoing)
- Coronation Park Study (Wood, ongoing)
- Town of Oakville, Stormwater Master Plan Study (Wood, ongoing)
- Town of Oakville's OSIM Inspections (Wood, ongoing)

2.0 PUBLIC CONSULTATION

An extensive Public Consultation program was implemented for this project to ensure that stakeholders and agency staff were consulted early on, and throughout the Class EA process.

2.1 Public Consultation Plan

In January 2017, Wood prepared a Public Consultation Plan addressing communication and consultation activities with stakeholders, including the general public, interested persons, indigenous communities and government agencies. This Consultation Plan has directed Public Consultation activities throughout the Class EA process.

2.1.1 Contact List

A public contact list was generated from Town of Oakville records, which included all residents within 125 m of the Study Area. Additional contacts were added by request, including through completion of PIC Comment Forms.

2.2 Consultation Schedule

The study was initiated in November 2016. Project milestones as of April 2018 are as follows:

Table 2.1. Consultation Schedule

	Date
Start-up meeting with Town of Oakville	November 10, 2016
Notice of Commencement published in newspaper and mailed to review agencies and affected public.	Ad: November 24, 2016 and December 1, 2016 Letter: January 9, 2017
Project Team Meeting with the Town of Oakville	December 15, 2016
Meeting with Conservation Halton Staff – Stormwater Management Focus (Technical Agency Committee Meeting)	January 30, 2017
Meeting with the Town of Oakville with a focus on the Traffic and Transportation study.	February 17, 2017
Notice of Public Information Centre No. 1 published in newspaper and mailed to review agencies and affected public.	April 3, 2017
Stakeholder Group Meeting No.1	April 6, 2017
Public Information Center No.1	April 20, 2017
Meeting with the Town of Oakville to review Technical Reports	May 30, 2017
Meeting with Mississaugas of the New Credit First Nations	June 8, 2017

Table 2.1. Consultation Schedule	
	Date
Site meeting with the Town of Oakville at Bronte Road and Lakeshore Road West	July 18, 2017
Meeting with the Town of Oakville to review the proposed Preliminary Design	October 3, 2017
Meeting with the Town of Oakville to discuss stormwater	October 19, 2017
Meeting with the Town of Oakville to discuss Streetscaping	October 13, 2017
Meeting with the Town of Oakville staff and the Landscape Architect focusing on the streetscaping concept	October 26, 2017
Utilities Meeting	October 30, 2017
Presentation to Heritage Committee	October 30, 2017
Stakeholder Group Meeting No. 2	November 2, 2017
Technical Agency Committee Meeting	November 9, 2017
Notice of Public Information Centre No. 2 published in newspaper and mailed to review agencies and affected public.	November 16, 2017
Meeting with the Town of Oakville to review PIC material	November 27, 2017
Public Information Center No. 2	November 29, 2017
Presentation to Roads and Works	February 8, 2018
Stakeholder Meeting – Third Line Roundabout	February 12, 2018
Meeting with Conservation Halton Staff – Stormwater Management Focus (Technical Agency Committee Meeting)	March 26, 2018

2.2.1 Phase 1 Consultation

A Notice of Study Commencement was submitted to relevant property owners, agencies, stakeholders, and organizations by mail on January 9, 2017. The notice detailed the study area, summarizing the objectives of the study and requesting comments. In addition, the Notice of Study Commencement was published in the local newspaper, *Oakville Beaver*, on November 24, 2016 and December 1, 2016.

Responses were received from several stakeholders and agencies. Copies of the newspaper advertisement, letters to stakeholders and agencies, copies of all comments received and written responses are contained in Appendix A.

2.2.2 Phase 2 and 3 Consultation

Consultation with agencies and the public in Phases 2 and 3 of the Class EA process included meetings with stakeholders and agencies and two Public Information Centres. Stakeholders were notified of the opportunities for consultation by letter and/or newspaper advertisement in the Oakville Beaver, as well as on the town's website. Results of the consultation with various stakeholders will be discussed in section 4.5 of this ESR.

Consultation with agencies and the public was completed in Phase 2, including a meeting with Conservation Halton on January 30, 2017, and Public Information Centre (PIC) 1, on April 20, 2017. Evaluation of the planning alternatives was completed with input from the Town, agencies, and stakeholders, to identify and address natural environment constraints. Other components of evaluation included the social, cultural and economic environment, technical aspects, cost, and compatibility with regional, Town and Conservation Halton plans and policies. A total of 31 people signed the register for PIC 1. The attendees expressed concerns regarding safety along the corridor, cycling infrastructure, improving sidewalks, improving drainage, and beautification through burying hydro lines. Further information regarding Phase 2 Consultation is found in Section 4.5.1 of this document and in Appendix A.

As part of Phase 3 consultation, a technical advisory meeting with Conservation Halton, Halton Region and MNRF occurred on November 9, 2017, for consideration of stormwater and drainage issues, as well as the preliminary design. A second point of public contact, PIC 2, occurred on November 29, 2017. 81 people signed the register and 29 comments and comment forms were received back within the review time period. The attendees expressed concerns regarding roundabouts, reduction of the roadway to 3 lanes within Bronte Village, pedestrian crossings through Bronte. Further information regarding Phase 3 Consultation could be found in Section 4.5.2 of this document and Appendix A.

2.3 Indigenous Consultation

Indigenous consultation is a key component of the Municipal Class EA process. The province has delegated the procedural aspects of the Duty to Consult to the Town of Oakville (letter dated February 8, 2017). Copies of all Indigenous Consultation documents can be found in Appendix B.

2.3.1 Identification of Indigenous Communities

Wood provided a request to MOECC (February 8, 2017) to confirm the Aboriginal Communities/groups that should be contacted for this project. This email included copies of the letters, Project Information Sheet and Notice of Commencement that were sent to the following Indigenous Communities/Groups:

- Mississaugas of the New Credit First Nation;
- Six Nations of the Grand River, and
- Haudenosaunee Development Institute.

A response was provided from the MOECC (February 8, 2017) confirming that the identified communities/groups would fulfill the *Duty to Consult* obligation for the indigenous consultation component of this study. The following is a summary of the indigenous consultation completed to date.

2.3.2 Mississaugas of the New Credit First Nation (MNCFN)

Introductory Letter and Information Package – March 9, 2017: The purpose of this letter was to introduce the project and determine if the Indigenous Community has an interest in the study.

Follow-up Phone Call – March 30 and 19, 2017: Follow-up phone calls were made to determine the level of interest in this project.

Meeting – June 8, 2017: meeting was held at Mississaugas of the New Credit First Nation office in Hagersville to discuss the project. Meeting minutes were taken and can be found in Appendix B.

2.3.3 Six Nations of the Grand River

Introductory Letter and Information Package – March 9, 2017: The purpose of this letter was to introduce the project and determine if the Indigenous Community has an interest in the study.

Follow-up Phone Call – March 30 and April 19, 2017: A follow-up phone call was made to determine the level of interest in this project.

2.3.4 Haudenosaunee Development Institute (HDI)

Introductory Letter and Information Package – March 9, 2017: The purpose of this letter was to introduce the project and determine if the Indigenous Community has an interest in the study.

Follow-up Phone Call – March 30 and 19, 2017: Follow-up phone calls were made to determine the level of interest in this project.

2.4 Agency Consultation

Due to the interest expressed by various government agencies, the Technical Agency Committee (TAC) was identified as a requirement during the RFP process for this study. Correspondence with TAC members took place throughout the course of the study, with three meetings being held at key points, one with Conservation Halton, near the beginning of the study, one with the entire TAC prior to the second PIC, and a final one with Conservation Halton, near the end of the study.

2.4.1 Meetings

Meeting with Conservation Halton – January 30, 2017
A meeting was held with agency representatives including the Town of Oakville, Conservation Halton and Wood. The purpose of the meeting was to review the stormwater requirements from the perspective of the Town and Conservation Halton. Opportunities for Low Impact Development (LID) along the corridor were also discussed. Minutes of the meeting can be found in Appendix C.

Technical Agency Committee (TAC) Meeting– November 9, 2017
A meeting was held with representatives of Conservation Halton (CH), Ministry of Natural Recourses and Forestry (MNRF) and Halton Region. The purpose of the meeting was to discuss drainage issues, proposed bridge conditions, and stormwater management, and to review existing conditions including terrestrial and aquatic studies. Meeting materials and minutes of the meeting can be found in Appendix C

Meeting with Conservation Halton – March 26, 2018
A meeting was held with agency representatives including the Town of Oakville, Conservation Halton and Wood. The purpose of the meeting was to review the stormwater management report, including plans for the McCraney Creek structure. Minutes of the meeting can be found in Appendix C.

2.5 Stakeholder Consultation

Stakeholders from key community groups (both businesses and residents) were invited to be part of the stakeholder committee for this study. Representatives of the following groups were invited to attend the meetings:

- Sir John Colborne Recreational Centre for Seniors
- Coronation Park Residents Association
- Bronte Village Business Improvement Association
- Oakville Historical Society
- Town of Oakville Councillors
- Appleby College
- Local School Boards
- Bronte Village Mall
- Bronte Village Residents Association
- Oakville Cycling
- Association of Oakville Harbours Stakeholders
- Bronte Historical Society
- Heritage Oakville

Three (3) stakeholder meetings took place over the course of the study. The opinions expressed by the Stakeholders were used to inform the project and the information subsequently presented to the public.

2.5.1 Meetings

Stakeholder Meeting 1 – April 6, 2017
A meeting was held with stakeholders representing the following groups:

- Sir John Colborne Recreational Centre for Seniors
- Coronation Park Residents Association
- Bronte Village Business Improvement Association
- Oakville Historical Society
- Town of Oakville Ward 1 Councillor

The purpose of this meeting was to introduce the Stakeholders to the project and determine any specific or broader issues that the groups they represented might find important. Meeting materials and minutes can be found in Appendix D.

Stakeholder Meeting 2 – October 30, 2017
The meeting was attended by stakeholders representing the following groups:

- Town of Oakville Councillors, Wards 1 and 2
- Coronation Park Residents Association
- Bronte Village Business Improvement Association
- Appleby College

The purpose of this meeting was to present the preliminary preferred solution to the group, and determine if there were improvements to be made or concerns to address, prior to presenting it to the wider public. Meeting materials and minutes can be found in Appendix D.

Stakeholder Meeting 3 – February 12, 2018
The meeting was attended by stakeholders representing the following groups:

- Town of Oakville Councillors, Wards 1 and 2
- Coronation Park Residents Association
- Seniors Working Action Group (SWAG)
- Oakville Christian School

The purpose of this meeting was to discuss the potential roundabout at the intersection with Third Line. Meeting materials and minutes can be found in Appendix D.

2.6 Utilities Consultation

Utility companies were contacted at the commencement of the study and invited to participate. A response was received from Halton Region, Hydro One Networks, Bell Canada, Enbridge Gas, TransCanada Pipelines, Oakville Hydro, Rogers Cable, Cogeco Connexion and Ontario Power Generation. A meeting was held on October 30, 2017. Meeting materials and minutes can be found in Appendix E.

Based on the responses there are various utilities present within the Lakeshore Road West right-of-way. Further consultation will be required through detail design to confirm conflicts and determine any required relocations.

2.7 Summary of Comments Received

The following are comments that have been received up to December, 2017 (ref. Table 2.2):

Table 2.2. Consultation Summary

	Summary of Comments Received	Responses
Resident	Resident on Sandwell Drive concerned with the lack of crossing in the vicinity of Sandwell Drive and Lakeshore Road. Closest crossing would be Fourth Line.	
Business	Chairperson of Bronte Village BIA requested to be contacted.	Responded by phone and email. Invited to participate in the Stakeholders Group as a representative of the Bronte Village BIA.
Resident	Resident expressed concern with safety provisions for cyclists.	Responded that provisions for active transportation by cyclists and pedestrians within the corridor is part of the study.
Resident	Resident expressed interest in a crosswalk at 2511 Lakeshore, finalizing some water/sewage projects before construction.	Responded that provisions for active transportation by cyclists and pedestrians was part of the study and that 2511 Lakeshore Road West would be included in evaluations for pedestrian crossings.
Resident	Resident expressed interest in curbs for their safety value.	Replied that road user safety and active transportation were both key parts of the study.
Resident	Stakeholder expressed concerns that proposed changes to Lakeshore Road would have negative impact on traffic.	
Resident	Resident asked questions about what "urban standard" refers to, if there is room to expand Lakeshore Road in downtown Bronte.	A definition and example of “urban standard” were provided. It was also identified that a “complete streets” approach would be taken through Bronte Village.
Resident	Resident expressed concern with noise impacts on property facing Lakeshore.	Town responded that the noise study had not yet been completed and updates would be available through the Town’s website

Table 2.2. Consultation Summary		
	Summary of Comments Received	**Responses**
Resident	Resident provided comments on their preference for a 3-lane road.	
Resident	Resident requested additional trash cans be placed along the Lakeshore Road corridor.	
Resident	Resident interested in the study area as a long term resident and requested to be included as a member of the Stakeholder Group.	
Resident	Resident provided the following comments: with new infill development request noise dampening measures be included (between Third Line and Westminster) and requested the next PIC to be held in the community (Senior Center or school in the neighbourhood).	
Resident	Resident attended the PIC and had the following comments: does the intersection of Lakeshore Road and Bronte Road have a high accident rate as it is on a significant skew, prefer a conventional right turn lane without the channelization, and request an emphasis on streetscaping and urban design in the Bronte Village.	
Resident	Resident requested to make this part of Oakville more bike friendly	
Resident	Resident concerned about sections of Lakeshore being safe for small children biking	
Resident	Resident provided comments regarding bike access along Lakeshore	
Resident	Resident concerned about sidewalk widths and repair, Bike paths, APS at Jones and East. Would also like to limit condo development along Lakeshore	
Resident	Stakeholder concerned about the impact of reducing Lakeshore from 4 lanes to 3 through the Bronte corridor near 2511 and 2489 Lakeshore Road	

Table 2.2. Consultation Summary		
	Summary of Comments Received	**Responses**
Resident	Resident requested further information regarding the area between Mississaga Street and Bronte Road as well as the analysis that was used to determine the preferred solution so any further comments can be consistent with the evidence base and analysis that has been gathered.	
Resident	Resident provided comments regarding the PIC. Concerned that snow removal may not have been accurately addressed. Also concerned there are too many pedestrian crossings being proposed in a small area.	
Resident	Resident provided feedback on the preferred solution available online. Concerned with roundabouts, speed of traffic, and keeping bike lanes clear. Agrees with the changes to the Bronte Road intersection and the addition of bike lanes.	
Resident	Resident who was unable to attend PIC 2 provided comments on the information posted on the Town's website. Concerned with roundabouts and pedestrians. Also, would like wires to be buried.	
Resident	Resident requested information regarding proposed improvements at Solingate due to limited visibility.	
Business	A representative from the Bronte BIA provide a summary of the Bronte Village Vision and the elements that the Bronte BIA would like to see incorporated within the Bronte Village section of the study area	
Business	Bronte BIA is encouraged by the Project Teams familiarity with the issues raised by the letter from the Bronte BIA	
Agency	Ministry of Transportation has no concerns and does not need to be involved in the study.	
Agency	Halton Region - notes that Ecological and Environmental Advisory Committee (EEAC) has been replaced by Natural Heritage	

Table 2.2. Consultation Summary

	Summary of Comments Received	Responses
	Advisory Committee (NHAC). NHAC will not be commenting on this project.	
Agency	Parkland Fuel Corporation requested to be added to the study mailing list.	
Agency	Councillor Ralph Robinson requested to be totally involved in the project, particularly the Lakeshore Road/Bronte Intersection.	Councillor Robinson was invited to join the Stakeholder Group meetings for the project.
Agency	Oakville Hydro - Requests to be active stakeholder. Oakville Hydro has overhead and underground lines throughout the study area and is concerned about any possible impact.	
Agency	Halton Region- requests to be advised if the study reviews potential development lands or intensification areas that may impact servicing on this roadway.	
Agency	Town of Oakville - Road and Works Operations. No interest at the time, but wish to remain on the contact list.	
Agency	Resident - on behalf of Coronation Park Residents Association - requests a direct link to the project website and an outline of the study.	Responded that the Town's website would be updated shortly. An invitation was also issued to be part of the Stakeholder Group.
Agency	Regional Municipality of Halton Water and Wastewater Planning Team requests to be added to the study mailing list.	
Agency	MOECC notes that consultation with First Nations stakeholders is required for this project.	
Agency	MOECC provided information of areas of interest that will need to be addressed as part of the Class EA and information on the responsibility of the Proponent to consult with Indigenous Communities. Areas of Interest include the following: Source Water Protection, Ecosystem Protection and Restoration, Surface Water, Groundwater, Air Quality, Dust and Noise, Servicing and Facilities, Contaminated Soils, Mitigation and	

Table 2.2. Consultation Summary		
	Summary of Comments Received	**Responses**
	Monitoring, Planning and Policy, and Class EA Process.	
Agency	MTCS responding to notice of study commencement	
Agency	TransCanada Pipeline confirmed the study area is clear of TransCanada facilities.	
Agency	Hydro One Networks confirmed the study area is clear of Hydro One Network distribution plant (<- 44,000 volts).	
Agency	Oakville Hydro identified the location of facilities within the study area (drawings included).	
Agency	Halton Region Public Works - requested the contact for Halton Region be changed.	
Agency	Cogeco provided map with markup of infrastructure.	
Agency	Halton Catholic District School Board provided a letter relating to their concerns surrounding St. Thomas Aquinas Catholic Secondary School, located within the project study area.	
Agency	Halton District School Board has no comments at this time on the Preliminary Preferred Alternative but asks that the schools within the study area be contacted directly, and that the school board and subject schools continue to be kept informed.	

3.0 EXISTING AND FUTURE CONDITIONS

Existing conditions along Lakeshore Road West are documented on Drawing 1 – Existing Conditions (ref. rear pocket).

3.1 Study Area

The study area is located within the Town of Oakville and extends from Mississaga Street to Dorval Drive (ref. Key Plan, Figure 1.1).

3.2 Land Use and Development Plans

Livable Oakville Official Plan, 2009, Office Consolidation April 2017

The Livable Oakville Plan (2009 Town of Oakville Official Plan) was prepared to conform to the Province of Ontario's Growth Plan for the Greater Golden Horseshoe, 2006, as required by the Places to Grow Act, 2005. It replaced the policies contained in the 1984 Town of Oakville Official Plan, and applies to all lands within the Town except the North Oakville East and West Secondary Plan areas.

The Livable Oakville Plan:

- establishes the desired land use pattern for lands within the Town, south of Dundas Street and north of Highway 407, to 2031;
- coordinates land use and infrastructure requirements to ensure that the anticipated growth can be accommodated;
- establishes a framework and policy context for decision making that provides certainty for the planning process;
- conforms or does not conflict with provincial plans, has regard to matters of provincial interest, and is consistent with provincial policy statements, and
- Includes the Bronte Village Revitalization Study, incorporated into section 24, including objectives relating to:
    - Nurturing, conserving and enhancing the historic lakeside village character of Bronte;
    - Revitalizing the village and maintaining a complete community; and,
    - Maintaining and improving waterfront connections.

Official Plan Review

Urban Structure Review (ongoing)

The Urban Structure Review was adopted as an Official Plan Amendment in September 2017. The Urban Structure Review considers:

- Population projections and accommodating required growth to 2041;
- The potential for development of existing and emerging areas such as Midtown Oakville, the Trafalgar Road Corridor and the area surrounding the Bronte GO Station;
- The preservation of stable residential areas and the protection of natural heritage;
- The relationship between growth areas and the delivery of municipal infrastructure; and
- Criteria for evaluation of new growth areas.

Bronte Village Growth Area Review (ongoing)

The Bronte Village Growth Area Review study will be put forth as an official plan amendment to modify the text and schedules of the Livable Oakville Plan. The purpose of the Bronte Village Growth Area Review study is to consider new or revised policies, as necessary, to ensure the goals and objectives for Bronte Village continue to be realized.

The effect of the Livable Oakville Plan amendment includes changes to:

- update the development concept for Bronte Village to clarify intent and to reflect policy changes throughout;
- provide policy direction for the ongoing Lakeshore Road West Environmental Assessment;
- update the policy language for expressing growth targets as a minimum planned density to be determined as part of future conformity matters;
- introduce new urban design policies to enhance existing objectives and include an urban design schedule to illustrate urban design elements including: primary streets, secondary streets, enhanced streetscape areas, urban squares, view corridors, pedestrian connections, and gateways;
- permit stand-alone residential uses in certain contexts within the Main Street 1 and Main Street 2 designations;
- recognize existing uses within the Waterfront Open Space designation and provide opportunity for the adaptive reuse of existing buildings;
- designate various properties to permit greater development opportunities at key locations which reflect the existing development concept;
- expand bonusing permissions within the Main Street District;
- provide an underlying land use designation on the lands designated Parkway Belt West;
- introduce the Greenbelt Urban River Valley to the lands subject to the new Greenbelt Plan (2017);
- adjust the growth area boundary to exclude St. Ann's Court;
- update the Bronte Village Land Use Schedule accordingly; and,
- enhance clarity and intent through housekeeping amendments.

Oakville Harbours Master Plan, March 2008

This initiative incorporates two Oakville harbours, Bronte Harbour and Oakville Harbour. The purpose of this initiative is to achieve the following goals:

- Integrate the parks adjacent to both harbours, and
- Provide a vision for both harbours and their role in the larger community.

This multifaceted study focuses on the harbour areas and adjacent parks. Key directions for the study are as follow:

1) Connect the harbours with their urban centres
2) Balance and respect for all users
3) Clear public access
4) Shared space for vehicle access and parking
5) Beautify amenities
6) Enhance wayfinding and signage
7) Protect natural features
8) Identify and preserve cultural heritage landscapes
9) Promote financial responsibility in harbour operations

The Town is currently finalizing the plan and it will be made public in 2017/2018.

Town of Oakville Streetscape Strategy 2014
This plan provides guidelines for streetscape studies to be undertaken within the Town of Oakville. The studies would be conducted by an inter-departmental project team with representation from all departments of the Town of Oakville.

3.2.1 Provincial Land Use Planning Initiatives

The following planning documents were reviewed to determine their applicability to the study area:

- Oak Ridges Moraine Conservation Plan;
- Niagara Escarpment Plan;
- Lake Simcoe Protection Plan, and
- The Greenbelt Plan.

Based on the review completed, the 2017 Greenbelt Plan, Section 6 - Urban River Valley Polices now includes Bronte Creek which is within the study area. This policy change does not affect the study as no changes are being recommended at Bronte Creek.

The following policies were reviewed to ensure the development proposed is in line with the policies contained within them:

Provincial Policy Statement (2014): The Provincial Policy Statement (2014) provides for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural and built environment. The Provincial Policy Statement supports improved land use planning and management, which contributes to a more effective and efficient land use planning system.

The following policies within the Provincial Policy Statement support potential improvements to the Lakeshore Road West corridor:

1.1.1 Healthy, livable and safe communities are sustained by:
g) ensuring that necessary infrastructure, electricity generation facilities and transmission and distribution systems, and public service facilities are or will be available to meet current and projected needs.

1.6 Infrastructure and Public Service Facilities:
1.6.1 Infrastructure, electricity generation facilities and transmission and distribution systems, and public service facilities shall be provided in a coordinated, efficient and cost-effective manner that considers impacts from climate change while accommodating projected needs.

Greenbelt Plan (2017)

Growth Plan for the Greater Golden Horseshoe (2017): The Growth Plan for the Greater Golden Horseshoe – Places to Grow, was adopted in June 2006 under the provisions of the Places to Grow Act, 2005. The Province has recently updated the Growth Plan, which came into effect July 1, 2017. The plan provides the framework for implementing the provincial government's vision for building strong, prosperous communities by better managing growth to the year 2041 in the burgeoning Greater Toronto and Hamilton Area (GTHA). Since implementation, the plan has been amended to provide population and employment forecasts to the year 2041.

The Growth Plan contains specific policies and directives regarding transportation infrastructure, land use planning, urban form, housing, natural heritage and resource protection to be considered by municipalities in their planning activities. The Growth Plan provides direction on where growth can occur, the form of future development, and future population and employment forecasts.

3.2.2 Existing Land Use

The land use adjacent to Lakeshore Road West corridor, within the study area, is a combination of residential, commercial, and park space. The following is a breakdown of the major land uses along the corridor:

- Single family residential dwellings located along both sides of Lakeshore Road, predominantly in the east section of the study area;
- Numerous apartment buildings (rental, condo and senior orientated) along the corridor;
- Numerous heritage designated properties (built heritage structures and cultural heritage landscapes);
- Park spaces including the Bronte Harbour Park and Coronation Park;
- Numerous commercial developments along the corridor, with a grouping within the Bronte Village area, and
- Institutional properties including the Walton Memorial United Church and Appleby College.

3.2.3 Existing Land Use Designation

Region of Halton Official Plan Land Use Designation

The Region of Halton Official Plan designates a portion of the study area as part of the Bronte Harbour Waterfront Park (ref. Figure 3.1). The objectives of this designation are to:

- To maximize public accessibility to the Halton waterfront by increasing the amount of well distributed public open space, and
- To provide a variety of recreational, cultural and tourism opportunities along the Halton waterfront.

The Official Plan also outlines the process for the development of Waterfront Park Master plans in partnership with Conservation Halton and the local municipalities.

The Town of Oakville is currently proceeding with a Master Plan for this area.

Figure 3.1. Region of Halton: Map 2 Regional Waterfront Parks

Lakeshore Road West Study Area

Town of Oakville Official Plan

The Town of Oakville Official Plan designates areas around the Sixteen Mile Creek and the Fourteen Mile Creek (ref. Figure 3.2) as floodplain, woodlands, and Areas of Natural and Scientific Interest. These areas have been investigated as a component of this study.

Figure 3.2. Town of Oakville: Schedule B Natural Features and Hazard Lands

Lakeshore Road West Study Area

Land use designations within the study area include the following (ref. Figure 3.3 and Figure 3.4) low density residential, medium density residential, high density residential, neighbourhood commercial, institutional, natural area, and utility. The study area for the Lakeshore Road West Improvements includes a growth area, and a special policy area.

Figure 3.3. Town of Oakville: Schedule F Southwest Land Use, Town of Oakville

Lakeshore Road West Study Area

Figure 3.4. Town of Oakville: Schedule P Bronte Village Land Use

Lakeshore Road West Study Area

Bronte Village Growth Area

Bronte Village is identified in the Livable Oakville Plan as one of the six areas where the majority of new growth in Oakville will be accommodated south of Dundas Street. It is a historic area located along Bronte Creek at Lake Ontario. Bronte Village is intended to be revitalized as a mixed use area with a thriving commercial area and a variety of housing options that provide a year round environment for residents, employees, and visitors. As noted in section 3.2, the Bronte Village Growth Area Review is ongoing.

The specific part of the Bronte Village Growth Area within the study boundaries is the Bronte Village Main Street District. This area is targeted for commercial, retail, and office development, with residential areas provided in mixed use buildings. This area will have defined landscaped, streetscaped, and integrated open spaces.

3.2.4 Proposed Development

The following proposed development (ref. Figure 3.5 and Figure 3.6) has been identified along the study area:

- Future development within the Bronte Village commercial district, and
- Small pockets of residential infill development along the corridor.

Figure 3.5. Oakville Development and Site Plan Applications

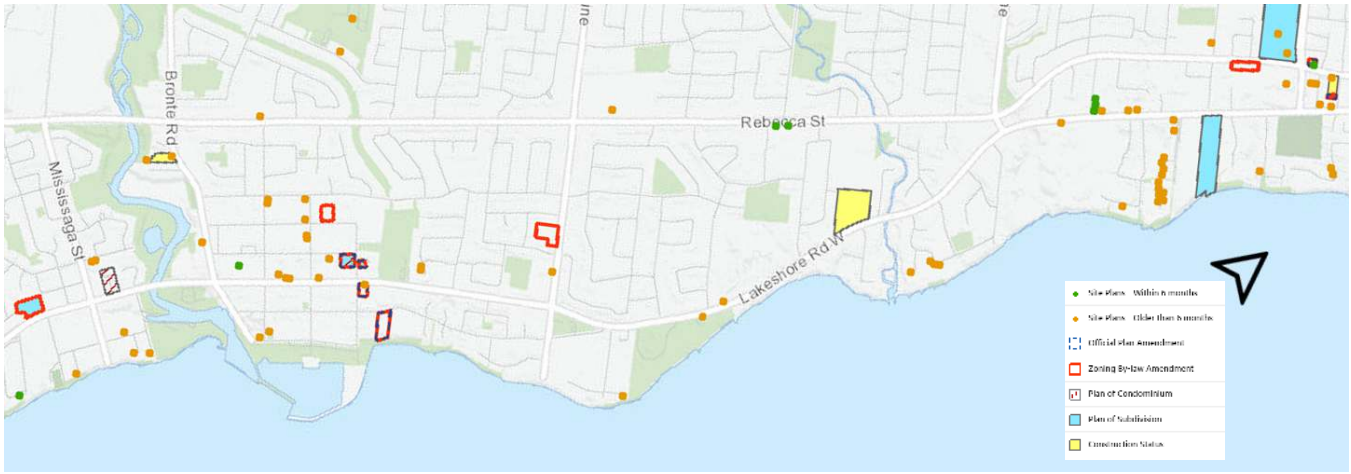
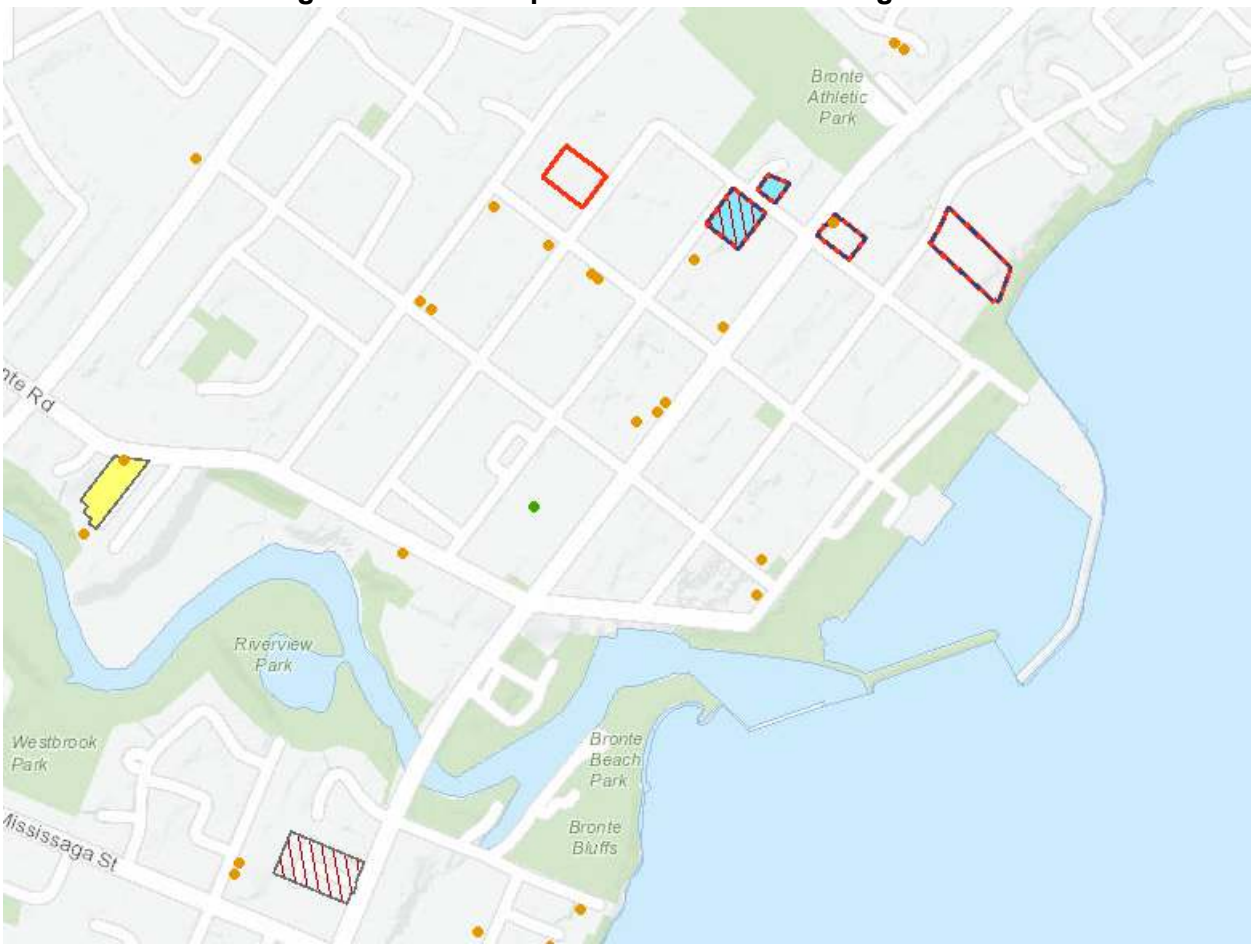


Figure 3.6. Development in the Bronte Village Area



3.3 Transportation

Wood has completed a Traffic Study to investigate existing and future traffic conditions in the study corridor. The study assessed the need for improvements to accommodate traffic in a safe and efficient manner and can be found in Appendix F.

3.3.1 Adjacent Projects and Planning Documents

Numerous studies, projects and initiatives previously completed or currently underway by the Town of Oakville and other public agencies provide the planning context for the Lakeshore Road West Class EA. The 2013 Town of Oakville Transportation Master Plan (Switching Gears) established the need and justification for roadway improvements along Lakeshore Road West through the study area and serves as the foundation for the *Problem and Opportunity Statement* for this Class EA study. Other notable documents include:

- Town of Oakville Official Plan 2009, 'Livable Oakville';
    - Town of Oakville Official Plan Review
    - Town of Oakville Zoning By-law 2014-014;

- Development Applications map;
- Active Transportation Master Plan 2009 and 2017;
- Region of Halton 2011 Transportation Master Plan; and
- Other ongoing reviews and Class EA studies near or within the study area.

3.3.2 Existing Roadway Network

The study examined current traffic conditions, operational deficiencies, and constraints experienced by the public travelling along Lakeshore Road West. There are 31 intersections (stop controlled and signalized) and numerous accesses and driveways within the study area. The analysis of existing 2016 traffic conditions illustrated that:

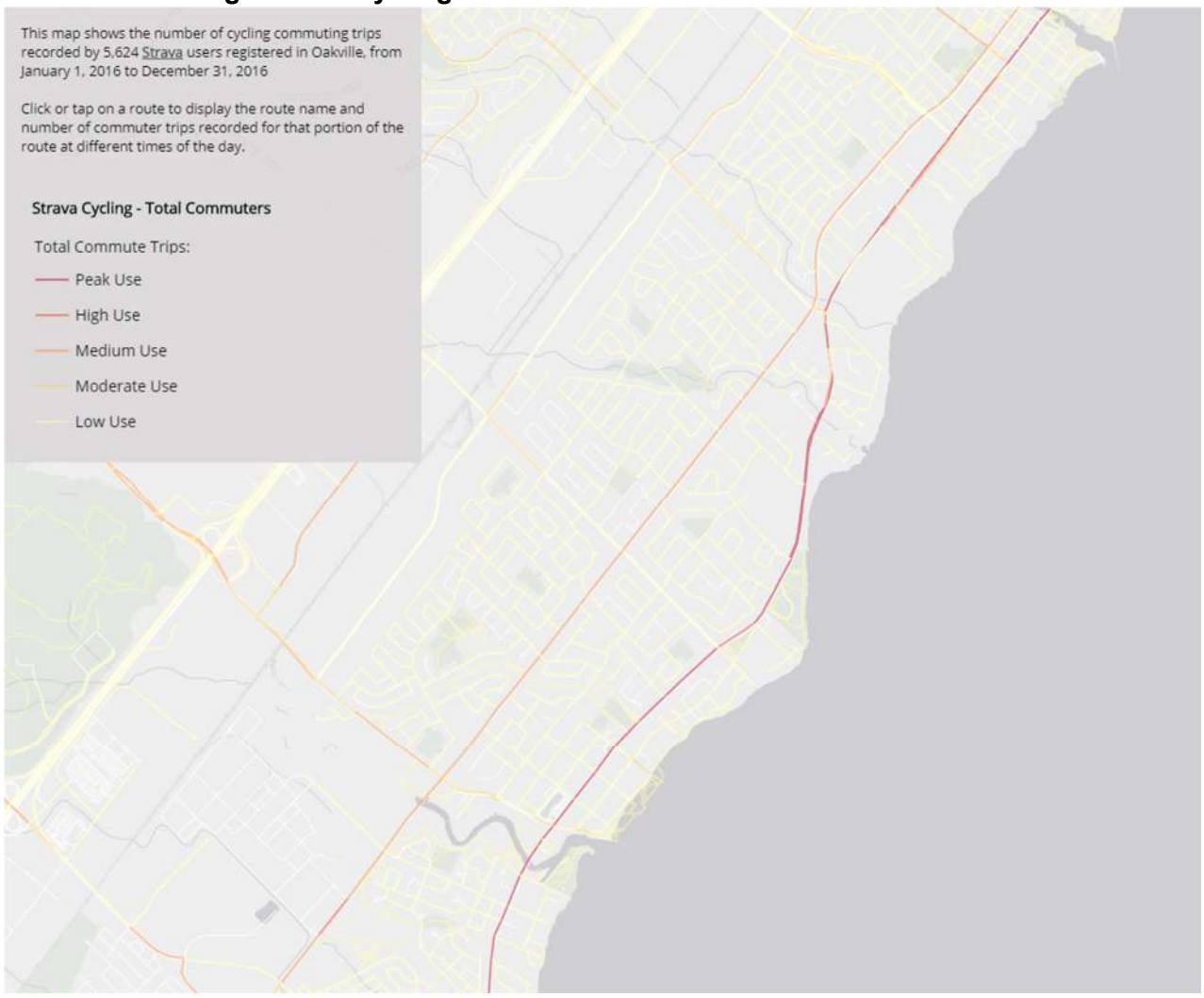
- Traffic throughout the corridor is currently operating at an acceptable level-of-service, with only minor delays during peak periods;
- Intersections along Lakeshore Road West are operating at acceptable levels-of-service;
- Transit currently has stops along Lakeshore Road West from Mississaga Street to Windsor Gate. Ridership was low through the balance of the study area, which led to the elimination of the bus route on Lakeshore Road between Third Line and Dorval Drive in September 2016; and
- Cycling and walking are very prevalent within the Lakeshore Road corridor and there are some connectivity gaps and missing infrastructure that need to be addressed in the design.

3.3.3 Active Transportation

Active transportation infrastructure along the Lakeshore Road West corridor from Mississaga Street to Dorval Drive is discontinuous and varied. A variety of users, from recreational cyclists (on multi-use trails), to commuter cyclists (using on-road bike lanes), walkers, joggers, skateboards and roller bladders (on sidewalks and multi-use trails) utilize what facilities exist. Creating a safe, consistent, and efficient network for these users is paramount, as they are exposed to vehicular traffic and are at a high risk for serious injuries and death. A review of the existing infrastructure displayed the inconsistent use of pavement marking and signage warning motorists to share the road in areas without dedicated on-road bike lanes. There are 31 intersections and numerous driveways and accesses that front Lakeshore Road West which create conflict points for drivers, pedestrians and cyclists.

As mentioned, a separate report "*Road Safety Performance Assessment" prepared by Intus Road Safety Engineering INC., March 2017,* (Appendix G) was completed for the study with recommendations to address issues identified, including issues associated with active transportation. Active transportation infrastructure along the Lakeshore Road West corridor has been reviewed and addressed through the preliminary design phase, providing a safe, efficient and consistent network with connectivity to existing trails throughout the study area. In 2014, the Town of Oakville's acquired cycling data from Strava to gain a better understanding of current use and trends. Figure 3.7 is an example of the map Strava produces.

Figure 3.7. Cycling Activities Around Lakeshore Road West



3.3.4 Transit

Oakville Transit currently provides service (Route 14 – Lakeshore West) along Lakeshore Road West between Mississaga Street and Windsor Gate (9 stops) and (Route 3 – Third Line) along Lakeshore Road West between Bronte Road and Third Line (6 stops). Bus service for the section of Lakeshore Road West between Third Line and Dorval was eliminated in September 2016 due to low ridership. Transit stops along Lakeshore Road West currently stop in the through lane with minimal disruption to traffic.

Intercity transit, originating from or passing through Oakville, is provided through Go Transit (Metrolinx) and Megabus. No intercity transit routes follow Lakeshore Road West. This corridor is not a feeder route and is irrelevant to connectivity to the Regional Transit Network.

3.3.5 Existing Traffic Conditions

VISSIM software was used to run the analysis to provide the overall existing intersection delay in seconds. Other outputs included:

- delay by traffic movement (seconds);
- level-of service (LOS A to F)
- 95th percentile queue

Based on the analysis outputs, Lakeshore Road West from Mississaga Street to Dorval Drive is operating at an acceptable LOS for existing conditions (2016), year 2021 and year 2031. Three (3) intersections were identified as having a traffic movement (left turn) operating at a LOS 'D'. These intersections have been further reviewed as part of the preliminary design of improvements to Lakeshore Road West.

3.3.6 Future Traffic Conditions

Future Transportation Conditions 2021

Future traffic conditions for the horizon year 2021 along Lakeshore Road West will include new development that is expected to be complete by 2021. A growth rate of 1% for both eastbound and westbound directions was used for the section of Lakeshore Road West from Mississaga Street to Jones Street, accounting for this new development within the Bronte Village Growth Area (Schedule A1, Urban Structure, *Town of Oakville's Official Plan* 'Livable Oakville'). The growth rates for the remainder of the corridor (Third Line to Dorval Drive) were derived from the Town's 2006 EMME PM model (Population and Employment). The growths rates varied from -1% to 2%.

The Town's EMME model plots only used the major intersections (13 of 31). Given the aggregation level of the EMME model, several side streets are missing from this plot. The growth rates were assumed to mirror side streets which are represented in the EMME plot. Using the above noted growth rates, forecasted background traffic for 2021 was modelled in VISSIM.

Traffic volumes generated by the new development were calculated using ITE trip generation rates based on the size of the development. There were four developments identified at the time of this analysis. All developments are expected to be at full buildout by 2021. Total estimated traffic volumes for 2021 were derived by adding the forecasted traffic with the estimated development-generated traffic.

The year 2021 was identified as being the critical year for the traffic study due to the zero (0) to negative growth expected from 2021 to 2031.

Future Transportation Conditions 2031

Future traffic conditions for the horizon year 2031 for Lakeshore Road West assumed that all significant redevelopment will be complete by 2021. The Town of Oakville provided the growth rates (0% for both east and westbound direction) for the section of Lakeshore Road West from Mississaga Street to Jones Street, based on a targeted 20% projected modal split (vehicular vs transit, walking cycling, carpooling, etc.) in this section. The growth rates for the remainder of the

corridor (Third Line to Dorval Drive) were derived from the Town's 2021 and 2031 EMME PM models and accounted for the same modal split of 20%. The growth rates varied from 0% to -2% and were used to model forecasted background traffic for 2031 in VISSIM.

3.4 Road Safety Performance Assessment

Intus Road Safety Engineering completed a Road Safety Performance Assessment (Appendix G). The collision data made available for this assessment indicates:

- The severity of the collisions in the Lakeshore Road West study area is higher than expected;
- There are more collisions occurring at intersections in the study area than expected;
- The east and west sections of the study area had 56% and 61% of the collisions recorded as occurring at intersections, respectively;
- Collisions are overrepresented in the PM peak travel period;
- Adverse environmental or road conditions do not appear to be contributing to an elevated collision risk. The cause or causes of this are difficult to pinpoint. Based on the available data and observations made during the site visit, there does not appear to be any pervasive and noticeable safety deficiencies with the area intersections; and
- The collision risk is elevated in the Bronte Village community (from Mississaga Street to East Street) where three intersections and three road sections have safety performance with good potential for improvement. The prevalent collisions at these locations are rear-end and sideswipe collisions in the mid-day and PM peak travel periods. This is typically indicative of traffic congestion causing safety performance issues.

Several items were suggested, for consideration, to improve the overall safety of the study corridor during the Class EA process. These included:

- The alignment and proposed cross-section of Lakeshore Road West should generally manage speeds to around 50 km/h through the entire study area;
- Converting Lakeshore Road West east of Bronte Road from a two-lane facility to a three-lane facility;
- The section of Lakeshore Road West from Mississaga Street to Bronte Road should be made congruous with the reminder of the road (i.e., with respect to number of lanes and cross-section design);
- Provide sidewalks on both sides of the road throughout the entire study area, if possible;
- Sidewalks should be prioritized over boulevards and outer separations, and if necessary the absolute minimum vehicular lane widths should be used in order to provide enough road space for a sidewalk.
- A reasonable level of safety for cyclists will be achieved if the design team conforms to the guidance provided in OTM Book 18 with respect to cycling facility type selection;
- On structures where pedestrians will be required to walk adjacent to motorized traffic on curb-faced sidewalks (e.g., the structure over the Bronte Creek), the device separating pedestrian and motorized traffic should also offer splash and spray protection;
- Selecting intersection control for individual intersections based on the control warrants adopted by the Town of Oakville (e.g., the OTM Book 12 warrants for traffic signal control) will result in a form of intersection control that is reasonably safe;

- Due to their safety benefits, roundabouts could be considered as a form of control for intersections and major driveways in the study area; and
- The design team and the Town should consider speed management measures during the Class EA process including but not limited to, roundabouts, narrow lanes, cycling lanes, roadside landscaping, and a reduced speed limit of 40 km/h in the Bronte Village area.

3.4.1 Sightline Review

A site visit was performed to understand sightline restrictions within the study area. The area in general is moderately flat, however there are a few horizontal and vertical curves along the corridor. Given wider radii and suitable crest or sag curvature, no potential sight restrictions were found along Lakeshore Road. However, at a few intersections, it was observed that northbound and southbound traffic may have limited sightlines overlooking eastbound and westbound lanes. These locations are as follows:

Bronte Road – is a signalized intersection with skewed geometry. It has channelized northbound and southbound right turn lanes. The south leg of the intersection has a greater skew as compared to the north leg, which results in a tighter northbound right turn which could potentially result in drivers overlooking and not yielding to oncoming eastbound traffic. If channels are to be maintained, provision of a smart-channel is a better option to mitigate sharp turns. However, no sightline restrictions were found at this location.

Third Line – is a signalized intersection with skewed geometry. Although there is a large horizontal curve immediately east of Third Line, no sightline deficiencies were observed along Lakeshore Road. It was observed that sightlines are restricted on the southbound approach overlooking the west leg of the intersection due to vegetation within the boulevard, which can be easily mitigated by clearing and removing overgrown vegetation and trees.

Dorval Drive – is a signalized intersection with a mildly skewed angle. This location does not possess any significant issues; however, the southbound right turn lane has restricted sightlines overlooking the west leg of the intersection due to adjacent higher ground elevation in the northwest quadrant. Shifting the stop bar closer to the intersection would help in providing better sightlines. No other restrictions were observed at this location.

3.5 Utilities

Based on mark-ups received, relocation or protection of various utilities may be required.

The following is an outline of the utility information supplied and known to date:

Halton Region – Halton Region has an ongoing EA for the Berta Point Pumping Station with two twin force mains along Lakeshore Road West from west of West River Street/Triller Place to East Street. Construction is scheduled for 2020.

Bell Canada –	Bell has buried lines and conduit buried throughout the study area. In general, these lines are located on both sides of Lakeshore Road West. Mark-up drawings were provided
Enbridge Gas –	No infrastructure in the corridor.
TransCanada –	No infrastructure in the corridor.
Hydro One Networks –	No infrastructure in the corridor.
Ontario Power Generation –	No infrastructure in the corridor.
Rogers Cable –	Rogers has existing aerial plant in the study area, both following and crossing the corridor. Mark-up drawings were provided.
Cogeco Connexion –	Cogeco has existing plant through the entire study area. Between Mississaga Street and Third Line the majority is buried, and between Third Line and Dorval Drive the majority is aerial. Mark-up drawings were provided.
Oakville Hydro –	Oakville Hydro has existing plant in the study area both underground and overhead, with the majority along the south side of Lakeshore Road West. Mark-up drawings were provided.

3.6 Existing Bridge Conditions

3.6.1 Bronte Creek

The Bronte Creek Bridge (also known as the 12 Mile Creek Bridge) was built in 1970 and rehabilitated around 1999. The total deck length is 64.9m and the structure width is 19.5m. The roadway width is 14.4m. The current posted speed is 50 km/h and the roadway consists of four (4) lanes. The bridge has been assessed as being in good condition and will not require any structural modifications.

3.6.2 14 Mile Creek

The 14 Mile Creek Bridge was built in 1916 and has been extended both north and south. It is a Spandrel Arch structure. The total deck length is 17.1 m and the structure width is 15.74 m. The roadway width is 11.54m. The current posted speed is 50 km/h and the roadway consists of two (2) lanes. The bridge has been assessed to be in good condition and will not require any structural modifications. The structure conveys the 100 year storm event, but the Regional Storm overtops the structure by 0.75 m +/- with a velocity of 1.09 m/s +/-.

3.6.3 McCraney Creek

The McCraney Creek crossing is an arch culvert built in 1940 and was subsequently extended with a box culvert section. The total deck length is 21m and the structure width is 5.4 m. The

roadway width is 8.4 m. The current posted speed is 50 km/h and the roadway consists of two lanes. In July 2017, emergency work was undertaken to temporarily stabilize the road embankment slope as a result of the north-west wingwall collapse. Further erosion issues have been identified. The structure conveys the 100 year event but is overtopped by the Regional storm by 1.48 m +/-. Due to the condition of this crossing it will require replacement as part of this project.

3.7 Natural Environment

3.7.1 Terrestrial Resources

Wood completed a Terrestrial Resources investigation. The full report is included as Appendix H. Terrestrial resources existing conditions were gathered through both secondary source information and field investigations conducted on May 24 and June 19, 2017. Through a secondary source review of Land Information Ontario (LIO) data, several natural heritage features have been identified in the vicinity of the project area.

Correspondence with MNRF reports that 14 Species at Risk (SAR) have been recorded in the vicinity of the study area, 11 of which are terrestrial or semi-terrestrial. Several wildlife SAR and species of conservation concern were observed during field investigations, including: Barn Swallow, Chimney Swift, Eastern Wood-Pewee, Peregrine Falcon, Canada Warbler and Red-necked Grebe. These species are typically tolerant of disturbance and have learned to adapt in an urbanized environment. Generally, habitat for SAR and species of conservation concern is limited and highly fragmented within the project study area. As such, only minor impacts to wildlife and supporting habitat are anticipated to result from the proposed project works.

The study area is characterized by large amounts of cultural land use and fragmentation. Approximately 93.1% of the study area includes these anthropogenic and cultural habitats and land uses in the form of residential, industrial and commercial lands and cultural vegetation communities. The majority of existing naturalized areas are associated with the watercourses throughout the project study area. Many non-native species were found within these naturalized areas. Wildlife found to occur in the vicinity of the project area from the secondary source review, as well as those observed on site during field investigations were found to be those that are tolerant of urbanized environments (i.e. raccoon, skunk) and includes several SAR which were observed or have a high likelihood of occurring in the area.

Only those features immediately adjacent to Mississaga Road have potential to be directly impacted by project works. The Lower Bronte Creek Wetland Complex is located approximately 170 m north of the Bronte Creek Bridge on Lakeshore Road West and is not anticipated to be impacted by the project works. Several urbanized parks (Riverview Park, Bronte Athletic Park and Coronation Park), as well as fragmented areas of woodland/forest near the watercourses are also present within the project study area. These parklands and fragments of forest/cultural woodland near the watercourses and are a relatively significant feature in context of the project area landscape, given that the area is characterized by a high degree of disturbance and development. Although the high disturbance and habitat fragmentation suggests limited functionality of these lands, several candidate Significant Wildlife Habitats have been identified in the project study area, including:

- Bat maternity colonies;
- Turtle wintering areas;
- Land bird migratory stopover areas;
- Amphibian woodland breeding habitat;
- Turtle nesting areas;
- Special concern and rare wildlife species habitats; and
- Amphibian movement corridor habitat.

3.7.2 Aquatic Resources

Wood completed an Aquatic Resources investigation. The complete report is included as Appendix I. Within the study area, Lakeshore Road West crosses four (4) permanent watercourses including Bronte Creek, Fourteen Mile Creek, McCraney Creek, and an unnamed tributary to Lake Ontario which flows through Sedgewick Forest, located to the east of the water treatment plant. There is one intermittent watercourse (unnamed tributary located at Crossing C17) and thirteen (13) additional drainage features which have ephemeral flow. The study area is under the jurisdiction of Conservation Halton and the Aurora District Ministry of Natural Resources and Forestry. A secondary source review, as well as correspondence with regulatory authorities revealed records of American Eel (*Anguilla rostrata*) and Silver Shiner (*Notropis photogenis*) in Bronte Creek, and Redside Dace (*Clinostomus elongatus*) within Fourteen Mile Creek.

A review of MNRF's NHIC database and correspondence from MNRF indicates that there are a number of natural heritage features recorded in the vicinity of the project study area:

- Occupied American Eel and Silver Shiner habitat: Bronte Creek;
- Occupied Redside Dace habitat: Fourteen Mile Creek;
- Lower Bronte Creek Wetland Complex (located approximately 170 m north of the Bronte Creek Bridge on Lakeshore Road); and
- Riverview Park, Bronte Athletic Park, Coronation Park lands.

3.7.3 Fluvial Geomorphic Assessment

AquaLogic Consulting completed a Fluvial Geomorphology Review for Fourteen Mile Creek and McCraney Creek. This report is included as Appendix J. Fourteen Mile Creek and McCraney Creek have been investigated based on fluvial geomorphic considerations for crossing improvements. Scoping level review of existing channel conditions, planform characteristics, crossing sizing and guidance for scour and erosion control, have been undertaken.

3.8 Archaeological Assessment

A Stage 1 Archaeological Assessment was completed for the study corridor and is included as Appendix K. The Stage 1 background study concluded that undisturbed portions of the study area have archaeological potential for three principal reasons: 1) the study corridor is in close proximity to Lake Ontario, and crosses four creeks; 2) a clear pattern of pre-contact aboriginal and historic Euro-Canadian land use in the vicinity as demonstrated by the presence of 11 previously

registered archaeological sites within a 1-km radius; and 3) Lakeshore Road is an historic transportation route that also traverses a portion of the historic Bronte Village. It has been concluded that areas where potential has been removed as a result of previous road and sidewalk construction, disturbed shoulders, driveways and boulevards comprise approximately 88% (12.5 ha) of the total study area, while areas of low potential due to excessive slope constitute approximately 1% (0.13 ha). The potential for archaeological resources exists within 11% (1.1 ha) of the total study area.

3.9 Cultural Heritage Assessment

A Cultural Heritage Assessment was completed for the study corridor and is included as Appendix L. A total of 17 listed and designated heritage properties were identified. These include a number of heritage homes, buildings and landscapes relating to the two world wars and Korea (Cenotaph), and buildings relating to recreation, industry, religion, and education. A list of potential project effects with respect to the recorded built heritage resource and cultural heritage landscapes, and the anticipated magnitude of these effects on the resources, was developed. The magnitude is evaluated with respect to the relative setback of a property from Lakeshore Road West, the cultural heritage value or interest of the resource, and existing conditions.

Traffic noise is an existing condition throughout the study area. The heritage context of all properties and landscapes has also been somewhat altered throughout years of land use. Visual alterations of cultural heritage landscapes have been caused by both subtractive and additive modifications through neglect and reuse. All seventeen heritage resources within the study area are evocative vestiges of historical land uses over time.

3.10 Hydrology and Drainage

A hydrologic and hydraulic assessment has been conducted for both the existing and proposed road condition. The Class EA study area drains to the Bronte Creek, Fourteen Mile Creek, McCraney Creek and multiple drainage outlets to Lake Ontario, with all events up to and including the 100 year event being captured and conveyed by the existing storm sewer and roadway right-of-way. The existing and future drainage systems (with no improvements) consisting of storm sewer networks and overland drainage routes within roadside swales and the road itself have been assessed using a PCSWMM hydrologic/ hydraulic model. Based on the modelling, various sections of the existing storm sewer surcharge and flood during the 100 year storm event, with basements potentially being flooded during a 100 year storm. Various section of the road have flow depths above the curb and above the flow capacity of the roadside ditches.

Three (3) main creek crossings have been assessed. The Bronte Creek crossing conveys the Regional Storm without overtopping. The Fourteen Mile Creek crossing conveys the 100 year storm, but does overtop for the Regional Storm, that said it does meet MNRF criteria for emergency vehicle ingress and egress. The McCraney Creek culvert conveys the 100 year storm, but does overtop by 1.36 m for the Regional Storm, and does not meet MNRF criteria for emergency vehicle ingress and egress. In addition, the culvert structural was built in 1940 and is nearing its lifespan, as such it will need to be replaced.

4.0 DEVELOPMENT AND EVALUATION OF ALTERNATIVE PLANNING SOLUTIONS

4.1 Problem and Opportunity Statement

The purpose of this study is to address existing and future opportunities and constraints along the Lakeshore Road West corridor, through a comprehensive, environmentally sound planning process, while facilitating dialogue between stakeholders with diverse interests. Based on a review of existing and future conditions, as well as preliminary consultation with stakeholders, it has been determined that improvements are needed along the Lakeshore Road West corridor. The following specific problems and opportunities have been identified:

- Improve intersection operations;
- Accommodate transit where required;
- Improve roadway geometry to meet current design standards;
- Provide and improve pedestrian and cyclist facilities;
- Improve pavement conditions;
- Improve vehicular, pedestrian and cyclist safety;
- Improve existing drainage and stormwater management;
- Improve creek crossings and structures and
- Accommodate future municipal services and utilities within the ultimate right-of-way.

4.2 Identification of Planning Alternatives

The following planning alternatives have been identified for consideration in addressing the problems and opportunities identified above:

Alternative 1: **Do Nothing:**

- No improvements
- Continue regular maintenance

Alternative 2: **Improve other Roads:**

- Add capacity to adjacent parallel roads to accommodate traffic

Alternative 3: **Multi-modal Improvements**:

- Improve transit and active transportation infrastructure
- Promote increased active transportation and carpooling use

Alternative 4: **Additional Improvements to Lakeshore Corridor:**

- Improvements in the form of:
    - Signal timing changes
    - Urbanization
    - Horizontal alignment modifications
    - Streetscaping

Alternative 5: **Widen Lakeshore Road West to 3 Lanes with Active Transportation Facilities:**

- Addition of a two-way center turning lane to increase traffic capacity throughout the corridor (left turning vehicles not blocking through lanes) with sidewalks and cycle lanes throughout the study area

Alternative 6: A combination of one or more of the alternatives mentioned above.

4.3 Evaluation Criteria for Planning Alternatives

In assessing planning alternatives, a range of environmental factors, and potential avoidance or mitigation of negative effects have been considered. To facilitate assessing planning alternatives, this study has identified evaluation criteria that reflect the concerns of various stakeholders, as communicated through preliminary consultation, as well as the concerns of the Town of Oakville. Table 4.1 identifies and describes the evaluation criteria utilized in the evaluation process.

Table 4.1. Evaluation Criteria for Planning Alternatives

Component	Evaluation Criteria	Description
Natural Environment	Wetlands and Vegetation	Potential adverse effects on terrestrial species and habitats
	Wildlife Habitat	Potential adverse effects on existing wildlife due to disturbance or loss of habitat
	Species at Risk	Potential effects on Species at Risk identified in the study area
	Groundwater/ Surface Water	Potential adverse effect on groundwater and wells including groundwater discharge and recharge
	Fisheries and Water Quality	Potential to minimize impact on aquatic features
	Flooding, Erosion and Surface Water Quality	Potential impact on flood potential, flood elevations, downstream erosion risk and water quality
Social Environment including, Cultural, and Economic	Land Use	Presence, number and characteristics of residences, community facilities, public parks, institutions or businesses within or adjacent to the study corridor
	Noise	Impact on noise levels at noise sensitive receivers during construction, and during operation
	Archaeology and Cultural Heritage Resources	Potential adverse effects on archaeological and built heritage resources
	Property Access Considerations	Ability to maintain/maximize access following construction
	Utilities	Ability to minimize effects on existing and proposed utilities
	Construction Disruptions	Ability to minimize construction disruption and complexity

Table 4.1. Evaluation Criteria for Planning Alternatives

Component	Evaluation Criteria	Description
	Active Modes of Transportation	Ability to contribute to the Active Transportation (AT) network throughout the corridor including consideration of AT type and design, and access to destinations along the corridor
	Accessibility (AODA)	Ability to maintain or enhance accessibility of the roadway for all road users including pedestrians
	Air Quality	Ability to reduce emission associated with transportation within the study area
Transportation	Safety	Ability to improve road user safety
	Travel Delay/ Traffic Capacity	Potential to address existing and future capacity and operational needs
	Transit	Potential to address transit needs for future planned transit initiatives
Costs	Capital Cost	Capital costs of the proposed improvements
Technical	Constructability	The ability to construct the improvements in a simple and cost-effective manner
	Adherence to Applicable Design Standards	Degree to which the proposed improvements meet applicable standards and codes
Transportation Plans & Policies	Compatibility with Regional and City Transportation Plans and Policies	Compatibility with regional and municipal official plans and policies

4.3.1 Assessment of Planning Alternatives

The planning alternatives were evaluated against the evaluation criteria listed in Table 4.1. The full Assessment of Planning Alternative is provided in Appendix N. A summary of the assessment is presented in Table 4.2. To facilitate comparison of alternatives a rating system is used showing a green (most preferred) to red (least preferred) scale, as shown below.

Most Preferred	Preferred	Neutral	Not Preferred	Least Preferred

Table 4.2. Evaluation Assessment Summary

	1. DO NOTHING	2. IMPROVE OTHER ROADS	3. MULTI-MODAL IMPROVEMENT	4. ADDITIONAL IMPROVEMENTS TO LAKESHORE CORRIDOR	5. WIDEN LAKESHORE ROAD WEST TO 3 LANES with ACTIVE TRANSPORTATION FACILITIES
Natural Environment	• No impacts along Lakeshore Road Corridor	• No Impacts along Lakeshore Road Corridor	• Potential for minor impacts, which can be mitigated with established practices and guidelines	• Potential for minor impacts, which can be mitigated with established practices and guidelines	• Potential impacts associated with widening of road corridor
Social Environment	• Continued congestion and lack of consistent active transportation facilities	• Continued lack of active transportation facilities	• Limited impacts to land use and other social factors	• Minor impacts associated with widening and property acquisition	• Impacts associated with widening and property acquisition
Transportation	• Through traffic would continue to be impacted by left turning vehicles • Pedestrian and cyclist safety concern would remain unchanged	• Improvement to other roads has already been taken into consideration in the traffic model (i.e.. improvements to Speers Road)	• Increase in traffic congestion • Improved transit and AT facilities	• Improved corridor capacity and reduced congestion	• Improve capacity and safety performance and reduced congestion
Cost	• Zero capital cost • Continued maintenance cost	• No direct costs • Continued maintenance cost	• Low capital cost associated with improvements	• Moderate capital cost associated with improvements	• Higher capital cost associated with improvements
Technical	• No construction • No upgrading of existing infrastructure	• No construction • No upgrading of existing infrastructure	• Minor constructability concerns. Able to upgrade some aspects of corridor to new standards	• Minor constructability concerns. Able to upgrade some aspects of corridor to new standards	• Constructability concerns including staging, utility conflicts and maintenance of traffic. Able to fully upgrade the corridor to new standards
Transportation Plans and Policies	• Recommended improvements in Town and Region documents would not be implemented	• Recommended improvements in Town and Region documents would not be implemented	• Complies with some aspects of Town and Region planning documents	• Complies with of Town and Region planning documents	• Complies with of Town and Region planning documents

Most Preferred	Preferred	Neutral	Not Preferred	Least Preferred

PREFERRED

wood.

The following discussion summarizes the results of the assessment of planning alternatives:

- **Alternative 1:** Dropped from further consideration, as it fails to address key deficiencies, particularly the lack of accommodation of pedestrians and cyclists, and lack of improved traffic operations.
- **Alternative 2:** Improvements to other roadways have already been considered in Town's EMME model for 2031. This alternative does not accommodate pedestrians and cyclists, and does not improve traffic operations. Therefore, Alternative 2 fails to address the identified deficiencies.
- **Alternative 3:** The provision of additional facilities for alternative modes of transportation in this area has the potential to attract some growth in alternative modes. The Town of Oakville has assumed a 10% modal split to year 2021 and a 20% modal split to year 2031. This planning alternative is not viable on its own as it does not address all deficiencies, but may be considered in conjunction with other alternatives.
- **Alternative 4:** Additional improvements along the Lakeshore Road West corridor such as signal timing changes, active transportation facilities, horizontal alignment, and landscaping will not address key deficiencies, however, may be considered in conjunction with other proposed alternatives.
- **Alternative 5:** Widening Lakeshore Road West to three lanes, with one lane in each direction and a two-way-center-left-turn lane, will increase traffic capacity throughout the corridor and reduce conflicts with turning vehicles. The addition of active transportation facilities such as sidewalks, multi-use trails and bike lanes will provide pedestrian and cyclists with the means to travel throughout the study area.
- **Alternative 6:** A combination of one or more of the above alternatives could address the specific problems and opportunities outlined in section 4.1. The preliminary recommended alternative solution, developed in consultation with agencies, is a combination of alternatives 3, 4 and 5.

4.4 Preferred Planning Solution

Based on input provided by stakeholders, technical agencies and public participants, as well as based on an assessment by the study team, the preferred planning alternative is **Alternative 6:** A combination of alternatives 3, 4 and 5, as follows:

3. Multi-Modal Improvements
4. Additional Improvements to the Lakeshore Road West Corridor, including turning lanes
5. Widen Lakeshore Road West to 3 lanes (two-way left turn center turning lane) with active transportation facilities (bike lanes, multi-use trails and sidewalks)

This alternative is also recommended in the Road Safety Performance Study for Lakeshore Road West. Various design alternatives for Alternative 6 were prepared and assessed by the Study Team and are described in the subsequent section of this report.

4.5 Public Consultation

As outlined in section 2.0, public consultation was a key component to this study. To bring the information to a wider audience two Public Information Centres (PICs) were held, the first during phase 2 of the study and the second during phase 3.

4.5.1 Public Information Centre No.1

Public Information Centre No. 1 (PIC No. 1) for the above project was held on Thursday April 20, 2017 from 6:00 p.m. to 8:00 p.m. at the Town of Oakville – Town Hall, South Atrium. Notification of the PIC was published in the local newspaper and mailed to review agencies and affected public on April 3, 2017. Copies of the newspaper advertisement, letters to stakeholders and agencies, a PIC summary, all comments received and written responses are contained in Appendix A, Public Information Centre Number 1. The purpose of the PIC was to solicit public comments and suggestions on the following:

- the purpose of the study;
- profile of the study area;
- issues and concerns within the study area;
- road improvement alternative solutions and combinations of alternative solutions;
- criteria by which road improvement alternative solutions have been evaluated;
- the Project Team's recommended road improvement solution; and
- next steps in the study process.

A total of 31 people signed the attendance sheet. At PIC No.1, a total of 14 comments sheets were submitted and numerous comments were submitted after the PIC to the Town. A summary of the PIC including comments received is included in Appendix A.

4.5.2 Public Information Centre No. 2

Public Information Center No. 2 (PIC No. 2) for the above project was held on Wednesday November 29, 2017 from 6:00 pm to 8:00 pm at the Sir John Colborne Recreation Centre for Seniors. Notification of the PIC was published in the Oakville Beaver and mailed to agencies and the affected public on Thursday November 16, 2017. Copies of the newspaper advertisement, letters to stakeholders and agencies, a PIC summary, all comments received and written responses, are contained in Appendix A, Public Information Centre Number 2. The purpose of the PIC was to solicit public comments and suggestions on the following:

- recommended road improvement design concept or combinations of concepts;
- criteria by which alternative design concepts of the preferred road improvement alternative have been evaluated; and
- the recommended design concepts.

A total of 81 people signed the register. A total of 18 comments sheets were submitted the night of the PIC, with additional comments and sheets submitted via mail and email within the comment period.

5.0 DEVELOPMENT AND EVALUATION OF ALTERNATIVE DESIGN CONCEPTS

The following alternative design concepts for Lakeshore Road West between Mississaga Street and Dorval Drive have been identified for consideration in addressing the problems and opportunities identified in section 4.0. The preferred planning solution is Alternative 6, a combination of alternatives 3, 4 and 5, as follows:

3. Multi-Modal Improvements;
4. Additional Improvements to the Lakeshore Road West Corridor including signal timing changes, urbanization, horizontal alignment modifications and streetscaping, and
5. Widen Lakeshore Road West to 3 lanes (two-way left turn center turning lane) with active transportation facilities (bike lanes, multi-use trails and sidewalks)

5.1 Evaluation Criteria

The same criteria listed in Table 4.1 were generally used in the evaluation of alternative design concepts, although a modified evaluation criteria was used for the assessment of roundabouts. The project team also considered criteria identified through consultation to be important to stakeholders and agencies, including:

- Focus on pedestrian safety;
- Retain boulevard trees;
- Improve stormwater management;
- Accommodate transit, cyclists and pedestrian requirements;
- Minimize impacts to the environment, including terrestrial and aquatic life;
- Minimize impacts to adjacent properties;
- Minimize the need to acquire additional property;
- Minimize the impacts to McCraney Creek;
- Optimize project capital cost;
- Accommodate Bronte Village Growth Area, and
- Accommodate or enhance Bronte Harbour access.

5.2 Development of Alternative Design Concepts

Alternative design concepts were developed to accommodate the preferred planning alternative for the study corridor. A minimum three-lane cross-section was carried forward for the full corridor, connecting with the three-lane cross-sections at the east and west limits of the study area. The following potential transportation improvements were considered and are evaluated below:

1. Signalized intersections;
2. Roundabouts;
3. Cycling facilities, and
4. Pedestrian crossings.

Given the distinct character of the corridor, alternatives were considered separately for the following sections of the roadway:

1. Bronte Village Section: Mississaga Street to East Street
2. Suburban Section: East Street to Dorval Drive.

5.3 Assessment of Alternatives

The assessment of alternatives by section is summarized below.

5.3.1 Bronte Village Section: Mississaga Street to East Street

As per the preferred planning alternative, the proposed cross-section for this portion of Lakeshore Road West will be one eastbound lane, one westbound lane and a center two-way-left-turn-lane. The center lane will accommodate various driveways and accesses and will improve capacity by removing left turning vehicles from the through traffic lane. It will also improve the operation and safety of the roadway.

Intersections
There are six intersections within this section, of which five are currently signalized and one is currently stop controlled on the side street. Signal warrant calculations were completed for higher volume intersections. A formal evaluation of the potential for roundabouts was completed. Each intersection was also assessed for improvements, including left and right turn requirements, sightlines and safety.

Signalization Assessment
In this section only one unsignalized intersection, Lakeshore Road West @ West River / Triller Place, was analyzed to determine if a traffic control signal was warranted under future conditions (critical year 2021).

The signal warrant analysis is based on the methodologies contained in Ontario Traffic Manual (OTM) Book 12. OTM Book 12 Traffic Signal Warrant, Justification 7 – Projected Volumes, is used in situations where you are forecasting volumes into the year 2021. Justification 7 uses the projected AM and PM peak hour volumes that were generated from the 2021 Vissim model.

For 2021, using the Justification 7 warrant, a traffic signal was not warranted for this intersection.

The detailed traffic signal warrant analyses completed for the intersections listed above can be found in Appendix F.

Roundabout Assessment
A high-level screening assessment for roundabouts was completed for the following intersections:

- Mississaga Street
- Bronte Road
- East Street

Table 5.1 lists the criteria considered in the assessment of roundabouts. Table 5.2 presents the evaluation summary. An assessment of the level of service of the preferred alternative is presented in the Traffic Study Report (ref. Appendix F).

Table 5.1. Roundabout Alternative Consideration Criteria

Criteria	Consideration
Property Impact	• Is there enough property available to accommodate the type of roundabout being considered? • Will property need to be acquired?
Safety	• Is speeding currently an issue? • History of high speed / angled collisions • Nearby vulnerable road users (seniors / children)
Operational Issues	• High U-turn / left turn volumes • Long queues / delays • Can active transportation be accommodated? • Can truck traffic and emergency services be accommodated?
Other Considerations	• Will mature trees and other vegetation be impacted? • Intersection gradient • Proximity to nearby rail crossing or signalized intersection • Impact to nearby entrances / accesses

Table 5.2. Roundabout Evaluation Summary

Intersection	Consideration			Carry Forward
	Left Turn/ U-Turn Volumes	**Streets at an Angle**	**Other Considerations**	
Mississaga Street	Low	✗	• Limited property available • Very tight ROW • Would require removal of mature trees	No
Bronte Road	Moderate	✓	• Very tight ROW • Hydro vault in north east quadrant of intersection • Gateway feature	No
East Street	Low	✗	• Very tight ROW • Building on edge of property line in southwest quadrant of intersection • Gateway feature	No

Based on the assessment above, none of the intersections within this section of Lakeshore Road are considered appropriate for roundabouts.

Additional Intersection Improvements

Based on the traffic analysis (Appendix F) the following intersection improvements are proposed:

- Mississaga Street
  - Left and right turn lane storage and taper lengths were adjusted to meet the future requirements
- Triller Place / West River Street
  - Left and right turn lane storage and taper lengths were adjusted to meet the future requirements
- Bronte Road
  - Removal of the right turn channelized islands
  - Adjustment of the north / south alignment
  - Set stop bars further back to improve sightlines
  - Left and right turn lane storage and taper lengths were adjusted to meet the future requirements
- Jones Street
  - Left turn lane storage and taper lengths were adjusted to meet the future requirements
- Nelson Street
  - Left turn lane storage and taper lengths were adjusted to meet the future requirements
- East Street
  - Left lane storage and taper lengths were adjusted to meet the future requirements

Cycling Assessment

Based on the cycling assessment completed for this corridor, (ref. Appendix O) the proposed facility for this section of Lakeshore Road is a dedicated on-road 1.5m bike lane with a 0.5m painted buffer in both directions.

Pedestrian Facilities

The proposed pedestrian facility is 2.0m sidewalks on both sides of Lakeshore Road West to support the high pedestrian traffic.

Pedestrian Crossing Assessment

A pedestrian crossing assessment was completed in conjunction with the Town of Oakville's *Pedestrian Safety Program, September 2017.* Within the Bronte Village section of the corridor, four (4) pedestrian crossings were recommended in order to provide a safer pedestrian environment. The Bronte Village commercial core houses many stores, shops and a mall, attracting high pedestrian traffic. The proposed crossing locations are:

- Bronte Creek Trail
- West of Jones Street
- West of Nelson Street
- West of East Street

On-Street Parking
There is existing on-street parking west of Nelson Street and through consultation with the Town of Oakville a need for additional on-street parking was identified. Additional on-street parking will be provided where possible.

5.3.2 Suburban Section: East Street to Dorval Drive

As per the preferred planning alternative, the proposed cross-section for this section of Lakeshore Road West will consist of one eastbound lane, one westbound lane and a center two-way-left-turn-lane. The center lane will accommodate various driveways and accesses and improve capacity by removing left turning vehicles from the through traffic lane. It will also improve the operation and safety of the roadway.

There are a total of 25 local and collector roads that intersect with Lakeshore Road West within this section. Many of these intersections are small dead-end streets and 'T' intersections with very low volumes. For this section of the corridor, only seven (7) major intersections were assessed in detail. The other intersections were assessed for any operational concerns.

Each intersection was assessed for improvements, including left and right turn requirement, sightlines and safety.

Signalization Assessment
In this section of Lakeshore Road West, three major unsignalized intersections were analyzed to determine if a traffic control signal was warranted under future conditions (critical year 2021):

- Lakeshore Road West @ Westminster Drive
- Lakeshore Road West @ Suffolk Avenue
- Lakeshore Road West @ Morden Road

The signal warrant analysis is based on the methodologies contained in Ontario Traffic Manual (OTM) Book 12. OTM Book 12 Traffic Signal Warrant, Justification 7 – Projected Volumes, is used in situations where you are forecasting volumes into the year 2021. Justification 7 uses the projected AM and PM peak hour volumes that were generated from the 2021 Vissim model.

For 2021, using the Justification 7 warrant, traffic signals were not warranted at any of the three intersections.

The detailed traffic signal warrant analyses completed for the intersections listed above can be found in Appendix F.

Roundabout Assessment
A high-level screening assessment for roundabouts was completed for the following intersections:

- Third Line
- Fourth Line
- Dorval Drive

Table 5.1, above, lists the criteria considered in the assessment of roundabouts. Table 5.4 presents the evaluation summary. An assessment of the level of service of the preferred alternative is presented in the Traffic Study Report (Appendix F).

Table 5.3. Roundabout Evaluation Summary

Intersection	Consideration			Carry Forward
	Left Turn/ U-Turn Volumes	Streets at an Angle	Other Considerations	
Third Line	Moderate	×	• May require removal of a few trees	Yes
Fourth Line	Moderate	×	• In close proximity to Rebecca Street intersection	No
Dorval Drive	Moderate	×	• Tight ROW • In close proximity to St. Jude's Cemetery • Grade along south side of intersection	No

Based on the assessment above, only the Third Line intersection is considered appropriate for roundabouts.

Further assessment was completed at the Third Line location to determine the appropriateness of a roundabout in close proximity to the Sir John Colbourne Seniors Centre (fronting Lakeshore Road) and Oakville Christian School (fronting Third Line). The Project Team, taking into consideration that this location has a high number of seniors and young school children, removed the roundabout from further consideration at this location.

Additional Intersection Improvements

Based on the traffic analysis completed for this study (ref. Appendix F) the following additional intersection improvements are proposed:

- Westminster Drive
  - Left turn lane storage and taper lengths were adjusted to meet the future requirements
  - This location has an existing Intersection Pedestrian Signal (IPS)
- Wolfdale Avenue
  - Left turn lane storage and taper lengths were adjusted to meet the future requirements
- Fourth Line
  - Left turn lane storage and taper lengths were adjusted to meet the future requirements
- Suffolk Ave / Appleby College Entrance
  - Left turn lane storage and taper lengths were adjusted to meet the future requirements
  - Pedestrian crossing location

- Morden Road
    - Left turn lane storage and taper lengths were adjusted to meet the future requirements
    - This location has an existing Intersection Pedestrian Signal (IPS)
- Dorval Drive
    - Left turn lane storage and taper lengths were adjusted to meet the future requirements

Cycling Assessment
Based on the cycling assessment (ref Appendix O) the proposed facility for this section of Lakeshore Road is a dedicated on-road 1.5m bike lane with a 0.5m painted buffer in both directions, and a 3.0m multi-use trail on the south side.

Pedestrian Facilities
The proposed pedestrian facilities will be a 1.5m sidewalk on the north side of Lakeshore Road West and a 3.0m multi-use trail on the south side.

Pedestrian Crossings
A pedestrian crossing assessment was completed, in conjunction with the Town of Oakville's *Pedestrian Safety Program, September 2017.* Within this section of the corridor, six (6) pedestrian crossings were identified to provide a safer pedestrian environment. The proposed crossing locations are:

- Bronte Athletic Park Walk
- Westminster Dr.
- Sandwell Dr.
- Suffolk Ave.
- Morden Rd.
- Holyrood Ave

5.4 Technically Preferred Design Concept

5.4.1 Bronte Village Section: Mississaga Street to East Street

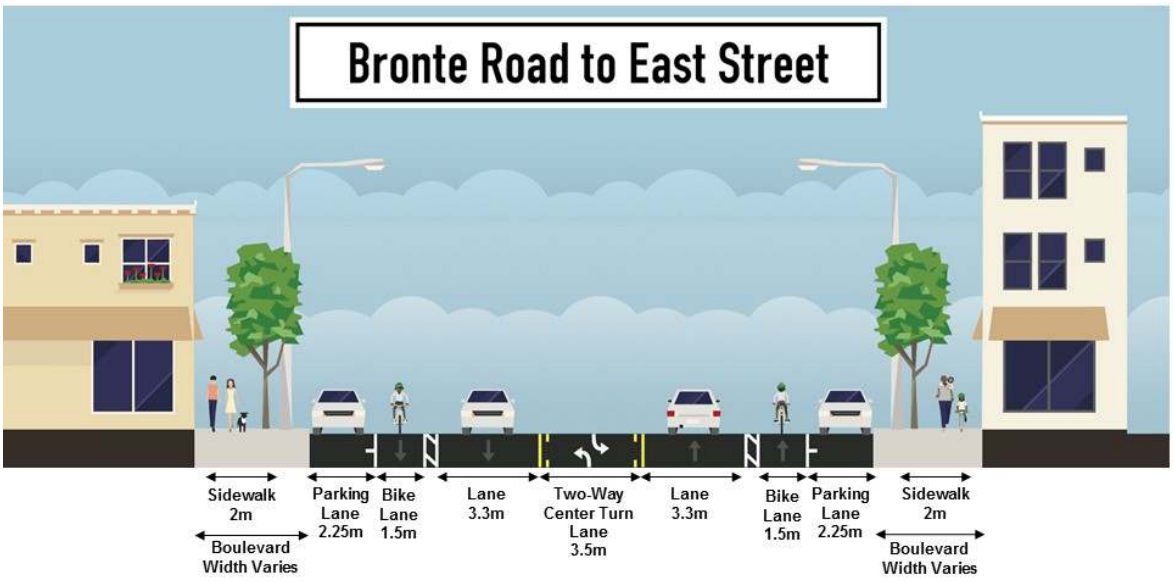
Based on the results of the assessments mentioned above the following corridor elements for this section of Lakeshore Road are:

- Continuous centre two-way-left-turn-lane
- Dedicated 1.5m bike lane with a 0.5m painted buffer, in both directions
- 2.0m sidewalk on both sides
- On street parking, where possible
- Pedestrian Crossings at 4 locations

The elements for this section are illustrated in the cross-sections shown in Figure 5.1 and Figure 5.2.

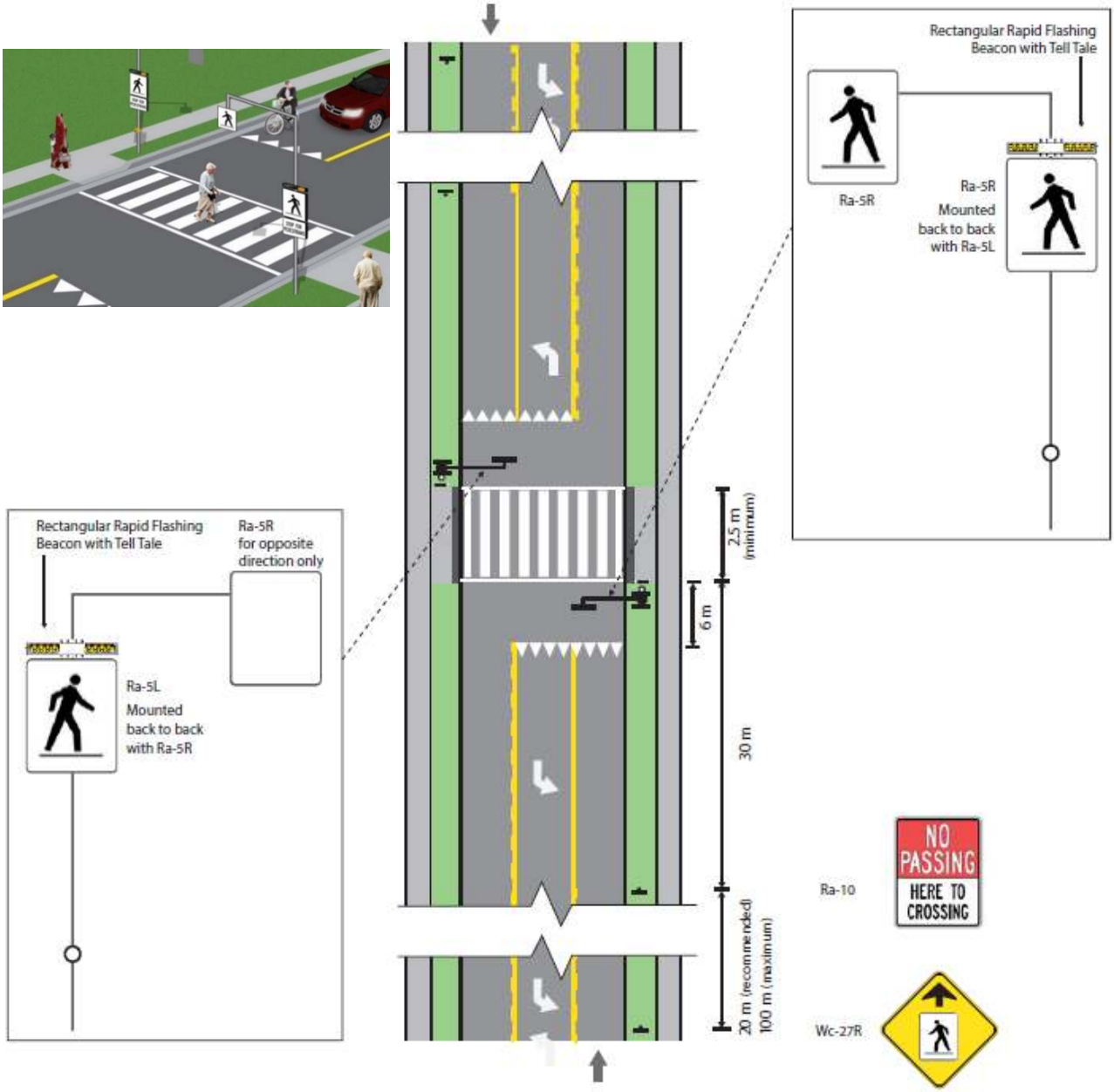
Figure 5.1.

Figure 5.2. With On-Street Parking



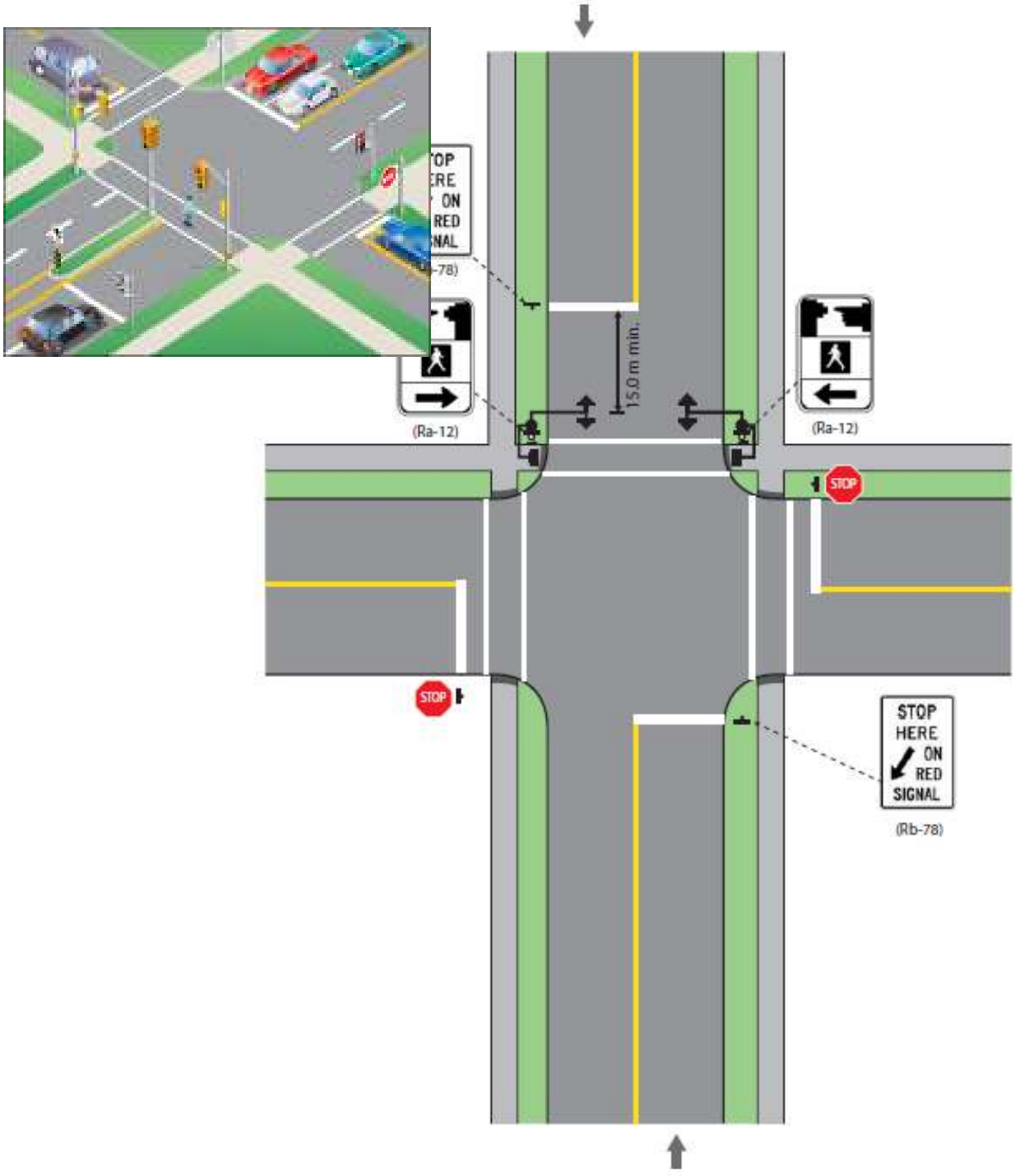
The pedestrian crossing type being recommended at west of Jones Street, west of Nelson Street and west of East Street is a Pedestrian Crossover Level 2 Type B Midblock and is shown in Figure 5.3

Figure 5.3. Pedestrian Crossover Level 2 Type B Midblock



The type of pedestrian crossing being recommended at Bronte Creek Trail (west of Bronte Road) is an Intersection Pedestrian Signal and is shown in Figure 5.4.

Figure 5.4. Intersection Pedestrian Signal



5.4.2 Suburban Section: East Street to Dorval Drive

Based on the results of the assessments mentioned above the following corridor elements for this section of Lakeshore Road are:

- Continuous centre two-way-left-turn-lane
- Dedicated 1.5m bike lane with a 0.5m painted buffer, in both directions

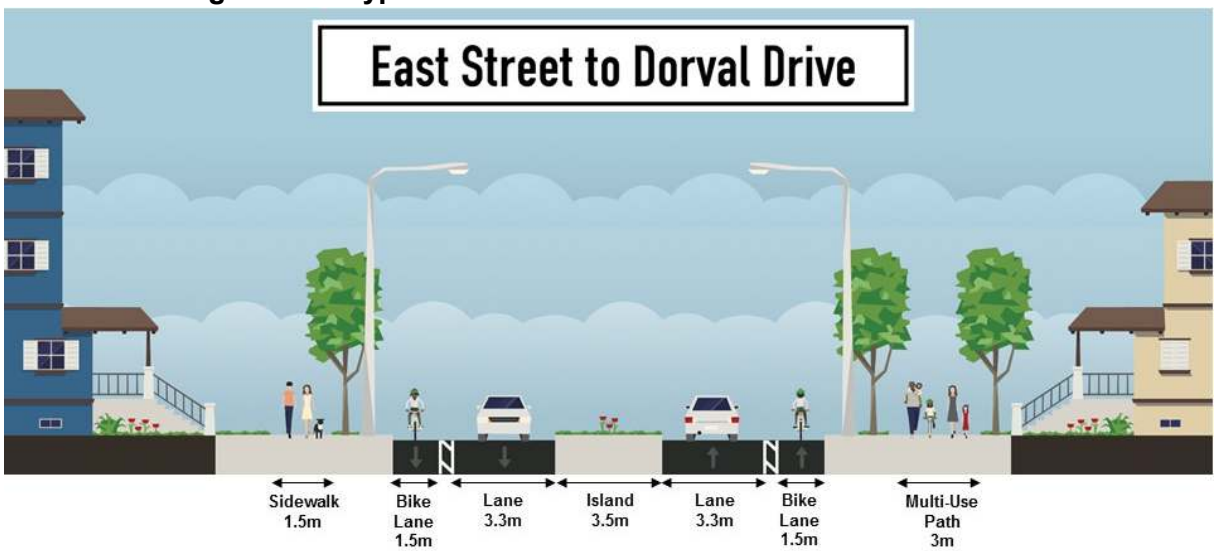
- 3.0m multi-use trail on the south side
- 1.5m sidewalk on north side
- Pedestrian Crossings at 6 locations

The elements for this section of Lakeshore between East Street and Dorval Drive are illustrated in the cross-section shown below in Figure 5.5.

Figure 5.5. Typical Cross Section

Where the opportunity exists, center island planters will be used as illustrated in Figure 5.6.

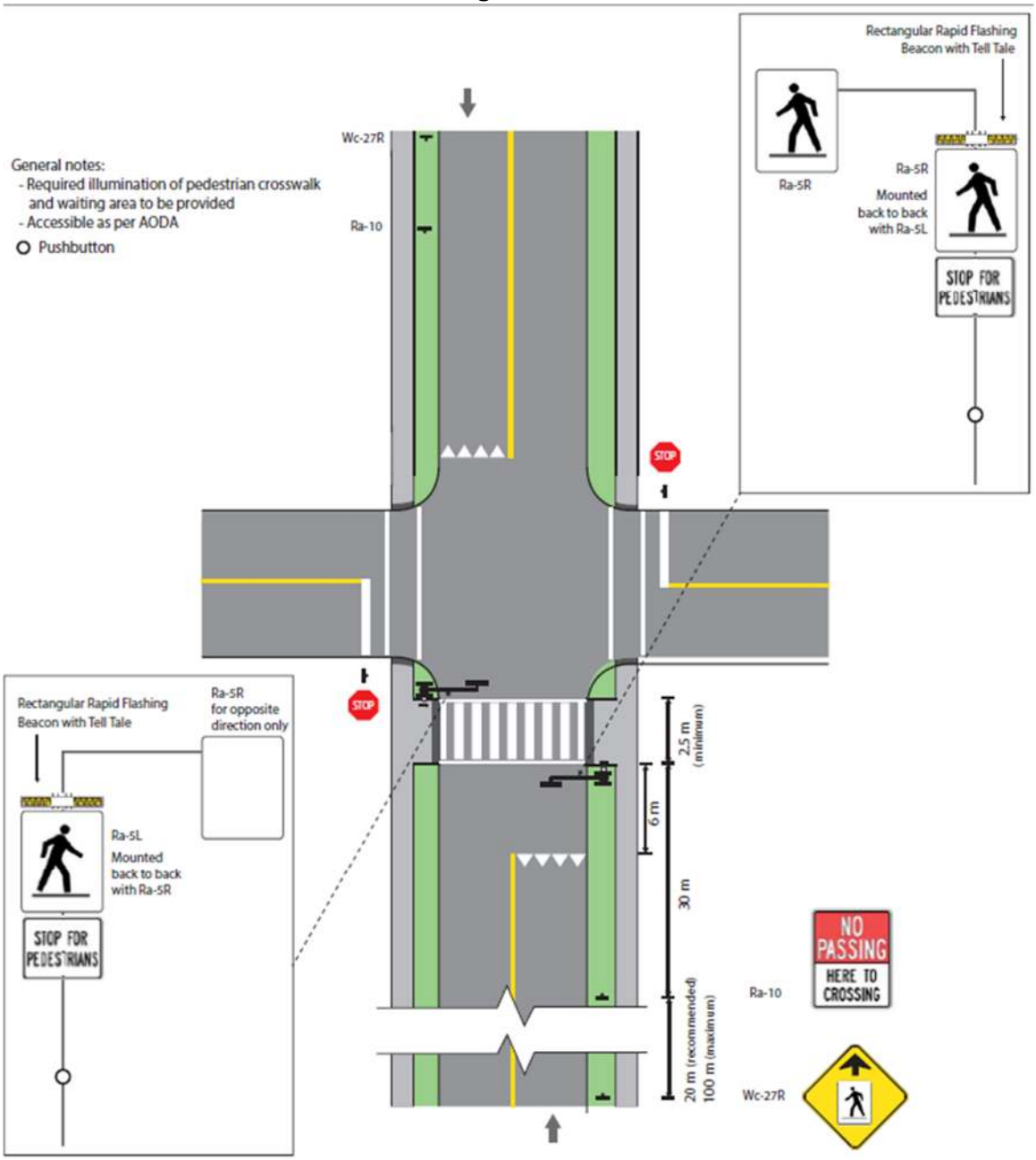
Figure 5.6. Typical Cross Section with Center Island Planters



The pedestrian crossing type being recommended west of Bronte Athletic Park Walk is a Pedestrian Crossover Level 2 Type B Midblock and is shown in Figure 5.2.

The type of pedestrian crossing being recommended at Holyrood Avenue is a Pedestrian Crossover Level 2 Type B Intersection and is shown in Figure 5.7

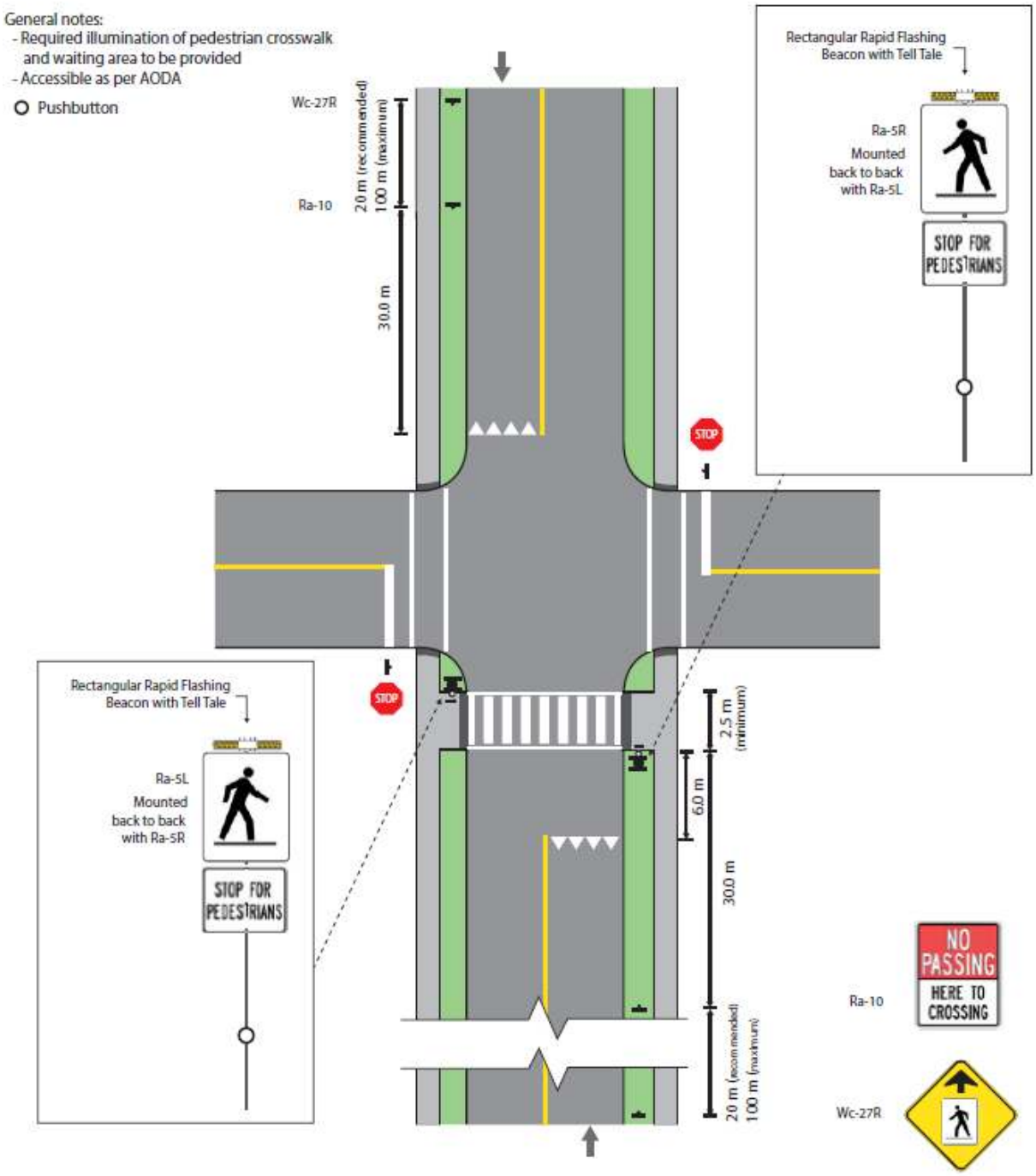
Figure 5.7.


General notes:
- Required illumination of pedestrian crosswalk and waiting area to be provided
- Accessible as per AODA
Pushbutton
Wc-27R
Ra-10
Rectangular Rapid Flashing Beacon with Tell Tale
Ra-5R
Ra-5R
Mounted back to back with Ra-5L
STOP FOR PEDESTRIANS
STOP
STOP
Rectangular Rapid Flashing Beacon with Tell Tale
Ra-5R for opposite direction only
Ra-5L
Mounted back to back with Ra-5R
STOP FOR PEDESTRIANS
2.5 m (minimum)
6 m
30 m
20 m (recommended) 100 m (maximum)
Ra-10
NO PASSING
HERE TO CROSSING
Wc-27R

The type of pedestrian crossing being recommended at Westminster Drive, Suffolk Avenue and Morden Road is an Intersection Pedestrian Signal and is shown in Figure 5.3.

The type of pedestrian crossing being recommended at Sandwell Drive is an Intersection Pedestrian Signal and is shown in figure 5.8.

Figure 5.8.



5.5 Stormwater Management

5.5.1 Drainage System

An integrated hydrologic/hydraulic model of the existing conditions of the Lakeshore Road R.O.W. has been developed in PCSWMM Version 7.0. The original PCSWMM model was developed as part of the Town of Oakville Stormwater Master Plan by Wood and was designed to assess the storm sewer system within southern Oakville. The PCSWMM modelling was updated for the hydrologic/hydraulic assessment within the Class EA to be more discretized and to assess each storm sewer section and roadside ditch to determine the Lakeshore Road drainage system performance. To understand the performance of the minor system (storm sewer system) the level of performance has been categorized as non-surcharged, surcharged and surcharged to surface. In summary, most of the existing storm sewer system surcharges, with only two (2) drainage systems not surcharging. For the major (overland flow) system within an urban road section, the level of performance has been noted as flow or ponding below top of curb, above the curb but less than 0.15 m above road centreline and then more than 0.15 m above centreline of road. The Town of Oakville requires overland flow on roads to be less than 0.15 m above road centreline. For rural road sections with road side ditches the level of performance has been assessed as non-surcharged (within the ditch) or surcharged (flooding outside of the ditch). Site reconnaissance has been conducted to determine potential basement connections to the storm sewer system. It is not known if basements have direct or sump system connections to the minor system. The PCSWMM model has been used to determine if the minor system hydraulic gradeline may be above basement levels.

To assess the proposed road (without stormwater management (SWM) and drainage improvements) the impervious levels were increased and the existing minor system level of performance determined. The major system was only assessed with drainage improvements and SWM in place. The proposed urbanized road drainage system has been assessed with the required new storm sewers and storm sewers to meet Town of Oakville design criteria. Where offsite drainage system improvements are required, these have been noted. Storm sewer upgrades have also been assessed and recommended in an attempt to address existing basement flood risk issues, with recommendations for basement disconnection should the level of flood risk remain with improvements in place.

Recommended stormwater quality treatment measures along the Lakeshore Road corridor, to address the increase in road pavement, consist of oil/grit chambers, infiltration trenches, tree Silva Cells, road island bioretention systems and offsite water quality retrofits. Stormwater quantity controls are not being recommended to control peak flows, although local flow diversion using new storm sewers and outlets, as in the case Lakeshore Road at Coronation Park and at Dorval Drive are being recommended. Infiltration trenches for erosion control are being recommended for the Lakeshore Road sections draining to Fourteen Mile Creek and McCraney Creek, and in the case of Fourteen Mile Creek, the trenches would provide thermal mitigation too, to address the MNRF Redside Dace Habitat requirement.

5.5.2 Crossings

There are four (4) crossings being considered. The first is Bronte Creek Bridge (also known as 12 Mile Creek Bridge) which was built in 1970 and rehabilitated around 1999. The total deck length is 64.9m and structure width is 19.5m. The roadway width is 14.4m. The current posted speed is 50 km/h and the roadway consists of four (4) lanes. The bridge has been assessed to be in good condition and will not require any structural modifications. Conservation Halton provided the current Bronte Creek HEC-2 hydraulic model for use in the Oakville Stormwater Master Plan. The Lakeshore Road crossing has been modelled as a bridge. Based on the HEC-2 hydraulic model the Bronte Creek crossing is capable of conveying the Regional Storm (Hurricane Hazel).

The second crossing is a 1.22 m x 1.84 m box culvert that conveys runoff from north of Lakeshore Road to Lake Ontario. Hydraulic modelling of the crossing has been included within the PCSWMM integrated hydrologic/hydraulic model. The crossing is capable of conveying the 100 year storm without overtopping Lakeshore Road, with approximately 0.50 m freeboard, therefore no upgrades are required.

The Fourteen Mile Creek Bridge was built in 1916 and has been extended both north and south. It is a Spandrel Arch Structure. The total deck length is 17.1 m and the structure width is 15.74 m. The roadway width is 11.54 m. The bridge has been assessed in good condition and will not require any structural modifications. The bridge has been modelled in HEC-RAS Version 4.1 as part of the ongoing Fourteen Mile Creek and McCraney Creek Flood Mitigation Opportunities Class EA. It conveys the 100 year storm event based on a deck elevation of 81.66 m, but the Regional Storm overtops it by 0.75 m +/- with a flow velocity of 1.09 m/s +/- (ref. Figure 14). Further details pertaining to the WSELs for all storm events (2-100 year & Regional) are provided in Appendix 'C' (of the Stormwater Management Report – Appendix M). At the bridge crossing, based on the simulated 0.75 m overtopping road depth and 1.09 m/s +/- flow velocity, and using the Ministry of Natural Resources and Forestry's (MNRF's) vehicle ingress and egress requirements (Technical Guide – River and Stream Systems: Flooding Hazard Limit, 2002), private vehicles would not be able to drive along Lakeshore Road at the Fourteen Mile Creek crossing during the Regional Storm Event. Emergency vehicles (fire trucks) would be able to cross the bridge as the flood depth is below the 0.90 m MNRF guideline for flow depth for emergency vehicles that said, Town of Oakville staff have indicated emergency vehicles would not use the bridge under Regional Storm flooding conditions. The bridge is not being recommended to be replaced.

McCraney Creek crossing is an arch culvert built in 1940 and subsequently extended with a box culvert section. The total deck length is 14 m and the structure width is 5.4 m. The roadway width is 8.4 m. The structure has a 100 year hydraulic capacity but is overtopped by the Regional Storm by 1.36 m with a flow velocity of 1.46 m/s (ref. Figure 15). In July 2017, emergency work was undertaken to temporarily stabilize the road embankment slope as a result of the north-west wingwall collapse. Erosion issues along the west creek bank will continue and will need to be addressed through creek works. Due to the structural condition and hydraulic capacity of this crossing it will require replacement as part of this project. The proposed bridge crossing would be a 14.6 m span by 4m rise by 24.3 m length, with some of the bridge section skewed to accommodate a 33 m +/- long creek realignment to address the existing creek bank erosion

condition on the northeast side of the structure. The proposed replacement structure would convey the Regional Storm without overtopping the road.

6.0 MAJOR FEATURES OF THE RECOMMENDED PLAN

6.1 Description of the Preferred Design

The following sections detail the proposed design for Lakeshore Road, based on the preferred design alternatives identified in Section 5.

6.1.1 Design Criteria

The proposed design criteria for the reconstruction of Lakeshore Road West, based on a design speed of 60km/h, is shown in Table 6.1. The design criteria is based on the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (2017), Town of Oakville, and the Region of Halton design standards.

Table 6.1. Design Criteria for Lakeshore Road West from Mississaga Street to Dorval Drive

Classification	Design Standards	Proposed
ROAD CLASSIFICATION	UAU	UAU
DESIGN SPEED (km/h)	60	60
POSTED SPEED (km/h)	50	50
MINIMUM STOPPING SIGHT DISTANCE (m)	85/140*	85/140
NUMBER OF LANES	2	3
MINIMUM CENTRE LINE RADUIS (m)	130 - 250	340
THROUGH LANE WIDTH (m)	2.7 – 4.0	3.30
LEFT TURN LANE WIDTH (m)	2.7 – 4.0 (min 3.25)	3.25
TWO-WAY-LEFT TURN LANE WIDTH (m)	2.7 – 4.0 (min 3.50)	3.5
RIGHT TURN LANE WIDTH (m)	2.7 – 4.0 (min 3.25)	3.25
ON STREET, PARALLEL PARKING STALL LENGTH (m)	7.0*	7.0
ON STREET, PARALLEL PARKING STALL WIDTH (m)	2.7*	2.7
SIDEWALK WIDTH (m)	1.5 – 2.0	1.5/2.0
BUFFERED BIKE LANE (M)	2.1 – 3.0	2
MULTI-USE PATH (m)	N/A	3
$GRADE_{MAX}$	6.0%*	2.45%
$GRADE_{MIN}$	0.50%*	0.50%
SAG VERTICAL CURVE K_{MIN}	18	25
CREST VERTICAL CURVE K_{MIN}	11	25
CURB RADIUS ARTERIAL TO ARTERIAL (m)	10.5*	18
$CROSSWALK\ WIDTH_{MIN}$	2.5	2.5
$DAYLIGHTING\ TRIANGLE_{MIN}$	15 x15**	15X15**
OFFICAL PLAN RIGHT-OF-WAY WIDTH (m)	26*	26

* Town of Oakville Standard
** Daylighting various for (3.5x3.5), (7.5x7.5) and (15x15) depending on the roadway it intersects with.

6.1.2 Horizontal Alignment

The proposed horizontal alignment will shift the centerline where required within the existing right-of-way to reduce the impacts on property, utilities and trees, as evaluated in Section 5. No significant changes to horizontal alignment are proposed.

6.1.3 Vertical Alignment

The existing vertical alignment of Lakeshore Road is generally maintained. Minor adjustments are to be reviewed during detailed design as necessary to provide a minimum grade of 0.5%, to allow for positive drainage of the curb and gutter, to accommodate the pavement rehabilitation recommendations and to match driveway gradients. Minimum 'K' factors are to be maintained for the 60km/h design speed as per the design criteria.

6.1.4 Typical Cross Section

Typical 3 lane cross sections were developed for Lakeshore Road West from Mississaga Street to Dorval Drive. Cross-sections were developed based on the *TAC Geometric Design Guide for Canadian Roads, 2017* and the Town of Oakville and Region of Halton design standards. The typical cross sections proposed for Lakeshore Road West are illustrated in Figures 6.1 - 6.3.

Key elements of the proposed cross-section include the following:

0.5 m Concrete curb and gutter;
3.3 m through lanes (1 lane each direction);
3.25 m left and right turn lanes as required at all intersections;
3.5 m center two-way-left-turn-lane;
2.7 m on-street parking between Bronte Road and Nelson Street;
3.5 m planted median at selected locations;
1.5 m (including 0.3 m gutter) on-street bike lane with 0.5 m painted buffer;
3.0 m asphalt multi-use path – south side of Lakeshore Road West, East Street to Dorval Drive;
2.0 m wide concrete sidewalk – north and south sides of Lakeshore Road West, Mississaga Street to East Street;
1.5 m wide concrete sidewalk – north side of Lakeshore Road West, East Street to Dorval Drive.

Figure 6.1. Mississaga Street to East Street Typical Cross-section

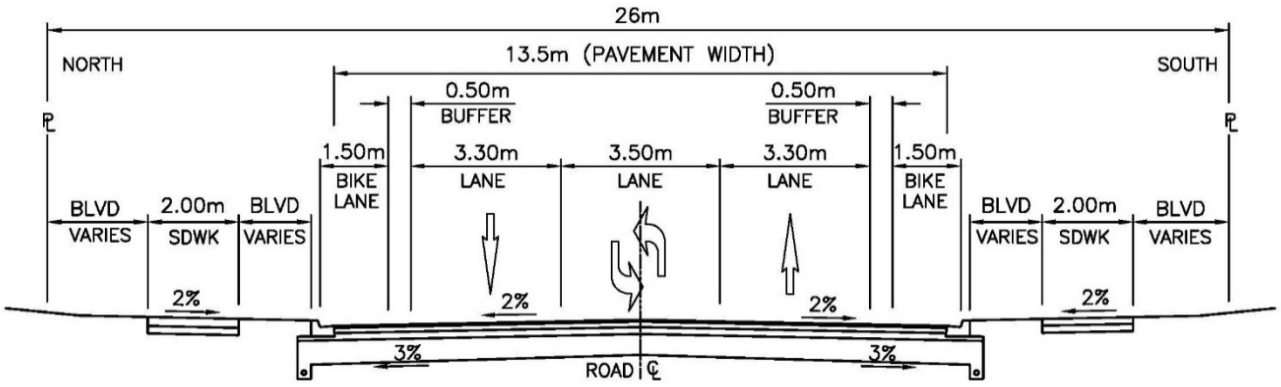


Figure 6.2. Bronte Road to East Street Typical Cross-section (with parking either side or both)

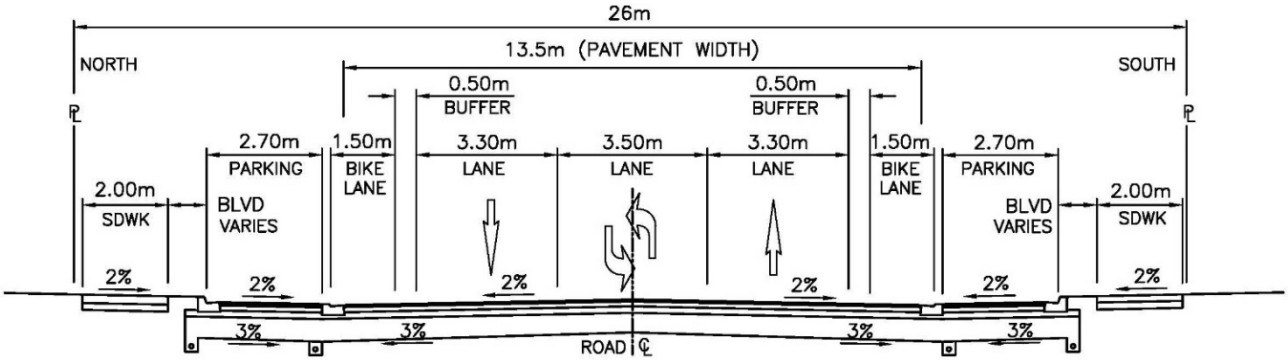
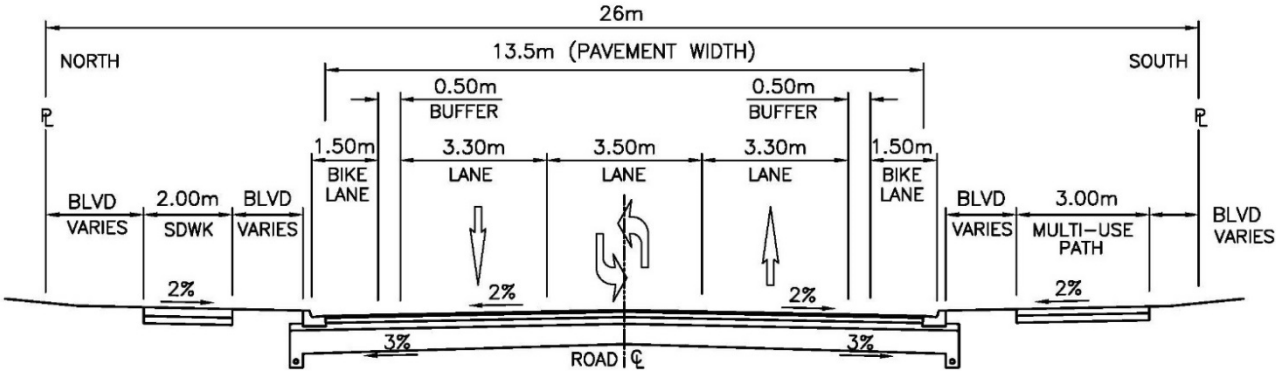


Figure 6.3. East Street to Dorval Drive Typical Cross-section



6.1.5 Intersections and Side Streets

Intersection designs have been developed to provide an acceptable level of service at each intersection. Turning lane storage lengths were calculated based on 95th percentile queue lengths (Appendix G). Signal warrants completed for major non-signalized intersections concluded none were warranted.

6.1.6 Transit Stops

The existing transit stop locations along the Lakeshore Road West corridor, outlined in section 3.3.4, will be maintained. The Town of Oakville Standards will be applied for reconstructed bus pads and/or bus bays.

6.1.7 Private Entrances

In general, existing private entrances will be reconstructed based on the following criteria:

- Match original driveway width at the property line;
- Match original driveway material at the property line;
- Driveway grades in accordance with municipal standard OPSD 351.010 (maximum 10%)

The Bronte Village Revitalization Study has proposed the consolidation of existing entrances and modification of roadway access from Lakeshore Road West to side streets as a priority. However, for purposes of this study, all existing entrances are being maintained, pending further development of the revitalization plans.

6.1.8 Active Transportation Facilities

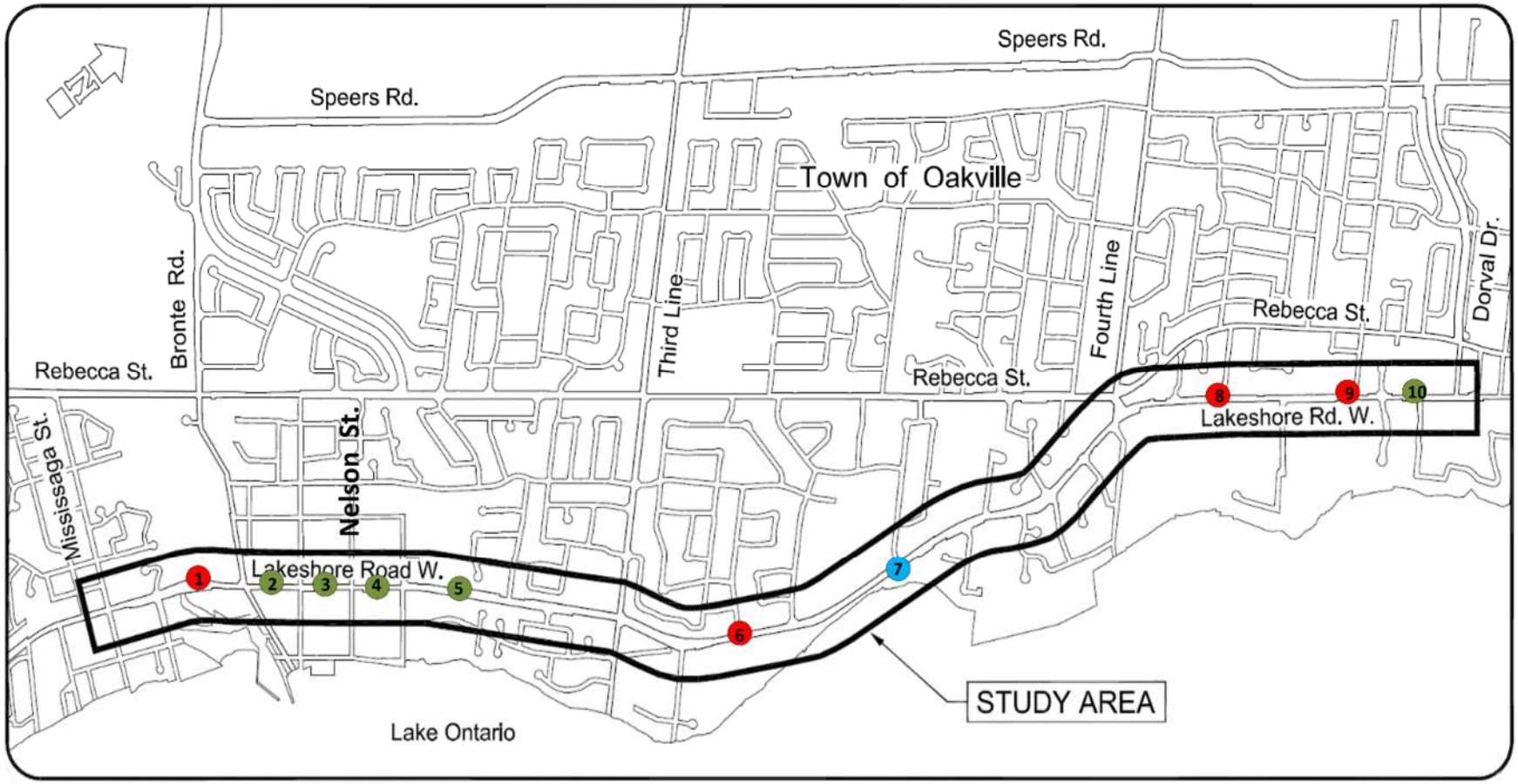
Sidewalks 2.0m in width will be constructed on both sides of Lakeshore Road West between Mississaga Street and East Street. On the north side of Lakeshore Road West from East Street to Dorval Drive, a 1.5m sidewalk will be constructed. A 3.0m multi-use trail will be constructed on the south side of Lakeshore Road West between East Street and Dorval Drive. 1.5m on-road bike lanes with a 0.5m painted buffer will be constructed in both directions along Lakeshore Road West from Mississaga Street to Dorval Drive.

Ten pedestrian crossings are being recommended for construction or upgrade to provide better connection between the north and south sides of Lakeshore Road West. A list of the proposed crossing locations and types is included as Table 6.2. Figure 6.4 shows the approximate locations of the crossings within the corridor.

Table 6.2. Pedestrian Crossing Locations and Types

Location	Area	Crossing Type
Bronte Creek Trail	Midblock	Intersection Pedestrian Signal
West of Jones Street	Midblock	Level 2 Type B Crossing
West of Nelson Street	Midblock	Level 2 Type B Crossing
West of East Street	Midblock	Level 2 Type B Crossing
Bronte Athletic Park Walk	Midblock	Level 2 Type B Crossing
Westminster Drive	Intersection	Intersection Pedestrian Signal
Sandwell Drive	Intersection	Level 2 Type C Crossing
Suffolk Avenue	Intersection	Intersection Pedestrian Signal
Morden Road	Intersection	Intersection Pedestrian Signal
Holyrood Avenue	Intersection	Level 2 Type B Crossing

Figure 6.4. Approximate Pedestrian Crossing Locations



Proposed Pedestrian Crossing Types:

- Intersection Pedestrian Signal (IPS)
- Level 2 Type B Crossing
- Level 2 Type C Crossing

Proposed Pedestrian Crossing Locations:

1. Bronte Creek Trail
2. West of Jones St.
3. West of Nelson St.
4. West of East St.
5. Bronte Athletic Park Walk
6. Westminster Dr.
7. Sandwell Dr.
8. Suffolk Ave.
9. Morden Rd.
10. Holyrood Ave.

6.1.9 Accessibility for Ontarians with Disabilities Act Measures

The Accessibility for Ontarians with Disabilities Act (AODA) requires that all barriers in the built environment (public spaces and buildings) be removed. The Integrated Accessibility Standards Regulation identifies the specific requirements that must be implemented for public spaces and the associated timelines. AODA requirements specifically provide criteria for pedestrian facilities including ramps, tactile plate at intersections (Figures 6.5 and 6.6). The AODA requirements will be confirmed during the detail design phase. The Oakville Universal Design Standards for Town Facilities will also apply.

Figure 6.5. Tactile Plate (TWSI)

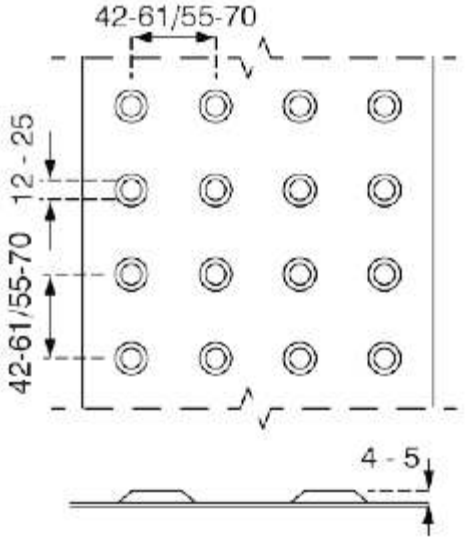
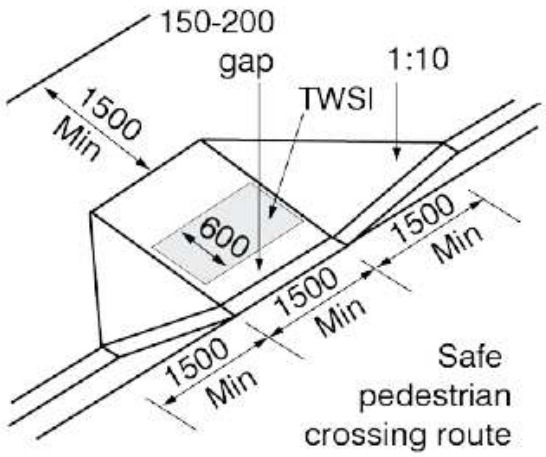


Figure 6.6. Example Midblock Crossing Ramp



6.1.10 Drainage Design

The proposed road drainage and stormwater management requirements have been assessed based on requirements outlined in the Stormwater Management Report (Appendix M). The combined upgraded existing and proposed new storm sewer networks (minor systems) and overland drainage systems (major systems) have been assessed to accommodate the proposed Lakeshore Road improvements, including the urbanization of existing rural road sections. The report recommends:

- Resize the existing sewer systems to convey future condition peak flow based on the improved road configuration;
- Upgrade downstream receiving systems to remove hydraulic constraints on the Lakeshore Road storm sewer system;
- Upsize the connection to the Nelson Road and Sarah Lane storm sewer;
- Significantly reduce existing basement flood risk by upgrading the storm sewer system;

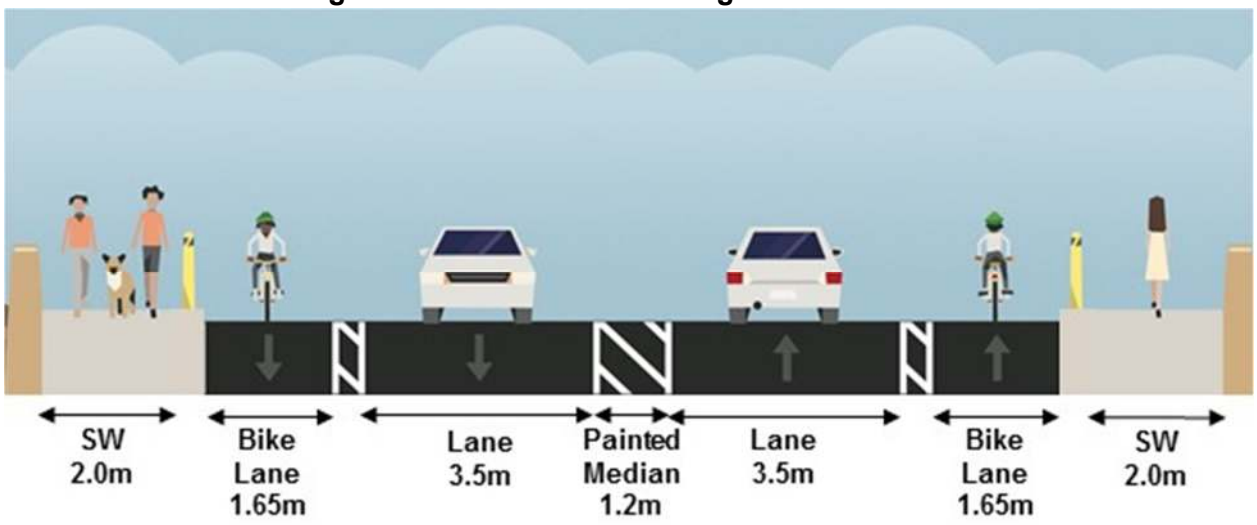
- Address the recommendations from the Coronation Park Drainage Class EA, and
- Flooding concern caused by a road sag at the intersection of Dorval Drive and Lakeshore Road will be reduced by connecting a storm sewer to St. Jude's Cemetery, owned by the Town of Oakville, and twinning the existing storm sewer system going east along Lakeshore Road to its outlet at Lake Ontario.

6.1.11 Hydraulic Crossing and Structure Design

Bronte Creek Bridge

The existing Bronte Creek Bridge requires no structural changes. It will be modified with a new pavement marking plan to accommodate the new cross-section (Figure 6.7). Pedestrian protection will also be provided by incorporating a pedestrian separation barrier wall or railing.

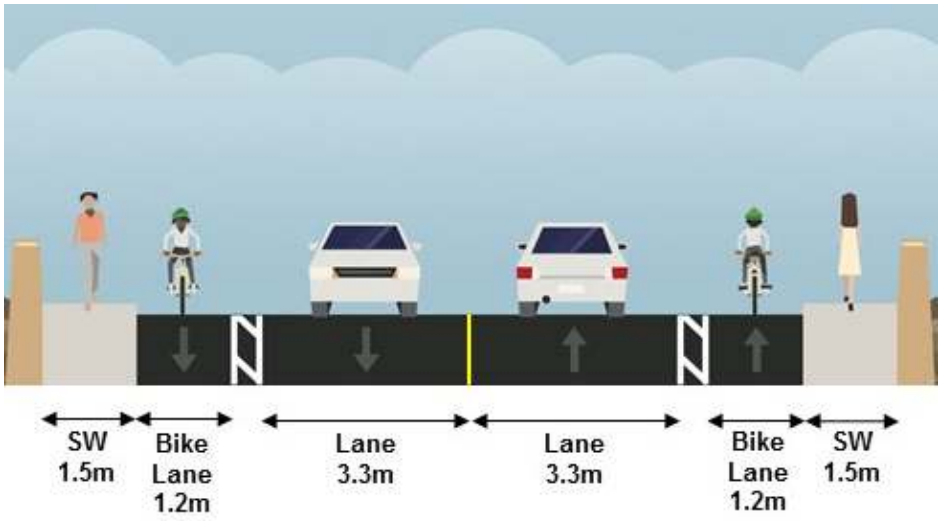
Figure 6.7. Bronte Creek Bridge Cross Section



14 Mile Creek Bridge

The existing 14 Mile Creek bridge requires no structural changes. The bridge deck will be modified with new pavement markings to accommodate the new cross-section (Figure 6.8).

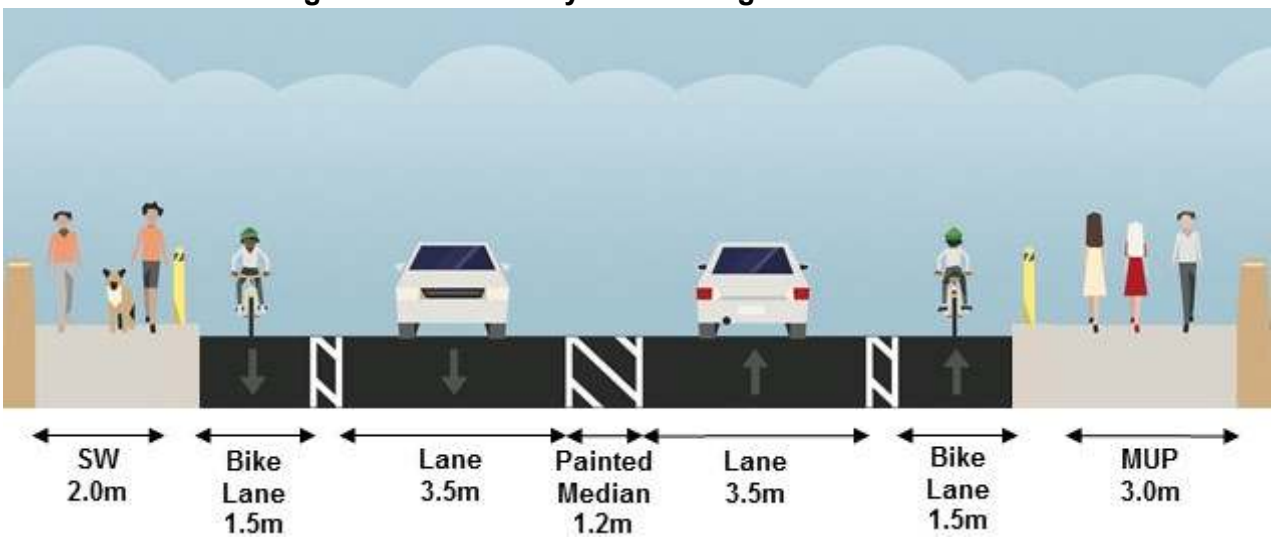
Figure 6.8. 14 Mile Creek Bridge Cross Section



6.1.12 McCraney Creek

The McCraney Creek Bridge requires replacement due to poor condition and flooding potential (ref. Appendix P). The new structure will accommodate two lanes of traffic, on-road bike lanes, a sidewalk (north side) and a multi-use trial (south side). Pedestrian protection will also be provided by incorporating a pedestrian separation barrier wall or railing.

Figure 6.9. McCraney Creek Bridge Cross Section



6.1.13 Utilities

A utility coordination meeting for Lakeshore Road West, between Mississauga Street and Dorval Drive was held and minutes were recorded (ref. Appendix E). The following utilities were identified in the right-of-way:

- Union Gas
- Oakville Hydro
- Bell
- Cogeco

Municipal Services Include:

- Water
- Wastewater
- Storm sewer

Utility relocation requirements will be clarified and finalised during detailed design. Additional investigation into public requests for buried hydro lines will be undertaken.

6.1.14 Property Requirements

Property acquisition relating to the Preliminary Design has been identified for the corridor. The proposed property takings are primarily narrow frontage strips along the roadway and daylight triangles at intersections. Table 6.3 lists the potential land area to be acquired by the Town. However, the exact area required is subject to detailed design.

Table 6.3. Property Acquisition

Order	Property #	Street	Area (M^2)
1	3063	Lakeshore Rd W.	47.83
2	PIN# 247560110	Lakeshore Rd W.	95.46
3	3039	Lakeshore Rd W.	40.85
4	3014	Lakeshore Rd W.	265.00
5	2514	Lakeshore Rd W.	840.90
6	2484	Lakeshore Rd W.	188.50
7	2484	Lakeshore Rd W.	61.60
8	2484	Lakeshore Rd W.	60.98
9	2484	Lakeshore Rd W.	119.55
10	PIN# 247600129	Lakeshore Rd W.	136.62
11	2457	Lakeshore Rd W.	33.67
12	2451	Lakeshore Rd W.	42.24
13	2447	Lakeshore Rd W.	86.57
14	2441	Lakeshore Rd W.	7.20
15	2393, -95	Lakeshore Rd W.	77.30
16	2381	Lakeshore Rd W.	44.86
17	2377	Lakeshore Rd W.	44.86
18	2365, -67, -69, -71, -73	Lakeshore Rd W.	118.65
19	2361	Lakeshore Rd W.	24.06

Table 6.3. Property Acquisition			
Order	**Property #**	**Street**	**Area (M^2)**
20	2355, -57, -59	Lakeshore Rd W.	40.86
21	2347	Lakeshore Rd W.	17.55
22	2330	Lakeshore Rd W.	117.56
23	2319	Lakeshore Rd W.	96.03
24	2307, -09	Lakeshore Rd W.	48.75
25	83	East Street	172.55
26	Donovan Baily Park	Lakeshore Rd W.	17.80
27	2127	Lakeshore Rd W.	220.20
28	101	Solingate Drive	53.85
29	2107	Lakeshore Rd W.	90.44
30	2022	Lakeshore Rd W.	87.00
31	2014	Lakeshore Rd W.	86.48
32	62	Third Line	91.70
33	1426 (Coronation Park)	Lakeshore Rd W.	650.00
34	1426 (Coronation Park)	Lakeshore Rd W.	167.50
35	1279	Lakeshore Rd W.	80.00
36	1218	Lakeshore Rd W.	63.75
37	1183	Lakeshore Rd W.	103.65
38	1141	Lakeshore Rd W.	110.66
39	1071	Lakeshore Rd W.	87.85
40	1063	Lakeshore Rd W.	87.95
41	1045	Lakeshore Rd W.	87.20
42	1037	Lakeshore Rd W.	87.20
43	1036	Lakeshore Rd W.	87.75
44	1031	Lakeshore Rd W.	88.10
45	1023	Lakeshore Rd W.	112.13
46	1015	Lakeshore Rd W.	139.88
47	1009	Lakeshore Rd W.	123.35
48	1003	Lakeshore Rd W.	41.25
49	PIN# 248360246	Lakeshore Rd W.	252.20
50	540	Lakeshore Rd W.	109.70
51	573	Lakeshore Rd W.	112.66
52	529	Lakeshore Rd W.	44.55
53	523	Lakeshore Rd W.	75.95
54	509	Lakeshore Rd W.	194.77
55	113	Suffolk Avenue	88.70

Table 6.3. Property Acquisition			
Order	**Property #**	**Street**	**Area (M^2)**
56	461	Lakeshore Rd W.	75.95
57	390 (PIN# 247760040)	Lakeshore Rd W.	22.80
58	372	Lakeshore Rd W.	141.32
59	363	Lakeshore Rd W.	96.30
60	362	Lakeshore Rd W.	153.93
61	351	Lakeshore Rd W.	177.00
62	346	Lakeshore Rd W.	124.25
63	345	Lakeshore Rd W.	64.40
64	PIN# 247600129	Lakeshore Rd W.	28.25
65	313	Lakeshore Rd W.	48.80
66	306	Lakeshore Rd W.	114.62
67	94	Holyrood Avenue	98.67
68	93	Holyrood Avenue	112.50
69	235	Lakeshore Rd W.	99.55

Total area (m^2)	7833
Total area (ha)	0.78

6.1.15 Cost Estimate

The estimated capital cost of the preferred design concept is $31,665,000, not including property costs or utility relocations. The high-level breakdown of the estimate is presented in the Table 6.4 below.

Table 6.4. Breakdown of Construction Estimate	
Description	**Cost**
Full Reconstruction @ $3100/m	$19,220,000.00
McCraney Creek Structure	$2,000,000.00
Reinstall 8 Traffic Signals	$880,000.00
Install 10 Pedestrian Signals	$400,000.00
Illumination	$1,850,000.00
TOTAL	**$31,655,000.00**

6.1.16 Streetscape Design

A preliminary streetscape plan was created by James McWilliam and is included in Appendix Q. The preliminary design consists of a typical streetscape treatment for Bronte Village, the Sir John Colborne Recreation Centre for Seniors, and the Coronation Park area.

Bronte Village
The preliminary streetscape design for the Bronte Village area strives to preserve existing trees, while providing a safe and attractive pedestrian precinct along this section of Lakeshore Road. The design elements include: raised planter beds with concrete 'sitting' wall sections (Figure 6.10), median planting beds, new street trees, and a two-metre wide concrete sidewalk. This sidewalk is flanked by colour/texture contrasting unit pavers where space is available. Street furnishings for this urban section of Lakeshore Road will include: benches, bike racks, waste receptacles, bollards, and wayfinding signage.

Streetscape 'greening' will be provided in the planting beds and other available spaces, with the installation of native trees, shrubs, perennials and ornamental grasses.

Sir John Colborne Rec Centre
East of the Bronte Village the streetscape will be more typical of the existing roadway. The proposed design will include several median planting beds and a multi-use path extending along the south side of Lakeshore Road. Amenity areas (Figure 6.11) will be provided at strategic locations along the multi-use path.

Coronation Park
Where Lakeshore Road passes beside Coronation Park, the multi-use path can pass through the parkland, providing a more attractive and safer route, with more separation from the roadway. New roadside trees will be planted as appropriate.

The existing trees located along the Lakeshore Road corridor will be preserved where possible. Where tree removals are required, these trees will be replaced following the Town of Oakville's Tree Protection During Construction Procedure. Preliminary tree removals have been clearly outlined in the preferred preliminary design drawings, subject to adjustment during detail design. Additional native trees will be installed where space is available.

Figure 6.10. Raised Planter Bed with Sitting Area (Bronte Village)

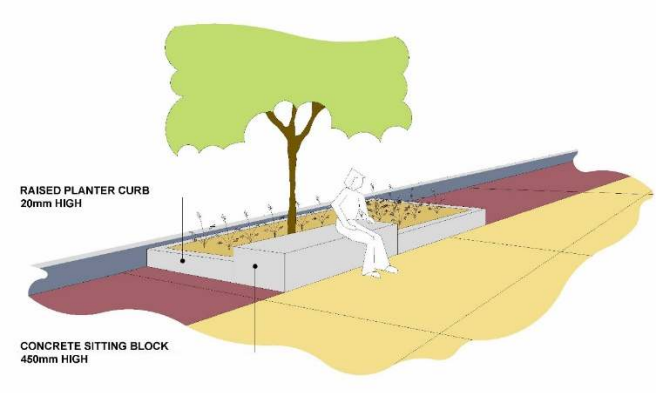
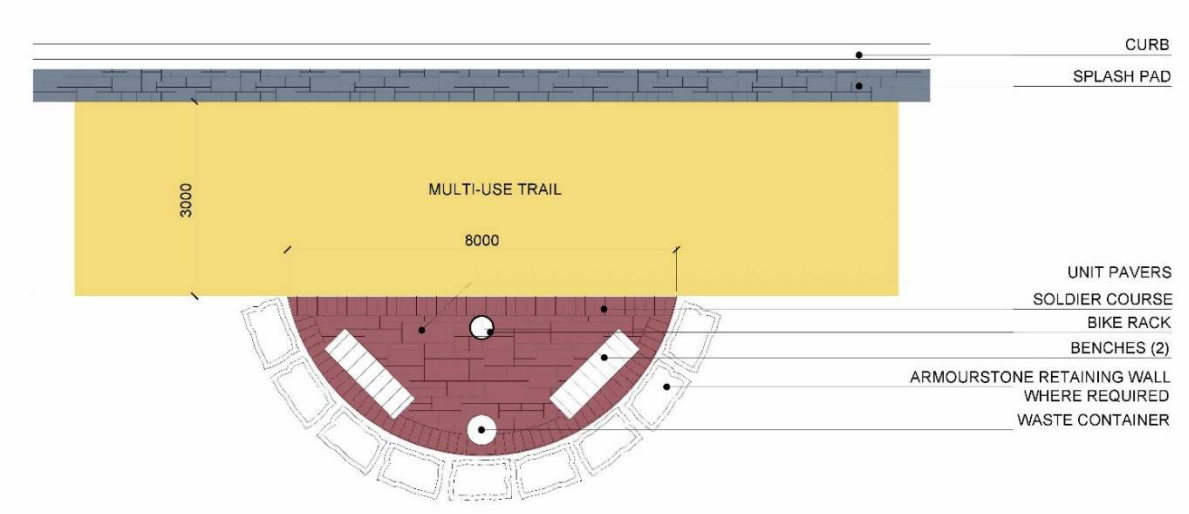


Figure 6.11. Typical Amenity Area (East of East Street)



6.1.17 Illumination

U Tech Engineers prepared an Illumination Assessment and Report which can be found in Appendix R. This report outlines lighting levels and pole locations to provide light to the proposed design.

Through Bronte Village, from Bronte Creek Bridge to East Street, 60W luminaries on existing poles are recommended. Lighting through Bronte Village will brand the district and meet the needs of the BIA beautification programme. The existing light standards may be replaced to allow a 'themed' feel for the area.

Along the rest of the corridor 32W luminaries in an opposite arrangement are recommended to provide better illumination distribution and maintain uniformity across the corridor. Additional lighting is required at some intersections to meet design values, including at Third Line where 108W luminaries are recommended to match the pre-existing wattage. Base mounted aluminum streetlight poles as per Town of Oakville standard drawing STD 9-8 are recommended. GE Evolve LED Rodway Lighting Fixtures of various wattages were used for all lighting calculations.

6.2 Environmental Issues and Commitments

6.2.1 Land Use

Future land use within the study area will remain consistent with the current uses of commercial and residential, with increasing infill. The Bronte Mall, within the Bronte Village area, is currently undergoing improvements, and will be further integrated into the urban design of the roadway corridor, in the detail design phase.

6.2.2 Noise Impacts

A traffic noise assessment was completed, using 41 representative receptors, for the proposed improvements to Lakeshore Road. Lakeshore Road West traffic data was provided for the 2016 existing conditions and the 2021 and 2031 future conditions. The year 2021 represents the peak traffic conditions with an expected decline in traffic volumes from 2031 onward, therefore the 2031 traffic volumes were not utilized for this noise assessment.

The results of the noise impact study indicated that the noise impacts along Lakeshore Road West are predicted be less than a 5 dB (noticeable) increase when comparing the Future “build” 2021 and Future “no build” 2021 scenarios. Therefore, in accordance with the project noise assessment criteria, consideration for noise mitigation is not required. The predicted Future “build” 2021 levels are above 60 dBA at twelve locations, however, based on the project noise assessment criteria, consideration for noise mitigation is not required at these locations.

Construction noise impacts are temporary and largely unavoidable. However, the contract documents should identify the contractor’s responsibilities with respect to controlling noise, as well as recording, investigating and if possible addressing complaints. The contract documents should also explicitly state that compliance with all applicable law is an expectation of the contract including adherence to the Town of Oakville Noise By-Law 2008-098.

Further noise impact information can be found in Road Traffic Noise Impact Study, Appendix S.

6.2.3 Aquatic Resources

An Aquatic Habitat Existing Conditions Report was completed as part of the preliminary design (ref. Appendix I). The improvements, extension or replacement of the crossing structures will likely require ‘in-water’ works that are both temporary and permanent in nature, depending on the extensiveness of the structure modifications. In-water works should occur within appropriate timing windows for construction suitable to the thermal regime and fish species evident. Furthermore, any watercourse where in channel work is required the works will require dewatering

such that work can be completed 'in-the-dry'. In these instances, cofferdams and bypass pumping and/or flumes can be utilized to isolate the work areas. Isolating and dewatering work areas may require fish salvage programs to avoid the stranding of fish within work areas.

During the works, runoff from construction activities may lead to a temporary increase in erosion risk due to increased area of exposed soil and stockpiled materials. This poses an increased risk of siltation to the watercourse leading to increased surface water turbidity which would be harmful for fish. Spills and leaks such as the introduction of sediment, concrete outwash, and other deleterious substances (e.g., salt, paint, solvents, oil and grease) during construction could allow contaminated water to enter the river. The potential for such effects is low if appropriate mitigation and environmental protection planning measures are applied consistent with Ontario Provincial Standards.

Additionally, limited temporary and/or permanent removal of shrubs/trees and/or riparian vegetation will be required for access routes to culverts and roadway improvements. Where feasible, access routes would be selected to minimize vegetation disturbance. Vegetation removals can result in a temporary increase in erosion and sedimentation risk, and instability in channel banks. Furthermore, vegetation removal may cause a temporary loss of overhead cover for fish and could result in increased water temperatures and instability in channel banks.

Correspondence with MNRF and Conservation Halton occurred throughout preliminary design to ensure agency guidelines were met for providing necessary protection of aquatic resources. Comments provided by the agencies have been included in this reporting. During the Detailed Design phase, additional mitigation measures may be developed as the design approaches completion.

6.2.4 Terrestrial Resources

A Terrestrial Habitat Existing Conditions Report was completed as part of the preliminary design (ref. Appendix H). The proposed improvements for this project are expected to have minimal long-term impact on the natural environment due to the current existing ROW and traffic in the area; however, there is potential for direct and indirect effects on the terrestrial environment during construction activities. The work will result in both defined impacts, and may include other potential impacts that are difficult to measure. These defined and potential impacts within the project study area include:

- Loss of natural and cultural vegetation along exiting ROW and potential ROW expansion areas;
- Loss of pervious surfaces leading to increased runoff;
- Disturbance, damage, or harm to wildlife species protected under the Migratory Bird Convention Act (MBCA), the Fish and Wildlife Conservation Act (FWCA), and/or the Endangered Species Act (ESA);
- Potential project encroachment on woodland features resulting in potential impacts to woodland dwelling species and land bird stopover areas;

- Loss and disturbance to bat maternity colonies through destruction and/or noise disturbance in forested habitats/treed areas within and adjacent to the ROW;
- Increased human presence near bat maternal roost sites may cause females to drop young for their protection or abandon young altogether if stressed;
- Potential encroachment of the road ROW into areas of the Project study area that may support turtle nesting;
- Potential increased noise and light disturbance to wildlife adjacent to the ROW;
- Potential increased dust generation and deposition on vegetation resulting in effects on photosynthesis, respiration, and transpiration;
- Potential increase in invasive species colonization within disturbed areas;
- Increased road mortality on birds, turtles, and amphibian associated with construction vehicles, increased road width, and increased traffic flows;
- Potential loss of amphibian breeding habitat adjacent to the ROW. Impacts may also
- include increased sedimentation; and
- Potential for direct loss of habitat for species of conservation concern. The footprint of the road along with associated shoulders, banks, and ditches will result in loss of habitat. Indirect loss of habitat may occur through changes in hydrology, introduction of non-native plant species, introduction of sediments and other contaminants, and salt spray and runoff.

The intent of this preliminary effects assessment is to provide considerations for further effects evaluation based on significant natural features present within the project study area, environmental consideration relative to road widening projects, and regulatory considerations for wildlife protected under various federal and provincial legislation. Confirmation of habitat use within identified Significant Wildlife Habitats should be conducted at the detailed design stage of the project to support the effects assessment and the development of environmental protection measures consistent with the municipal, regional, and provincial regulations.

6.2.5 Fluvial Geomorphic Assessment

Fourteen Mile Creek and McCraney Creek have been investigated based on fluvial geomorphic considerations for crossing improvements in the Town of Oakville. Scoping level review of existing channel conditions, planform characteristics, crossing sizing and guidance for scour and erosion control, have been undertaken. The full assessment can be found in Appendix J.

The recommended meander belt limits for delineation of Fourteen Mile Creek related Redside Dace habitat are 75m, with 25m measured westerly and 50m measured easterly from the creek centreline along Lakeshore Road. The minimum crossing opening widths are recommended as 16.5m and 13.5m for Fourteen Mile Creek and McCraney Creek respectively, which encompass bankfull width targets of 9.5m and 6.5m with 3.5m overbanks on both sides. Larger crossing opening widths would also be suitable, with overbank width adjusted accordingly. Opening sizing is conditional on implementation of scour protection to the 100yr event design storm with an added FS=1.15. Additional erosion control is required on the upstream side of the McCraney Creek crossing based on the high-risk erosion site defining the confined slope embankment on the west side. The 100yr event design standard is recommended for treatment sizing. All channel works must incorporate integrated recommendations from a fish habitat and passage perspective.

6.2.6 Archaeology

A Stage 1 Archaeological Assessment has been completed for this study (ref. Appendix K). The study found that areas where potential has been removed because of previous road and sidewalk construction, disturbed shoulders, driveways and boulevards comprise approximately 88% (12.5 ha) of the total study area, while areas of low potential due to excessive slope constitute approximately 1% (0.13 ha). The potential for archaeological resources exists within 11% (1.1 ha) of the total study area. In light of these results, the following recommendations are made:

1. A Stage 2 archaeological assessment in accordance with Section 2.1 of the MTCS *Standards and Guidelines for Consultant Archaeologist (2011)* is required prior to any form of land alteration within the areas of archaeological potential that are noted for portions of Lakeshore Road West. As the sections of the study area that retain archaeological potential cannot be ploughed due to their limited spatial extent and the presence of buried utilities, Stage 2 assessment should be carried out by means of hand shovel test pitting at 5-metre intervals.
2. If construction related activities extend past the current right-of-way fronting St. Jude's Cemetery (located at 258 Lakeshore Road West in Oakville), a cemetery investigation may be required. The preliminary design does not identify any construction outside of the current right-of-way, however, this is subject to detailed design.
3. No further archaeological assessment is required for the remainder of the study area. The above recommendations are subject to Ministry of Tourism, Culture and Sport approval, and it is an offence to alter any of the study area without Ministry of Tourism, Culture, and Sport concurrence.

6.2.7 Cultural Heritage

A Cultural Heritage Study has been completed for this project (ref. Appendix L). A range of effects are anticipated within the study area, mostly as a result of impacts on vegetation, fences, stone walls, gates and viewscapes. The impacts are characterized from low to high, based primarily on the distance of resources and vegetation from the right-of-way or impact zone, but property encroachment along the roadway should be sensitive to the character of the abovementioned heritage resources. Post-construction landscaping along the corridor should employ heritage plants and heritage themes to help conserve and enhance the cultural heritage character near the heritage resources.

Three properties were identified as having a potential for medium or high magnitude effects from construction:

- 2489 Lakeshore Road West – Walton United Church
- 540 Lakeshore Road West – Appleby College
- 372 Lakeshore Road West – Unnamed Listed House

2489 Lakeshore Road West – Walton United Church

While the designated heritage church at 2489 Lakeshore Road West is far enough from the roadway that it will not be directly affected by road construction, the retaining wall and/or steps near the front of the property could potentially be disturbed (Figure 6.12). The preliminary design does not identify any direct impact to these items, however, this is subject to detailed design. If any direct impact to the stone wall and stone stairs takes place due to the road construction, they will need to be rebuilt to existing appearance and materials.

Figure 6.12. Walton United Church

540 Lakeshore Road West – Appleby College

The wrought iron fence, stone wall and stone gateway at the front of Appleby College (540 Lakeshore Road West) is close to the roadway, however the preliminary design does not identify a direct impact. All wrought iron fencing, stone walls, and stone gateways at 540 Lakeshore Road West that are disturbed by the road construction would need to be rebuilt to existing appearances and substance. The preliminary design does not identify any disturbance of these items, however, this is subject to detailed design.

Figure 6.13. Appleby College Features

372 Lakeshore Road West – Unnamed Listed House

The stone wall and stone gateway in front of the listed house at 372 Lakeshore Road West is located within an identified area of property acquisition and will require mitigation or adjustment at the detailed design phase. Any disturbance to the stone walls and stone gateway at 372 Lakeshore Road West by the road construction will need to be rebuilt to existing appearances and substance.

Figure 6.14. Stone Wall in Front of 372 Lakeshore Road West

It is recommended that the following mitigation measures be taken:

1. Construction fencing and tree hoarding should be installed around and in front of those heritage resources which are closer to the roadway, at a sufficient distance to ensure that there will be no direct construction impacts as a result of the movement of construction equipment or machinery;

2. Standard road construction techniques should be used where possible, excluding all avoidable construction techniques (such as deep foundation work or piling) that could cause structural damage to heritage resources;
3. All trees that cannot be saved should be replaced with large caliper nursery stock that are appropriate for roadside use (i.e. salt resistant). Replacement trees should replicate as closely as possible the heritage appearance, assortment and placement of the current trees; and,
4. Wherever possible, the roadway should be engineered to ensure that the heritage character of the buildings and landscapes listed in Table 2 are not unduly impacted or obscured.

6.2.8 Erosion and Sediment Control

Prior to the commencement of construction, standard erosion and sediment control (ESC) measures should be designed and implemented and should meet or exceed Ontario Provincial Standards and Specifications (OPSS), and in accordance with Town of Oakville and Conservation Halton standards. The control measures shall be implemented prior to work and be maintained through all phases of the project until vegetation is re-established and all disturbed ground is permanently stabilized.

6.2.9 Permitting Requirements

Table 6.5. Permitting Requirements

Agency	Permit / Approval	Comments
Ministry of the Environment and Climate Change	Environmental Activity and Sector Registry (EASR) - Self Registration of Water Taking Activity	For road construction and construction site dewatering.
Ministry of Tourism, Culture, and Sport	Stage 2 Archaeology Assessment	Required to be completed for identified areas during detail design.
Ministry of Natural Resources and Forestry	Endangered Species Act	Required for potential impacts to Butternut and Kentucky Coffee-tree if presence confirmed during detail design.
Ministry of Natural Resources and Forestry	Licence to Collect Fish for Scientific Purposes	Required if a cofferdam is used during the replacement of the McCraney Creek Bridge
Department of Fisheries and Oceans	Fisheries Act	Request for Review
Environment and Climate Change Canada	Species at Risk Act	To determining permitting requirements under SARA for any impacts to Redside Dace in 14 Mile Creek.
Conservation Halton	Permit under O. Reg. 162/06	Required to develop in areas of natural hazards or to alter a creek.
Town of Oakville	Tree Protection Agreement, Tree	Required for the removal of trees during construction.

Table 6.5. Permitting Requirements		
Agency	**Permit / Approval**	**Comments**
	Protection Zone Encroachment Permit, Tree Permit	

7.0 Summary of Environmental Effects, Proposed Mitigation, Commitment to Further Work

Table 7.1. Summary of Environmental Effects, Proposed Mitigation, Commitments to Further Work

ID	Details	Relevant Organization(s)	ID	Details
1	Stormwater Management	Conservation Halton	1.1	Oil/grit separators (OGS) will be installed at various locations. Whenever possible, additional water quality measures have been recommended in addition to the OGS.
			1.2	Offsite LID BMP retrofits have been recommended on a trial basis to provide water quality and will be further evaluated during detailed design.
2	Surface Water Quality	MOECC, Conservation Halton & Town of Oakville	2.1	Mitigation measures for erosion and sedimentation from construction operations will be included in the contract and implemented. An erosion and sedimentation plan will be submitted to the Conservation Halton during detail design. Work will be controlled to prevent the entry of any deleterious materials to watercourses and located downstream of the study area. Refuelling of all vehicles and equipment will be conducted away from the watercourse to prevent any material from entering the watercourse. Any material (excavated soil, sediment, and backfill material) that is removed during construction will be placed above the high-water mark and contained in a manner to ensure sediment will not enter the watercourse.
			2.2	Specialized ESC measures specific to Redside Dace protection within 14 Mile Creek, will be utilized in the stabilization of the site. This includes the use of double-row non-woven, wire-backed silt fencing and the installation of staked straw bales between the silt fences.
			2.3	All spills that could potentially cause damage to the environment will be reported to the Spills Action Centre of the Ministry of the Environment and Climate Change. A detailed protocol will be developed during detailed design to be implemented during construction if an incidence should occur.
			2.4	Stormwater management quality control measures will be further evaluated during detailed design.

Table 7.1. Summary of Environmental Effects, Proposed Mitigation, Commitments to Further Work				
ID	**Details**	**Relevant Organization(s)**	**ID**	**Details**
			2.5	Dewatering methods will be reviewed during detailed design. At such time, a permit be obtained if required.
3	Disposal of Excess Material and Contaminated Material	Town of Oakville	3.1	Soil characteristics may need to be monitored during excavation activities and if field observations warrant, Sampling may be required to ensure appropriate disposal or re-use of surplus soil.
		Town of Oakville	3.2	Handling and disposal of contaminated soil material during construction will be detailed in the contract specifications during the detailed design stage in accordance with Part XV.1 of the Environmental Protection Act and Ontario Regulation 153/04, Records of Site Condition.
		MOECC	3.3	Activities involving the management of excess soil should be completed in accordance with the MOECC's current guidance document titled Management of Excess Soil – A guide for Best Management Practices (2014) available online.
		MOECC	3.4	All waste generated during construction must be disposed of in accordance with MOECC requirements.
4	Fisheries/ Watercourse	Conservation Halton, MNRF	4.1	During the Detail Design phase, further communication with the MNRF and Conservation Halton will be necessary to determine the need for permitting related to project works
			4.2	The permitted timing window for Redside Dace in 14 Mile Creek is July 1 to September 15. As such, all in-water works will be conducted within this timing window for works impacting 14 Mile Creek.
			4.3	The permitted timing window for Silver Shiner and American Eel in Bronte Creek is July 1 to September 15. As such, all in-water works will be conducted within this timing window for works impacting Bronte Creek
			4.4	The permitted timing window for Rainbow Trout (McCraney Creek) is June 15 to March 31. As such, all in-water works will be conducted within this timing window for works impacting McCraney Creek.
			4.5	An Environmental Monitor (or designate) should be on-site during construction of watercourse

Table 7.1. Summary of Environmental Effects, Proposed Mitigation, Commitments to Further Work

ID	Details	Relevant Organization(s)	ID	Details
				crossings to ensure compliance with specifications and site plans.
5	Property Impacts	Residents & Town of Oakville	5.1	All impacts to private property will be mitigated where appropriate as documented within this report.
6	Landscaping and Vegetation	Conservation Halton, Residents & Town of Oakville	6.1	Removal of vegetation and disturbance of soils will be minimized.
			6.2	Vegetation removals should be completed prior to the onset of the Breeding Bird period (April 1st to August 30th)
			6.3	Staging of the project will limit vegetation disturbance and minimize the amount of time disturbed soil is exposed.
			6.4	Where feasible, a 30m vegetated buffer will be maintained adjacent to the creeks and their floodplains.
			6.5	A Landscape Planting Plan will be prepared during detail design following the Town of Oakville Tree Protection and Removal Policy. Conservation Halton will be consulted.
			6.6	All tree and shrub plantings within the corridor are to be salt-tolerant, non-invasive, low maintenance, disease/pest resistant and drought tolerant. Native plant species are preferred.
			6.7	Construction impacts at stream crossing areas are to be mitigated with the planting of riparian vegetation. This vegetation should be native, non-invasive, riparian vegetation, as approved by the Conservation Halton.
7	Traffic and Access	Residents, Town of Oakville Halton Region	7.1	A traffic management and construction staging plan will be prepared at the detail design stage.

Table 7.1. Summary of Environmental Effects, Proposed Mitigation, Commitments to Further Work

ID	Details	Relevant Organization(s)	ID	Details
8	Utilities	Utility Companies	8.1	Required utility relocations will be coordinated with relevant companies during Detail Design.
9	Noise	Town of Oakville, Residents	9.1	No traffic noise mitigation measures are required.
			9.2	Construction noise control measures are to be implemented. General noise control measures to be referred to, or placed into the contract documents.
10	Property Requirements	Town of Oakville	10.1	Limited property purchase will be required. Property purchase requirements to be minimized where possible.
11	Archaeology	Ministry of Tourism, Culture, and Sport, Indigenous Communities	11.1	A Stage 2 Archaeological Assessment will be completed as part of the detail design phase.
			11.2	Prior to the commencement of a Stage 2 Archaeological Assessment the Mississaugas of the New Credit First Nation, the Six Nations of the Grand River, and the Haudenosaunee Development Institute will be contacted to determine the nature of indigenous participation.
			11.3	If any archaeological artifacts are located during construction, work in the area will cease and the Ministry of Tourism, Culture and Sport will be contacted. If human remains are encountered during construction, the Ministry of Tourism, Culture and Sport and the Registrar of the Cemeteries Regulation Unit will be contacted.
12	Wildlife	MNRF	12.1	Comply with the Migratory Bird Convention Act, 1997 (MBCA) regulations and guidelines for vegetation clearing recommended by Environment Canada. Clearing is to be avoided from April 1 to August 30 for this project location, although these timing constraints should not be perceived as absolutes.
			12.2	Vertical facings suitable for nesting by bird species (i.e. bridge structures, soil piles, and excavation areas) should be covered using tarps, or plastic sheets, or any other means of preventing nesting within the construction zone. Such barriers should be installed prior to April 1 and shall remain in place until August 30, or until the completion of rehabilitation works. Alternatively, vertical facings should be maintained daily at a 45° angle to deter nesting.

Table 7.1. Summary of Environmental Effects, Proposed Mitigation, Commitments to Further Work

ID	Details	Relevant Organization(s)	ID	Details
13	Built Heritage and Landscape Assessment	Ministry of Tourism Culture and Sport	13.1	Protection/ retention measures for the identified built heritage features will be further evaluated at the detailed design phase.
14	Construction Dewatering	MOECC	14.1	Permits for construction dewatering will be acquired as appropriate.
15	Air Quality	MOECC	15.1	The following mitigation measures will be used to minimize/ mitigate impacts on air quality: • use new or well-maintained heavy equipment; • fit equipment with muffler/exhaust system baffles, and/or engine covers; • comply with operating specifications for heavy equipment and machinery; • minimize operation and idling of gas-powered equipment; • minimize activities during windy and prolonged dry periods to minimize airborne particles; • stabilize stockpiled excavated soils; • cover or otherwise contain loose construction materials that have potential to release airborne particulates; • spray water to minimize the release of dust and/or use chemical dust suppressants (non-chloride-based); and • minimize the duration of soil exposure. The proposed improvements do not result in increased capacity, thus increased traffic and resultant pollution due to the improvements is not anticipated;

7.1 Construction Phasing

The Town of Oakville Capital Forecast identifies completion of the project in four phases. The recommended first phase is from Fourth Line to Dorval Drive for detail design and construction as this section includes the McCraney Creek structure which needs to be replaced due to its poor condition. Mississaga Street to Third Line is recommended in phase 4 of project schedule due to the timing of future Berta Point Pumping Station and 2 twin forcemains along Lakeshore Road West from West River Street to East Street and Bronte Village Mall Redevelopment project in this section. The schedule and the timing of detailed design and construction is subject to change based on the Town's capital forecasting schedule. The recommended phasing is as follows:

- **Phase 1 -** Fourth Line to Dorval Drive (including replacement of McCraney Creek Bridge)
- **Phase 2 -** Fourth Line to Sandwell Drive
- **Phase 3 -** Sandwell Drive to Third Line
- **Phase 4 –** Mississaga Street to Third Line

7.2 Notable items to be considered in Phase 5 - Implementation

During the duration of this Environmental Assessment (EA), several items were recorded needing to be taken into consideration or further discussion is required by the Town after the EA is filed and project moves in to Phase 5 – Implementation. Notable items include the following:

- Lane reduction from 4 lanes to 3 lanes from Mississauga Street to Dorval Drive maybe deferred until which time the east / west extension Wyecroft Bridge is completed.
- The combining of accesses at Walton Memorial United Church and the Bronte Harbour Club Condominiums and installing a traffic signal in place of the proposed pedestrian signal needs to be further reviewed as a possible solution to vehicles exiting those sites.
- The recommendations from the Stage 1 Archaeological Assessment was that a Stage 2 Archaeological Assessment is required, this is to be completed in advance of the detailed design.
- The existing northbound restriction at Suffolk Avenue / Appleby College and the possible installation of a full traffic signal in place of the proposed pedestrian signal is to be reviewed as part of new future development planned on the northeast corner.
- Traffic signal timings and a review traffic progression should be reviewed and optimized.
- Access control and access management along Lakeshore Road West should be reviewed further for opportunities to combine access where possible.
- The proposed pedestrian crossing locations and crossing types identified in this report are to be reviewed further during detailed design. The timing of these installations are to be prioritized and phased over time.
- Surcharging of the proposed storm sewer system does occur for some of the sewer sections. That said, most of the surcharge is considered minimal and just above the pipe obvert. Two (2) locations that will need further evaluation during detailed design are:

- The section between Stations 1+400 and 1+850 is surcharged due to the sewer system on Sarah Lane, and further optimization of the proposed Lakeshore Road sewer system may be considered.
- The section between Stations 1+850 and 2+660 just east of Third Line, the storm sewer system may need to be increased slightly, but due to cover constraints, a detailed plan and profile for this road section is required.
- Construction noise impacts are temporary and largely unavoidable. However, the contract documents should identify the contractor's responsibilities with respect to controlling noise, as well as recording, investigating and if possible addressing complaints. The contract documents should also explicitly state that compliance with all applicable law is an expectation of the contract including adherence to the Town of Oakville Noise By-Law 2008-098