City of Mississauga

Clarkson Road and Lakeshore Road Intersection Municipal Class Environmental Assessment Study

Project File Report

Thursday, October 13, 2022

B001266

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City of Mississauga

Project File Report

Clarkson Road and Lakeshore Road Intersection

Schedule B Municipal Class
Environmental Assessment Study

Project No.: B001266

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Executive Summary

The City of Mississauga has undertaken a review of the intersections of Clarkson Road North and Clarkson Road South, with Lakeshore Road West, to address operational and safety concerns. A Schedule 'B' Municipal Class Environmental Assessment (EA) Study has been completed to identify the key issues and evaluate how the existing conditions may be improved. The EA identified these improvements through a comprehensive planning and design process that focused on all elements of the transportation infrastructure, including but not limited to; traffic operations and traffic safety, streetscaping, active transportation facilities (both cyclists and pedestrians), transit operations, and commercial road accesses.

This study follows the Municipal Engineers Association (MEA) Municipal Class Environmental Assessment process for a Schedule B project (October 2000, as amended in 2007, 2011 and 2015).

Study Area

The study area is focused on the intersections of Clarkson Road South and Lakeshore Road West, and Clarkson Road North and Lakeshore Road West, in the City of Mississauga and the Village of Clarkson. The study area limits extend on:

- Clarkson Road North, from Lakeshore Road West to Fellen Place
- Clarkson Road South, from Lakeshore Road West to south of Pattison Crescent
- Lakeshore Road West, from approximately 60 metres west of Clarkson Road South to approximately 110 metres east of Clarkson Road North.

Study Planning Context

Provincial and municipal planning and policy context has been considered in assessing the existing infrastructure needs of the study area. The provincial and municipal policy framework guides infrastructure, land use planning, and strategic investment decisions to support City growth and transportation objectives.

The identification of study area problems and opportunities and the assessment of the study's need and justification were carried out with due consideration of the planning framework to ensure that the final recommendations are consistent with the policies and objectives of the various levels of government.

The related planning and policy context considered includes: A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2020), the Provincial Policy Statement (2020), the City of Mississauga Official Plan (2021), the Lakeshore Connecting Communities

Transportation Master Plan (TMP, 2019) and the Lakeshore Road West Complete Streets Study, which is ongoing at this time of reporting.

Problems and Opportunities

The intersections of Lakeshore Road West and Clarkson Road North / Clarkson Road South are offset by approximately 75 metres, resulting in two closely spaced, signalized intersections. Concerns relating to congestion and safety have been raised by the public regarding the operations of the two intersections, and the interspersed commercial entrances in their vicinity.

In addition to other background technical assessments completed for this study, a traffic safety performance review identified several issues at the intersections including., obstacles aligned with crosswalks and visibility of secondary traffic signals etc. The Traffic Analysis completed by the study did not identify any significant existing operational issues at the intersections, as the signals are currently optimized, and the existing operational performance is considered acceptable. However, congestion will be experienced in the future horizon years assessed by the study (2031 and 2041), and this includes the queuing of the eastbound left-turn movements on Lakeshore Road West (between the Clarkson Road intersections) spilling back into the through lanes and blocking through-movements.

There is an opportunity to review the Lakeshore Road West and Clarkson Road North / Clarkson Road South intersections and identify improvements that will accommodate future traffic needs of the intersections while also improving the safety, and mobility for all road users at the intersections.

Description of the Existing Environment

Transportation

Clarkson Road North and South are two-lane, local roads with posted speed of 40 km/h. Lakeshore Road West is a five-lane (four lanes and a two-way left-turn lane), east-west arterial road with a posted speed of 40 km/h. Per the Official Plan, the Long-Term Road Network (Schedule 5) identifies that Clarkson Road North will become a Major Collector in the future.

Cultural Heritage

A total of seven cultural heritage resources were identified within and/or adjacent to the study area. Five cultural heritage resources are listed on the Heritage Register for Mississauga (2020), one of these resources is additionally included on the Ontario Heritage Trust’s Places of Worship Inventory, and two properties were identified during the field review. The resource listed on the Ontario Heritage Trust’s Places of Worship

Inventory is in the southeast quadrant of the Clarkson Road South intersection and is a former Methodist church that was reconverted for commercial use (currently a Benjamin Moore shop).

Archaeology

The Stage 1 Archaeology Assessment determined that no previously registered archaeological sites are located within one kilometer of the Study Area. Most of the study is disturbed and the parts of the study area that exhibit archaeological potential are located just north of Turtle Creek, or west of Clarkson Road South.

Natural Environment

Turtle Creek, located north of Lakeshore Road West, is a natural corridor which meets the criteria of a significant woodland and valleyland. The study area presents suitable habitat for species-at-risk (SAR) however no SAR were identified during the site visit. A tree inventory was completed for 100 trees within the study area, with approximately nine trees in the vicinity of the intersections.

Socio-Economic Environment

The intersections are located within the urban mixed-use area in the City of Mississauga. Land use in the surrounding area is a mixture of Low Density Residential and Mixed Use (Commercial / Residential). In the immediate vicinity of the intersections are several businesses including banks, restaurants, and a gas station.

Noise and Air Quality

A Noise Assessment has been conducted within the study area. Clarkson Road has private homes along both sides of the street, on the north and south links, which are considered as Noise Sensitive Areas (NSAs). Most of the first-row buildings on Lakeshore Road West are commercial in nature and thus are considered non-sensitive. As this project focuses on localized improvements (i.e., no capacity expansion or similar), the project is expected to cause no change in future operational sound levels which are anticipated to be within the provincial and city guidelines criteria and therefore noise mitigation is not required. Noise will be generated during construction and the project will be subject to City Noise By-Law No. 360-79.

An Air Quality Impact Assessment was conducted for this study. As with the Noise Assessment, the residences along Clarkson Road North and South were considered sensitive receptors. Commercial and industrial buildings are considered non-sensitive. Localised improvements at the Clarkson Road intersections are not expected to have significant impacts on nearby sensitive receptors. Although the assessment identified exceedances of thresholds for some contaminants, these are primarily due to

background pollution within the study area. Therefore, no mitigation measures are identified required as part of these improvements.

Phase One Environmental Site Assessment

Potential Contaminating Activity (PCA) was identified at four sites within the study area. This includes 1730 Lakeshore Road West and 1765 Lakeshore Road West that are located in the vicinity of the intersections and the proposed improvements. A subsurface investigation (i.e., Phase Two Environmental Site Assessment) involving sampling and analysis of soil and groundwater within the limits of the proposed construction works would be required to confirm the potential for contamination from the identified PCAs and the management of materials generated during construction.

Alternative Solutions

Four improvement approaches were considered to help develop the potential alternative solutions for the intersections, and these were presented at the first virtual Public Information Centre (PIC). The four approaches included realigning Clarkson Road North, reconfiguring the intersections into a roundabout, installing a raised centre median between the two intersections, and prohibiting left-turn movements at the intersections. The use of a roundabout was subsequently screened out as it was not geometrically or operationally feasible.

By incorporating elements of the remaining improvement approaches, a range of alternative solutions were developed to address the known operational and safety issues at the Lakeshore Road West and Clarkson Road North/South intersections. The four alternative solutions were presented at the second virtual Public Information Centre (PIC #2), and included: Do Nothing, Solution 1 – Realign Clarkson Road North, Solution 2 – Centre Median and Widen Lakeshore Road West, Solution 3 – Centre Median and Eastbound Left-Turn via a “Laneway”. The alternative solutions and their evaluation were presented at the PIC #2 and Solution 2 was identified as the preliminary preferred solution.

Refinement to the Preferred Solution

Following PIC #2, the preferred solution was further refined through the below rationale:

- Solution 2 is desirable compared to the other solutions; however, it only mitigates and does not solve the fundamental issue of the close intersection spacing.
- Solution 1 solves the fundamental issue; however, its significant cost and impacts to existing businesses is a critical disadvantage

- Public feedback at PIC #2 highlighted the desire for a community design, with a focus on all modes of transportation and an emphasis on the future vision for Clarkson Village.

After PIC #2, the evaluation was revisited with new perspectives on the socio-economic and cultural heritage factor areas. With the updated evaluation, both Solution 1 and Solution 2 were identified as preferred.

Therefore, the City of Mississauga sees an opportunity to fulfill the short/medium term operational and safety needs while still planning for a longer-term vision of the community, by recommending the two solutions as 'interim preferred' (Solution 2) and 'preferred' (Solution 1) improvements.

Consultation

An extensive stakeholder consultation and engagement program was undertaken to assist the planning and decision-making process. Throughout the study, the public, internal City staff, external agencies and organizations, and Indigenous Communities were engaged to provide input. Key milestones of the consultation program included:

- Notice of Study Commencement and Introductory PIC was published in the local newspaper on November 19, 2020, and mailed to area property owners, agencies, and other stakeholders.
- Virtual Public Information Centre #1 (online project portal) held from December 03 to December 3, 2020.
- Virtual Public Information Centre #2 (online project portal) held from November 10 to December 10, 2021. PIC #2 included a live meeting held November 24, 2021.
- Virtual Public Information Centre #3 (virtual presentation and live meeting) held April 27, 2021.
- Presentations and meetings with regional, municipal, and public authorities, including City staff, Region of Peel staff and members of the Peel District School Board.
- Meetings with CVC and impacted property owners; and Mississaugas of the Credit First Nation review of Stage 1 Archaeological Assessment.

A dedicated study website was established through the City of Mississauga's website at the beginning of the project. Study notices and Public Information Centre materials (e.g., Notices, display material, Q&As) were made available on the website as the study progressed.

Study website: https://www.mississauga.ca/projects-and-strategies/environmental-assessments/lakeshore-road-and-clarkson-road-intersection-improvement/

Written comment responses were received during the various commenting periods following each PIC, and feedback was facilitated at each PIC using either the website PIC portal, surveys and live question-and-answer meetings held at PIC #2 and PIC #3. The table below provides a summary of the key issues that were raised and the Project Team's response to these issues.

Common Comments	Project Team Response
Questions of the purpose behind the study, as the intersections seem to operate fine right now.	The initial driver behind the study were resident concerns of operations and pedestrian safety. A Traffic Safety Review identified several deficiencies at the existing intersections, notably with the pedestrian facilities. Traffic Analysis conducted identified that, while the intersections operate adequately now, they will be subject to significant congestion in the future.
Concern that Lakeshore Road West was being widened to six lanes / the improvements will increase traffic and speeds.	This study is focusing on intersection improvements and no capacity improvements (i.e., additional lanes) are being considered.
Solution 2 (Side-by-Side Left Turn lanes with Centre Median) appears to prioritize vehicular traffic and is not a long-term solution.	Solution 2 will enable the intersections to operate efficiently into the future and to the project horizon. Improvements to pedestrian facilities (sidewalk, crosswalk, etc.) and a new cycle track are also included in the improvements on Lakeshore Road West.
Understanding that Solution 1 (Realign Clarkson Road North) is desirable from a design and transportation perspective, however, doubt that the City could enact upon it due to its high cost and impact.	While the high cost and impact means that the timing Solution 1 is dependant on future redevelopment / available funding, the City are able to commit to a future vision for the Clarkson community and its transportation network by identifying Solution 1 as the Preferred Solution in this EA study.

Recommended Plan

As above, Solution 2 was identified as the interim preferred (short- / medium-term) and Solution 1 as the preferred solution (long-term). The study therefore proposes an overall Recommended Plan for the intersections, which will be implemented on a phased basis.

Interim Preferred Solution

An overview of the interim preferred solution is illustrated in **Exhibit E-1.** The improvements include:

- A slight increase in the overall pavement width on Lakeshore Road West to accommodate 'side-by-side' left-turn lanes in between the intersections.
- Consolidation and modifications to driveways/accesses on Lakeshore Road West, to improve access management and reduce the number of conflict points with active transportation users.
- New cycle tracks in the boulevard along Lakeshore Road West and through the intersections. These improvements will tie into cycle track facilities being planned as part of the ongoing Lakeshore Road West Complete Streets Study.
- Relocation of the eastbound bus stop and shelter, from the southeast quadrant of Clarkson Road North to the southwest quadrant, and a new westbound bus stop and shelter (currently only a bus stop).
- Improvements to intersection geometry and pedestrian facilities, including improved crosswalk alignments and new signals which will include accessible pedestrian signals.
- Provision of a raised centre median, to provide access management and mitigate congestion issues by physically prohibiting crossing movements from driveways.
- The improvements will require some property from the frontage of the Esso Gas Station (Circle K) property, located north of Lakeshore Road West and in between the Clarkson Road intersections.

The recommendations of the interim preferred solution are anticipated to be integrated with the recommendations of the ongoing Complete Street Study Report, to provide an Integrated Road Project for Lakeshore Road West in this area. This Integrated Road Project is anticipated to commence construction around 2026.

Preferred Solution

An overview of the preferred solution is illustrated in **Exhibit E-2.** Key elements of the improvements include:

- A realignment of Clarkson Road North, from its culvert on Turtle Creek to intersect at the Clarkson Road South intersection. The result is a single four-leg intersection rather than the two existing three-legged intersections on Lakeshore Road West.
- Due to the significant cost and property impacts, the solution currently does not currently have an anticipated construction timeframe and will be dependant on future redevelopment and/or available funding.
- As the timeframe for the preferred solution is unknown, it is recommended further supporting technical assessments be completed in the future and closer to the time of implementation. These include Geotechnical Investigations, Stormwater Management and Drainage, Noise and Air Quality Impact Assessments, Environmental Site Assessments and Natural Environment Impact Assessment.
- The realignment of Clarkson Road North affords the opportunity to reconfigure the Lakeshore Road West cross-section, as the 'side-by-side' left-turn lanes (of Solution 2) will not be required. The realignment is contingent on future redevelopment plans, and this redevelopment can also open the opportunity to widen the Lakeshore Right-of-Way (ROW) to better match that desired by the City's Official Plan.
- Solution 1 would require the acquisition of the three commercial properties in the northwest quadrant of the Clarkson Road North intersection. As such, the accesses / commercial driveways along Lakeshore Road West in the study area would be subject to significant changes, and improved access management can be implemented with these changes.
- With the realignment, the east- and westbound bus stops and shelters are anticipated to be relocated to the Clarkson Road South intersection. Final locations and designs will be confirmed in the Detailed Design phase.

Preliminary Cost Estimate

Preliminary cost estimates have identified construction costs at approximately **$0.5M** for the Interim Preferred Solution (Solution 2) and approximately **$1.1M** for the Preferred Solution (Solution 1). Note that cost estimates do not include property costs, as they would be confirmed as part of the Detailed Design phase, in consultation with Realty staff.

Environmental Impacts and Mitigations

Anticipated impacts to the natural, socio-economic, and cultural environments, together with proposed mitigation measures, were identified to address the implementation of the

Interim Preferred Solution and Preferred Solution. Anticipated impacts and proposed mitigation are provided for the following factors:

- Land Use and Socio-Economic Impacts
- Archaeology and Cultural Heritage
- Noise
- Property Requirements
- Climate Change
- Air Quality
- Streetscaping / Urban Design
- Utilities
- Construction
- Vegetation and Vegetation Communities
- Fisheries and Aquatic Habitat
- Wildlife and Wildlife Habitat
- Groundwater
- Surface Water
- Soil Removal and Contaminants

Commitments to Future Work

This Project File Report identifies specific items to be reviewed and confirmed during the Detailed Design phases for both the Interim Preferred Solution and Preferred Solution. Some of these commitments will address specific concerns raised by property owners and review agencies during the EA process. Items to be addressed during Detailed Design phase, include but are not limited to, resolution of outstanding concerns and any permits and approvals.

Timing of Improvements

The City intends to phase the improvements at the intersection by implementing the interim preferred solution in the short to medium term and the preferred solution in the longer term.

The City will look to leverage coordination opportunities with other operational improvements such as road resurfacing to implement the interim preferred solution. The City's road resurfacing program has identified the need to resurface Lakeshore Road through Clarkson Village with an estimated timing year of 2026. The final construction

timing of the interim preferred solution will be confirmed through detail design and will be subject to annual Council review and prioritization

The City does not currently have an estimate timing year for the preferred solution. The implementation of the preferred solution will be subject to opportunities created through the redevelopment of the area and funding considerations.

Preferred Solution and Interim Preferred Solution Exhibit

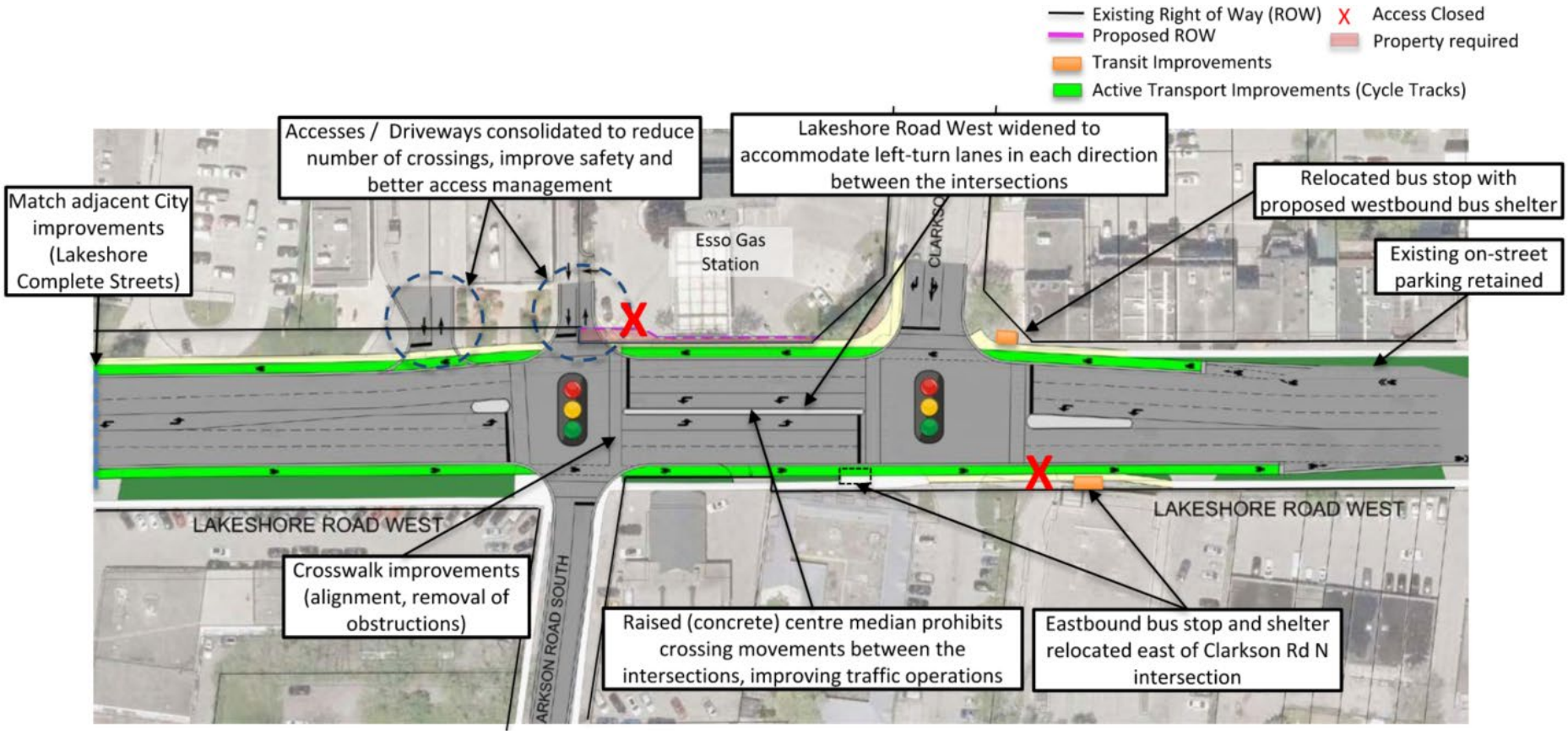

Exhibit E-1: Interim Preferred Solution

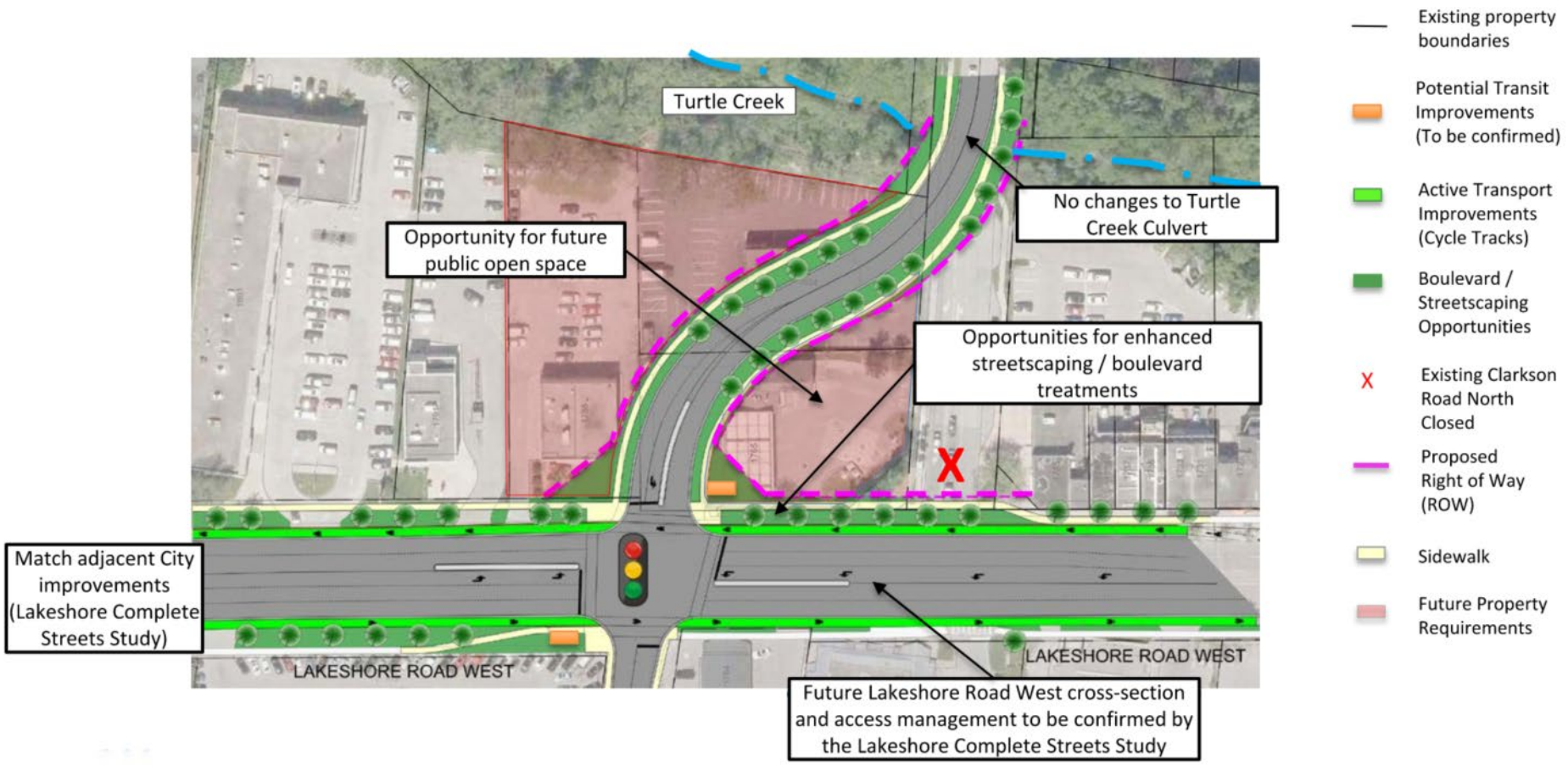

Exhibit E-2: Preferred Solution

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1 Introduction and Study Process

1.1 Study Scope

The City of Mississauga has undertaken a review of the intersections of Clarkson Road (North and South) with Lakeshore Road West to address operational and safety concerns raised by the public. A Schedule 'B' Municipal Class Environmental Assessment (EA) Study has been completed to identify the key issues and evaluate how the existing conditions may be improved. The EA identified these improvements through a comprehensive and context-sensitive focus on all elements of the transportation infrastructure, including but not limited to; traffic operations and traffic safety, streetscaping, active transportation facilities (both cyclists and pedestrians), transit operations, and commercial accesses.

1.2 Municipal Class Environmental Assessment Process

This study follows the Municipal Engineers Association (MEA) Municipal Class Environmental Assessment process for a Schedule B project (October 2000, as amended in 2007, 2011 and 2015). The Municipal Class Environmental Assessment is an approved planning and design process under the Ontario Environmental Assessment Act. As illustrated in **Exhibit 1-1,** the planning and design process is comprised of five phases:

Phase 1 Identify Problem or Opportunity.

Phase 2 Identify and Evaluate Alternative Solutions to the problem or opportunity.

Phase 3 Identify and Evaluate Alternative Design Concepts for the preferred solution.

Phase 4 Complete and File Environmental Study Report (ESR) for public review; and

Phase 5 Implement the project (Detail Design, Construction, Operation, and Environmental Monitoring).

Transportation improvements are classified into one of the following schedules:

Schedule A Projects are limited in scale, have minimal adverse environmental impacts, and may be implemented without following the full Class EA process.

Schedule A+ Projects are limited in scale, have minimal adverse environmental impacts, and may be implemented without following the full Class EA

process. However, the public is to be advised prior to implementing the project.

Schedule B Projects may have some adverse environmental impacts. The proponent must undertake a screening process, involving contact with directly affected public and technical/regulatory review agencies to ensure that they are aware of the project and that their concerns are addressed. A Project File is prepared for public review.

Schedule C Projects may have significant environmental impacts. The proponent must follow the full planning, design, and documentation process of the MEA Municipal Class EA document. An Environmental Study Report is prepared for public review.

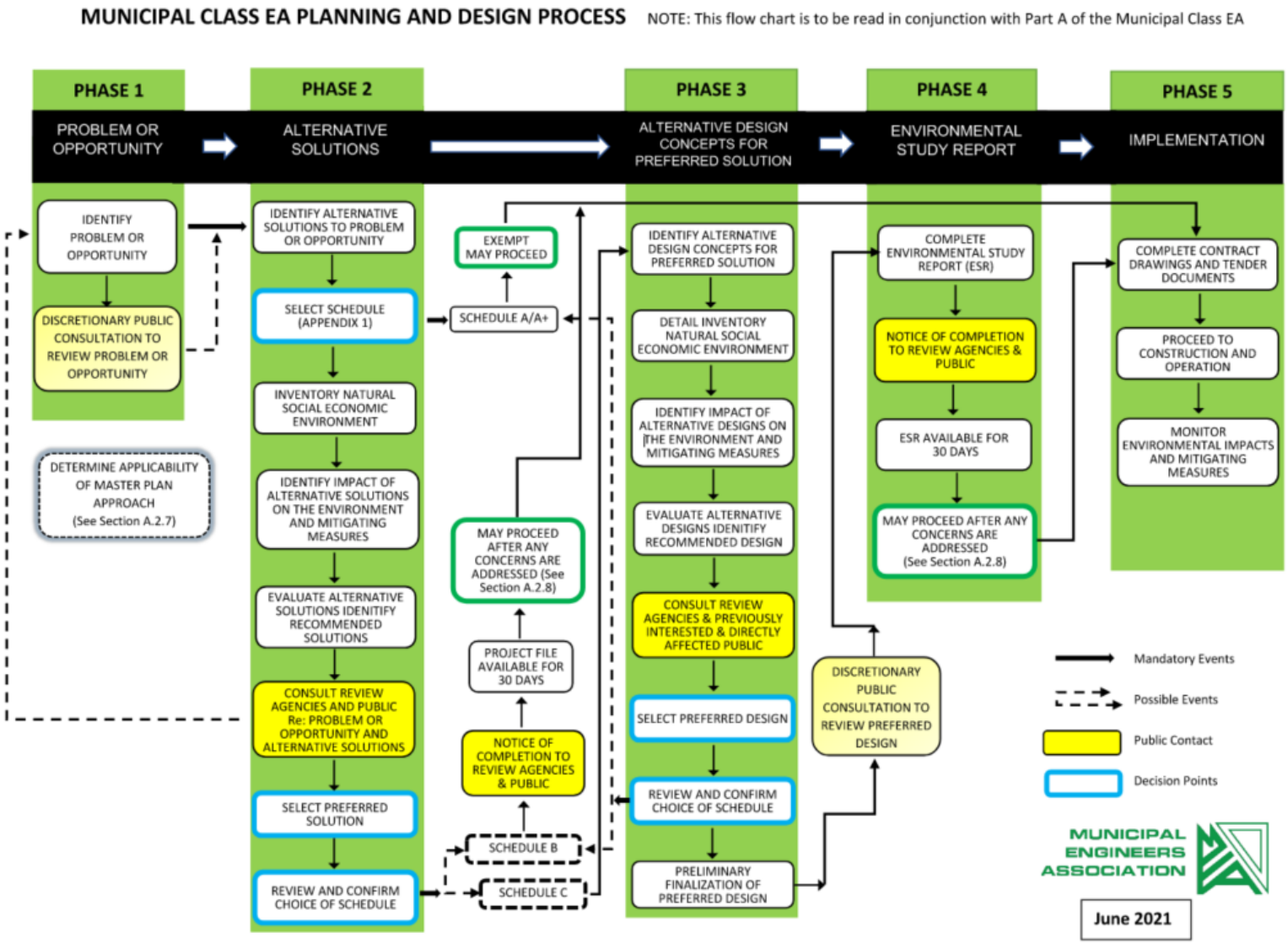

Exhibit 1-1 Municipal Class EA Planning and Design Process

1.2.1 Notice of Completion

The Project File Report (PFR) for this study is available for a 45-calendar day public review during which comments/concerns can be submitted. The review period was announced with the publication of the Notice of Study Completion. As detailed in the notice, interested persons may provide written comments to the project team by **November 28, 2022.** All comments and concerns should be sent directly to **Rory O'Sullivan** at the City of Mississauga.

Rory O'Sullivan
Transportation Engineer
City of Mississauga
201 City Centre Drive,
Mississauga, ON L5B 2T4
rory.osullivan@mississauga.ca

The Municipal Class EA process also includes an appeal provision. The Minister of the Environment, Conservation and Parks has the authority and discretion to make an Order under Section 16 of the Environmental Assessment Act.

A Section 16 Order may require that the proponent of a project going through a Class Environmental Assessment (Class EA) process:

- Submit an application for approval of the project before they proceed. This is generally referred to as an Individual Environmental Assessment (individual EA).
- Meet further conditions in addition to the conditions in the Class EA. This could include conditions for: further study, monitoring and/or consultation

The Minister can also refer a matter in relation to a section 16(6) Order request to mediation.

Before making an Order, the Minister must consider the factors set out in section 16(5) of the Environmental Assessment Act. If a Section 16 Order request is made, the project proponent cannot proceed with the project until the Minister makes a decision on the request. If the Minister makes a Section 16 Order, the proponent may only proceed with the project if they follow the conditions in the Order.

Note, Section 16 Order requests were previously known as Part II Order requests.

Reasons for Requesting an Order

A concerned party may ask the Minister to make a Section 16(6) Order if:

- they have outstanding concerns that a project going through a Class EA process may have a potential adverse impact on constitutionally protected Aboriginal and treaty rights.
- they believe that an Order may prevent, mitigate, or remedy this impact.

A Section 16(6) Order request cannot be made to simply delay or stop the planning and implementation of a project that is going through a Class EA process. Prior to making a Section 16(6) Order request, the concerned party should first try to resolve any concerns directly with the project proponent, in this case, the City of Mississauga.

Timing for an Order Request

During the public comment period, anyone can review the documentation, submit any comments or concerns to the proponent, and request a Section 16(6) Order

To request a Section 16 Order for a project, on the grounds that an Order may prevent, mitigate, or remedy potential adverse impacts on constitutionally protected, Aboriginal and treaty rights, a concerned party must make the request before the public comment period is complete.

How to make a request

To submit a Section 16(6) Order request, the following information must be provided:

- name, address, and email address.
- project name.
- proponent name.
- what kind of Order is being requested i.e., a request for additional conditions or a request for an individual environmental assessment.
- details about the concerns about potential adverse impacts on constitutionally protected Aboriginal or treaty rights and how the proposed Order may prevent, mitigate, or remedy the identified adverse impacts.
- whether the concerned party belongs to, represents or has spoken with an Indigenous community whose constitutionally protected Aboriginal or treaty rights may be adversely impacted by the proposed project.
- whether the concerned party has raised their concerns with the proponent, the proponent's response (if any) and why the concerns could not be resolved with the proponent.
- any other information to support the request.

Section 16 Order requests are made to the Minister of Environment, Conservation and Parks and the Director of Environmental Assessment Branch:

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

Director
Environmental Assessment Branch
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto ON M4V 1P5
enviropermissions@ontario.ca

There is no appeal of the minister's decision with respect to a Section 16 Order. If the request for a Section 16(6) Order is denied by the minister, the proponent can proceed with the project. If the minister makes an Order, the proponent may only proceed with the project if they follow the conditions in the Order.

The above discussion is intended as an overview of the process only. For more information and specific instruction, please visit:

https://www.ontario.ca/page/class-environmental-assessments-section-16-order.

1.3 Study Approach

1.3.1 Project Team

The core project team is comprised of staff from the City of Mississauga and CIMA+ Canada Inc. and their subconsultants. Lead members of the project team area listed in **Exhibit 1-2**.

Exhibit 1-2 Core Project Team

City of Mississauga

- Rory O'Sullivan, Project Manager

CIMA+

- Stephen Keen, Project Manager
- David Hiett, Deputy Project Manager / Preliminary Design
- Martin Scott, Class EA Process / Socioeconomics
- Jaime Garcia, Transportation Planning / Access Management

- Scott Roberts, Civil Design / Constructability
- Hongtao Gao, Preliminary Design
- Phil Weber, Roundabout Specialist
- Karen Greer, Environmental Site Assessments
- Kai Markvorsen, Natural Environment

Archaeological Services Inc. (ASI)

- Lisa Merritt, Archaeology
- Annie Veilleux, Cultural Heritage

RWDI

- Tara Bailey, Air Quality

Civicplan

- Paul Shaker, Enhanced Consultation

1.4 Consultation Plan

A Consultation Plan was implemented to ensure meaningful consultation with internal and external stakeholders as well as reviewing agencies. The Consultation Plan, organized around study phases, included public information centres, stakeholder engagement and participation of technical review/regulatory agencies at study milestones.

The Plan identified stakeholders and reviewing agencies based on a precursory review of study area characteristics and potential impacts of the project. A mailing list was developed to notify potentially interested parties of opportunities for review and comment. The key agencies/stakeholders included:

- Ministry of Environment, Conservation and Parks
- Ministry of Northern Development, Mines, Natural Resources and Forestry
- Ministry of Tourism, Culture and Sport
- Credit Valley Conservation Authority
- Region of Peel
- Mississauga Cycling Advisory Committee
- MiWay (Mississauga Transit)
- Utilities

- Clarkson Village Business Improvement Association (BIA)
- Indigenous Groups
  - Mississaugas of the Credit First Nation (MCFN)
  - Six Nations of the Grand River Elected Council
  - Haudenosaunee Confederacy Chiefs Council

2 Study Planning Context

The provincial, regional, and municipal planning and policy context has been considered in assessing the existing infrastructure needs of the study area. The provincial, regional, and municipal policy framework guides infrastructure, land use planning, and strategic investment decisions to support City growth and transportation objectives. The identification of study area problems and opportunities and the assessment of the study's need and justification were carried out with due consideration of the planning framework to ensure that the final recommendations are consistent with the policies and objectives of the various levels of government.

2.1 Provincial Planning Context

The following provincial planning policies/studies were reviewed and have relevance to this EA:

- A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2020)
- Provincial Policy Statement (PPS) (2020)
- Metrolinx - 2041 Regional Transportation Plan (RTP) (2018)

Key points of relevance from these policies/studies include:

- Section 3.2 of the Growth Plan provides the infrastructure policies to support sustainable growth, including Integrated Planning: *planning for new or expanded infrastructure will occur in an integrated manner and will be supported by infrastructure masterplans, asset management plans, community energy plans, watershed planning, environmental assessments, and other relevant studies where appropriate*
- Section 3.2.2 of the Growth Plan provides Transportation policies, which includes:
    - provide connectivity among transportation modes for moving people and for moving goods.
    - offer a balance of transportation choices that reduces reliance upon the automobile and promotes transit and active transportation; and,
    - offer multimodal access to jobs, housing, schools, cultural and recreational opportunities, and goods and services.
- Part V Policies of the PPS; transportation systems should be safe, energy efficient, facilitate the movement of people and goods, and are appropriate to address projected needs. A multimodal transportation system is to provide connectivity within and amongst the transportation systems

- The Metrolinx 2041 Regional Transportation Plan holds Lakeshore Road West through the study area as a Primary Route in the Regional Cycling Network, recommended to provide a cohesive network of regional corridor and local routes to facilitate commuter cycling.

This study is consistent with Provincial planning context in that the recommendations contribute to a multi-modal transportation network that is safe, efficient, and appropriate for current and future community needs.

2.2 Regional Planning Context

The following regional planning policies/studies were reviewed however, as neither Lakeshore Road West or Clarkson Road North / South are regional roads, no plans or policies are specifically related to the purpose of this EA study or that may impact the study area:

- Peel Region Official Plan (2022)
- Peel Region Long Range Transportation Plan (LRTP 2019)
- Region of Peel Water and Wastewater Master Plan (2020)

2.3 Municipal Planning Context

The following municipal planning policies/studies were reviewed and have relevance to this EA:

- City of Mississauga Official Plan (2021)
- The City of Mississauga Transportation Master Plan (TMP 2019)
- City of Mississauga Cycling Master Plan (2018)
- City of Mississauga Pedestrian Master Plan (2021)
- City of Mississauga Vision Zero Action Plan (2021)
- MiWay5: Transit Service Plan (2016 – 2020)
- Development Charges Background Study (2022)
- City’s Cultural Districts Implementation Plan (2020)
- Lakeshore Connecting Communities (2019)
- Clarkson Village Study (2010)
- Mississauga Stormwater Quality Control Strategy (2012)
- Clarkson Transit Station Area Study

Key points of relevance from these respective studies include:

- Mississauga Official Plan Chapter 14: Community Nodes
- Urban Design Policies
    - 14.2.1.1 Clarkson Village Community Node is to transition into a pedestrian friendly and transit supportive community full of activity places and gathering spaces, with a main-street atmosphere found amidst new, contemporary, mixed use, development paying tribute to the Village's heritage and character.
    - 14.2.1.15 Lands located at the northwest corner of Lakeshore Road West and Clarkson Road North are encouraged to redevelop as a focal point of the Clarkson Village Community Node.
- Transportation, Access, and Parking
    - 14.2.3.1 No major changes to Clarkson Road will be undertaken except minor channelization, reconstruction, bus-bay construction, and improvements of a similar nature.
    - 14.2.3.2 Notwithstanding the classification of Clarkson Road, this road will be limited to no more than two through lanes.
    - 14.2.3.4 Development within the Clarkson Village Community Node will implement the general intent of Map 14-2.2: Access Management Plan - Clarkson Village Community Node and will:
        a) eliminate and/or consolidate vehicular access connections to and from Lakeshore Road West to reduce vehicle turning movements onto and direct traffic towards signalized intersections.
        b) facilitate the creation of a publicly accessible laneway system by granting public use easements over internal driveways to facilitate access to and from abutting lands to the east and west and to consolidate vehicular access connections to Lakeshore Road West.
        c) contribute a proportionate share towards the construction of a continuous centre median along Lakeshore Road West.
    - 14.2.3.7 A dedicated cycling route will be provided along Lakeshore Road West.
- Although the City of Mississauga Transportation Master Plan (2019) does not provide specific directions for the future of Lakeshore Road West or Clarkson Road North / South through the study area, the goals of this study align with that of the TMP in creating streets that are safe, accessible, integrated, connected, resilient and conducive to healthy communities.
- The City's Cycling Masterplan (2018) proposes a cycle track / separated bike lane along Lakeshore Road West and shared routes along Clarkson Road North / South, through the study area.

- The Clarkson Road North intersection was noted by the City's Cultural Districts Implementation Plan (2020) as an underused public space with potential for activation
- In the Lakeshore Connecting Communities (2019), Lakeshore Road and its intersections with Clarkson Road North and Clarkson Road South, various cross-section improvement alternatives were considered, and the selected preferred alternative is shown in **Exhibit 2-1**. This option provides continuous, dedicated, unidirectional cycling facilities and sidewalks on both sides and a landscaped buffer between cycling and pedestrian facilities for added safety, four (4) lanes with buses running in mixed traffic, as well as lay-by parking on the north side. Although the Official Plan designated ROW is 35 metres in this segment, a 30 metres preferred section has been provided as the 35 metres ROW may not be achieved by the time of implementation. To accommodate all the elements within the 30 metres, 1.9 metres sidewalks were recommended on both sides and a combined 2.0 metres utility and tree zone on the north side of Lakeshore Road was recommended.

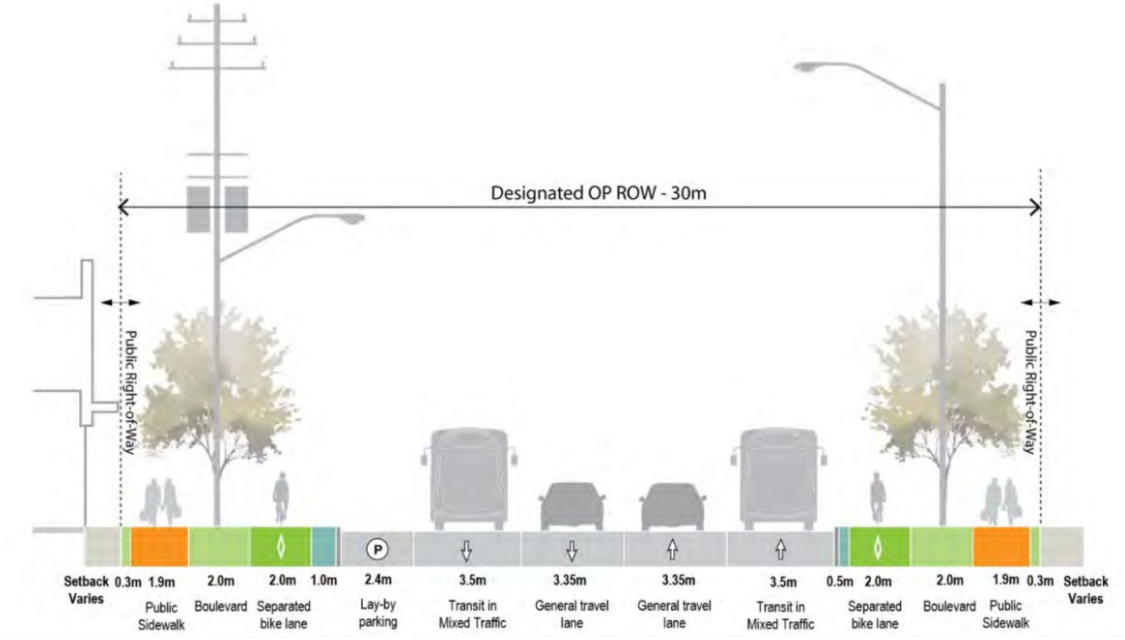

Exhibit 2-1 Lakeshore Connecting Communities TMP (2019) - Preferred ROW Alternative - Clarkson

- In the Clarkson Village Study (2010), cross-section recommendations included cycle tracks and a continuous raised median along Lakeshore Road West through the study area. This study however has been superseded by the Lakeshore Connecting Communities Study (2019).

The recommendations made in this study specifically facilitate the implementation of several previous studies, as listed above.

2.4 Planning Context Summary

The planning context illustrates the rationale for integrated land-use, access, and multi-modal transportation planning. In the case of the Clarkson Road intersections, the City has established policies and visions for the Community of Clarkson and the Lakeshore Road West facility through the study area. The planning principles and approaches applied within this Class EA framework are all consistent with the above provincial regional, and municipal plans and policies.

3 Existing Conditions

3.1 Overview

The intersections of Clarkson Road (North and South) with Lakeshore Road West are located in the heart of Clarkson Village. While Clarkson Road serves residential neighbourhoods, Lakeshore Road is ostensibly commercial in nature with consumer-oriented shops and strip malls, restaurants, and a gas station.

The public have raised concerns with respect to traffic operations in the area. These concerns are mainly with respect to queuing and turning issues between the closely spaced Clarkson Road North and South intersections, as well as vehicle movements to and from the commercial driveways that are interspersed in-between and adjacent the intersections. For instance, due to the close intersection spacing, the combined west- and eastbound left-turn lanes are only 52 metres long, resulting in queues spilling back into the through lanes during traffic peak hours. Occasional unsafe (and contrary to existing signing) left turns into the ESSO gas station on the north side of Lakeshore Road, or vehicles accessing the Benjamin Moore on the south side, can exacerbate the operational issues between the two intersections.

There have been several planning exercises for Lakeshore Road West at this location, including the Clarkson Village Study (2010), the Clarkson Village Urban Design Guidelines (2014) and more recently the Lakeshore Connecting Communities Transportation Master Plan (2019) (further detailed in **Section 2.3**), through which recommendations to improve transit, and enhance cycling and walking connections on Lakeshore Road West were identified. Active transportation facilities are a key issue for this area, particularly given the range of commercial establishments and the proximity of the Turtle Glen Park and the nearby Nine Creeks Trail. The Lakeshore Connecting Communities TMP recommended that the existing ‘sharrow’ markings be replaced with a raised cycling track. Both Lakeshore Road and Clarkson Road are designated as cycling routes in the Mississauga Cycling Master Plan (2018).

3.2 Study Area

The study area is illustrated in **Exhibit 3-1** and consists of:

- Clarkson Road North, from Lakeshore Road West to Fellen Place
- Clarkson Road South, from Lakeshore Road West to south of Pattison Crescent
- Lakeshore Road West, from approximately 60 metres west of Clarkson Road South to approximately 110 metres east of Clarkson Road North.

Exhibit 3-1 Study Area

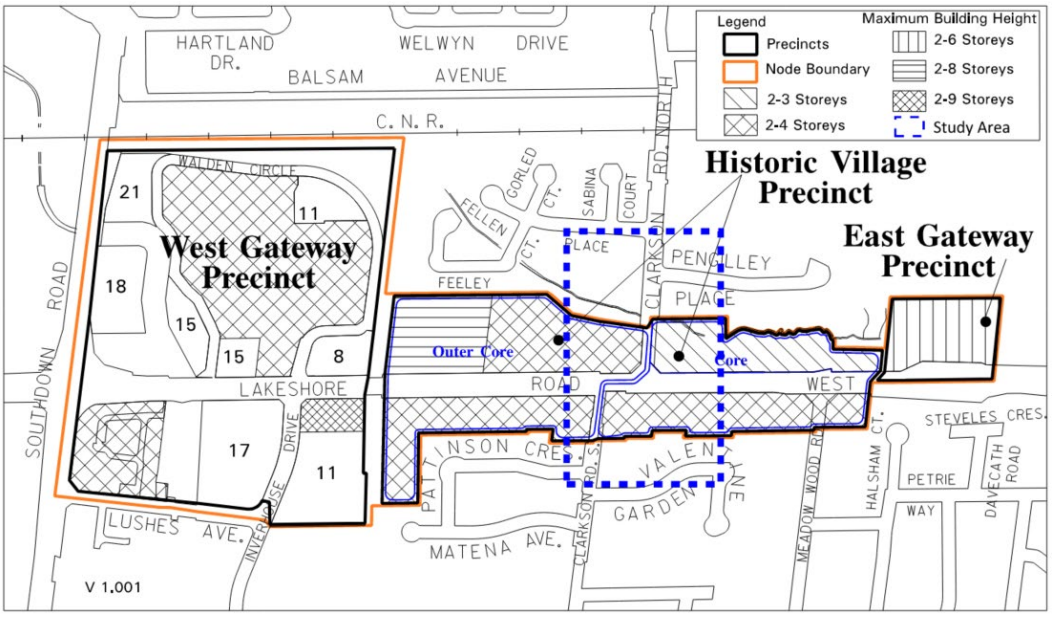

Exhibit 3-2 Study Area in reference to the Clarkson Village Community Node (City of Mississauga Official Plan)

The study area includes the Clarkson Village Community node, as identified by the City of Mississauga's Official Plan, and includes the nodes Historic Village precinct areas as shown in **Exhibit 3-2**. Official Plan policies identified for the node are further detailed in **Section 2**.

3.2.1 Clarkson Road North and South

Clarkson Road North and South are classified as major and minor collectors, respectively, by the City's Official Plan. The roadways have two-lane cross-sections (one per direction), with Clarkson Road North being fully urbanized and Clarkson Road South having a "semi-urban" cross-section. In terms of network connectivity, Clarkson Road North is of the greater importance as it is the only north-south connector across the CN railway between Southdown Road and Lorne Park Road, i.e., an almost 3km long stretch of Lakeshore Road West.

3.2.2 Lakeshore Road West

Lakeshore Road is a major arterial east-west roadway featuring a five-lane cross-section (four traffic lanes and a two-way left turn lane). The posted speed through the study area is 40 km/h and shared use cycling ("sharrow" markings) is provided in both directions in the outside lane. On-street parking along Lakeshore Road is limited but parking is generally provided in parking lots in-front or at the rear of shops, resulting in many driveways onto Lakeshore Road. The intersections of Clarkson Road North and

Clarkson Road South have a spacing of approximately 75 m, and commercial driveways form part of the signalized intersections, opposite both Clarkson Road approaches. In addition, there are commercial property access between the two intersections, including an ESSO gas station and a Benjamin Moore paint shop.

3.3 Traffic Operations

A Traffic Operations Report was completed as part of this study and is included in **Appendix A**. The traffic analysis assessed the existing operational performance of the two intersections and modelled their predicted future performance. Traffic analysis was also used in support of the improvement alternative assessment and evaluation. For the traffic analysis component of the study, the adjacent intersections to the study area were also included to understand the impacts of the Clarkson Road intersection improvements on the wider network. In total, four signalized intersections were considered as part of this analysis and illustrated in **Exhibit 3-3**. The study area intersections include:

- Lakeshore Road West & Clarkson Village Plaza entrance
- Lakeshore Road West & Clarkson Road South
- Lakeshore Road West & Clarkson Road North
- Lakeshore Road West & Meadow Wood Road

Exhibit 3-3: Traffic Analysis Study Area and Assessed Intersections

3.3.1 Existing Operations

An assessment of existing conditions identified that all intersections operate below capacity, with the highest demand present on the southbound through/left-turn movement at Lakeshore Road West & Clarkson Road North, during the AM peak hour.

The modelling identified queuing for the eastbound left-turn movement at the intersection of Lakeshore Road West & Clarkson Road North extending beyond the available storage length during AM and PM peak hours. A field investigation was also undertaken in support of the traffic operations analysis, and it was observed that the turning vehicles would clear the intersection at the end of every signal cycle. The eastbound left-turn queues were observed to operate better than reported in traffic modelling, presumably due to drivers being more aggressive when making the turn than the modelled behaviour. In addition, the eastbound through/right-turn movement also presents long queues during the PM peak hour. Like the eastbound left-turn movement, no queue spillback was observed and all through vehicles would clear the intersection at the end of every cycle length.

3.3.2 Future Operations under Existing Intersection Configurations

Traffic volumes were projected for the horizon years of 2031 and 2041 and were estimated by using macro-modelling (EMME) data provided by the City; as well as pre-pandemic (2019) turning movement counts within the study area. Operations at the intersections, under their existing configurations, were then assessed using these future volumes to determine their operational performance in these horizon years.

3.3.2.1 2031 Horizon Year

All intersections are expected to operate below capacity in 2031, except for the intersection of Lakeshore Road West and Clarkson Road North. This intersection is expected to operate above capacity during the PM peak hour, with congestion and delays attributed to the eastbound left-turn movement.

At the intersections, several movements are anticipated to have long queues / delay during the peak hours. Most notably:

- Lakeshore Road West and Clarkson Road South
    - Vehicles exiting the commercial property from the north (former Tim's Hortons) or accessing Lakeshore Road West from the south (Clarkson Road South) would expect relatively long delays.
- Lakeshore Road West and Clarkson Road North

- Queues for the eastbound left would start to exceed the available storage length in both the AM and PM peaks. The queues would then spillback into the adjacent Lakeshore Road West and Clarkson Road South intersection. Observing the traffic modelling, the eastbound left queue was queuing into the eastbound through lanes and so there is potential the actual queues in the future may be longer than reported.
- Vehicles exiting the commercial property from the south (commercial plaza) or accessing Lakeshore Road West from the north (Clarkson Road North) would expect relatively long delays

3.3.2.2 2041 Horizon Year

Like the 2031 horizon year, in 2041 all intersections are expected to operate below capacity apart from the intersection of Lakeshore Road West & Clarkson Road North, which is expected to operate above capacity during the PM peak hour (with most congestion and delays contributed to the eastbound left-turn movement).

The impacts as detailed in the 2031 horizon year will similarly be felt in 2041, however to a slightly greater extent. This includes the queuing of the eastbound left-turn at Clarkson Road North spilling back into the Clarkson Road South intersection, and interrupting operations on Lakeshore Road West.

Also as above, observing the traffic modelling, the eastbound left queue was queuing into the eastbound through lanes and so there is potential the actual queues in the future may be longer than reported. **Exhibit 3-4** provides a screenshot from the modelling, illustrating this condition.

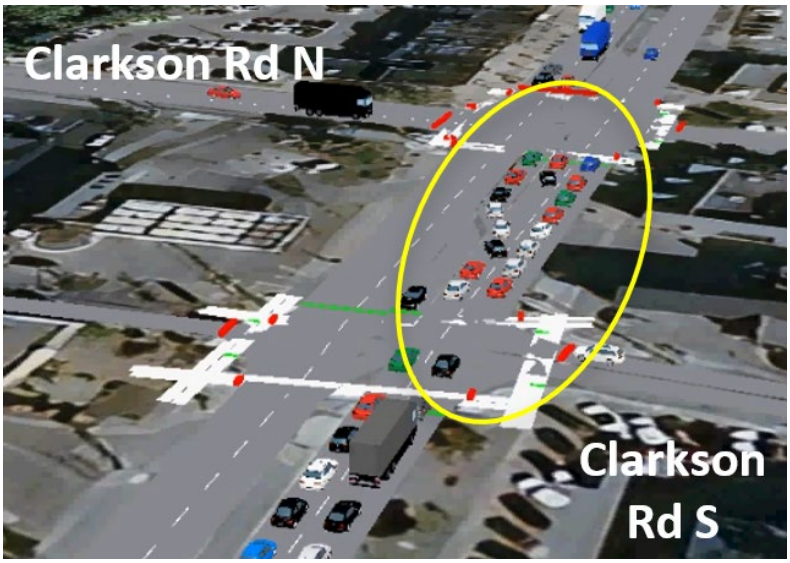

Exhibit 3-4 Traffic Modelling Screenshot – Eastbound Left-turn Queueing

3.3.3 Traffic Operations Summary

The traffic analysis did not identify any significant existing operational issues at the Clarkson Road North and South intersections, as the signals are currently optimized, and existing operations are considered acceptable. However, congestion will be experienced in the horizon years of 2031 and 2041, including the queuing of the eastbound left-turn movements, on Lakeshore Road West between the Clarkson Road intersections, spilling back into each intersection.

3.4 Active Transportation

In terms of Active Transportation, sidewalks are present within the study area, on the north and south side of Lakeshore Road West, east and west side of Clarkson Road North and Clarkson Road South, and on the east side of Meadow Wood Road. The sidewalks on the north side of Lakeshore Road West, both sides of Clarkson Road North and Clarkson Road South are located between 1.5 and 4.5 metres from the edge of the through lanes. While the sidewalks on the south side of Lakeshore Road West are located between 3.5 and 7 metres from the edge of the through lanes. The sidewalk on the east side of Meadow Wood Road is located approximately 3.5 metres from the edge of the through lane. All sidewalks within the study area are between 1.5 and 4.2 metres wide, which conforms to AODA requirements, and were generally in good condition.

No separate, dedicated bicycle facilities are provided on Lakeshore Road West within the study area, resulting in bicyclists having to share the road with vehicular traffic. The roadway has painted ‘sharrows’ and ‘Share the Road’ (side-by-side operation) signs. The curb lanes along Lakeshore Road West between the Clarkson Village Shopping Plaza entrance and 30 metres metres east of Clarkson Road North were measured to be between 4.0 and 4.3 metres, and lane widths east of Clarkson Road North were 3.4 metres. Based on OTM Book 18 – Cycling Facilities, the suggested minimum width for motorists to pass people riding bikes with a 1.0 metres gap (per the Highway Traffic Act) in a shared lane is 4.3 metres. The existing active transportation conditions, including a multi-model level of service analysis, are further detailed in the traffic safety performance review, included in **Appendix A.**

3.5 Transit

There are currently bus stops in the northeast and southwest quadrants of the Clarkson Road South intersection. In the northeast quadrant, only a stop is present and in the southwest quadrant, there is a stop and shelter. Lakeshore Road West is the primary route of Service #23.

3.6 Traffic Safety

A traffic safety performance review of the existing conditions was undertaken by this study and its report is included in **Appendix A**. The findings of the assessment assisted the project team in addressing the existing potential safety issues and incorporate safety improvements in the design of the improvement alternatives. The traffic safety performance review included collision analysis, field investigations and recommendations for improving safety.

3.6.1 Collision Analysis

The following are the main findings based on the review of collision history within the study area:

- A total of 24 collisions were reported in the study area between January 2014 and December 2019: 17 at the intersection of Lakeshore Road West & Clarkson Road North and seven at the intersection of Lakeshore Road West & Clarkson Road South. **Exhibit 3-5** illustrates a summary of the collision history at the intersections, including the accident severity.
- A total of five pedestrian collisions were reported within the study area, two of which on were the east crosswalk of Clarkson Road North, during rain/wet surface conditions.
- For angle collisions at Clarkson Road North, all ‘at-fault’ drivers were reported as ‘disobeyed traffic control’ and were travelling eastbound on Lakeshore Road West.
- Three out of four (75%) turning movement collisions involved a southbound left-turning vehicle at Clarkson Road North.
- The intersection of Clarkson Road South presents a Potential for Safety Improvement (PSI) of zero, meaning that their safety performance is equivalent to or better than similar sites.
- The intersection of Clarkson Road North presents a PSI of 7.0 which means that there is opportunity for improvement compared to similar sites.

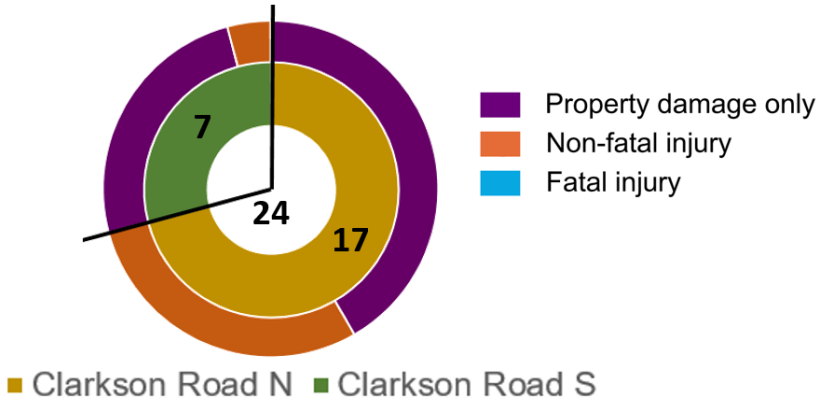

Exhibit 3-5 Summary of Collision History at the Intersections

3.6.2 Field Investigation

CIMA+ undertook a daytime field investigation on Thursday, October 1st, 2020, and a nighttime investigation on Saturday, October 17th, 2020, to identify any potential safety and operational issues in the study area. During the field investigation, the study team observed the conformance, consistency and conditions of site geometrics, traffic control devices, physical characteristics and roadside safety and road user interface with the study area.

The findings from the field investigation and initial recommendations to address them are summarized in **Table 3-1**. The recommendations are based on the existing configuration of the Lakeshore West and Clarkson Road intersections and the recommendations have been either been incorporated, adapted, or negated as part of the proposed improvements. Improvements to traffic safety are further detailed in **Appendix A**.

Table 3-1 Summary of Findings and Initial Recommendations

Field Investigation Finding	Initial Recommendation
Excessive horizontal offset of ground-mounted signs	Relocate ground-mounted signs along Lakeshore Road West and Clarkson Road North to a horizontal offset between 30 centimetres and 2 metres from the curb (reinstall each sign on individual posts).
Faded crosswalk pavement markings	Repaint faded crosswalk markings.

Field Investigation Finding	Initial Recommendation
Utility/illumination poles within the clear zone	Consider relocating the hydro poles on the east side of Clarkson Road South outside the clear zone. Alternatively, consider installing barrier curb to provide additional protection at low speeds.
Obstacles aligned with crosswalks	Relocate obstacles aligned with the NE quadrant crosswalk at Clarkson Road South, and at the SE quadrant at Clarkson Road North. Alternatively, consider realigning crosswalks.
Tactile plates extending to the stop bar	Replace tactile plates to match the width of the crosswalk on the NE quadrant at Clarkson Road South
Secondary traffic signal head not visible in advance of intersection	If feasible, consider relocating the secondary traffic signal head for the northbound direction at Clarkson Road South to be visible within 110 metres in advance of the intersection.
Discrepancy on vehicular clearance intervals on the east-west direction at Clarkson Road North and Clarkson Road South	Shorten the amber interval at the specified intersection from 4 to 3 seconds. Increase the all-red interval to 2.4 seconds and 3.2 seconds for Clarkson South and Clarkson North, respectively.
Non-AODA pushbuttons	Upgrade all pushbuttons to meet AODA requirements.
Potential conflict at gas station exit onto Lakeshore Road West	Re-design exit-only access at gas station to be right-out only, along with a left-turn movement prohibition.
Potential conflict at ‘inner’ crosswalks on Lakeshore Road West	Consider removing the ‘inner’ pedestrian crosswalks at Clarkson Road North and Clarkson Road South.
Pedestrian signal head located 6 metres from crosswalk	Relocate the pedestrian signal head on the NW quadrant of Lakeshore Road West & Meadow Wood Road, in order for the lateral distance between the crosswalk and the pedestrian signal head to be within 1.5 metres.

Field Investigation Finding	Initial Recommendation
Absence of dedicated bicycle facilities	Consider adding dedicated bike lanes on Burnhamthorpe Road West (separate facility such as separate bicycle lanes, buffered paved shoulders or in-boulevard active transportation pathway). Recommendation to be addressed as part of the Multi-Modal Review.
No reflective signal backboards	Consider adding 3-inch retroreflective sheeting to signal backboards.

3.7 Socio-Economic Environment

3.7.1 Land Use

The intersections are located within the urban mixed-use area in the City of Mississauga. Land use in the surrounding area is a mixture of Low Density Residential and mixed use, shown in **Exhibit 3-6**.

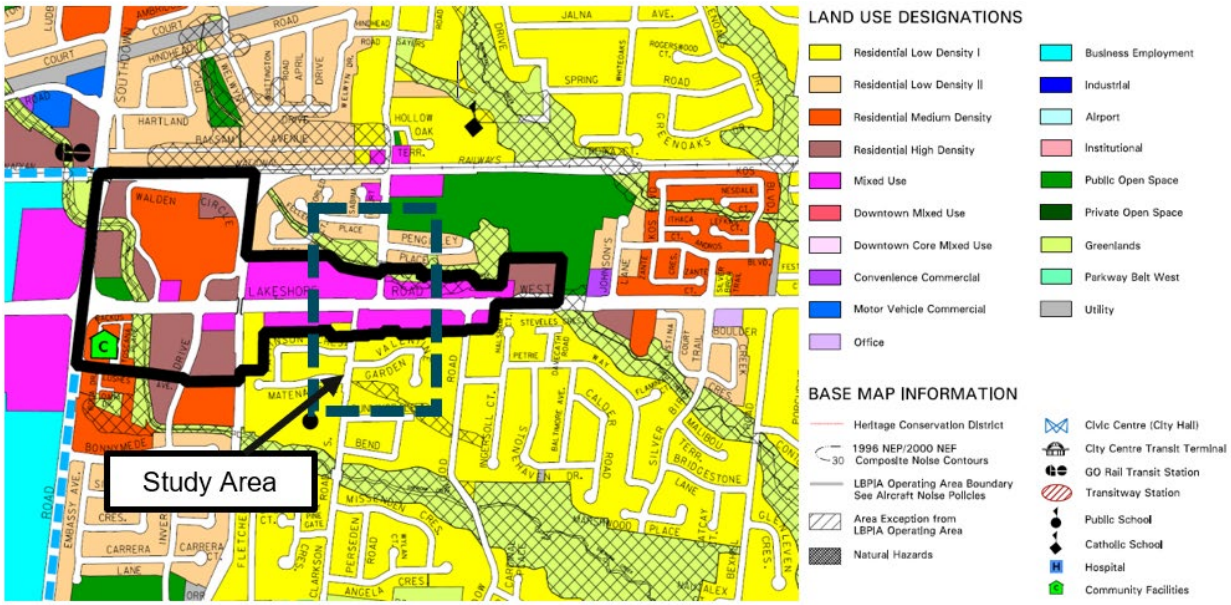

Exhibit 3-6 Surrounding Land Use (City of Mississauga Official Plan)

At the time of this report, there are currently no proposed developments in the immediate vicinity of the intersections. There is one application in process within the study area:

- The properties 1102-1125 Clarkson Road North are under development for 136 new units. The land use was recently (2016) modified to accommodate additional permitted use of horizontal dwellings.

3.8 Cultural Heritage

3.8.1 Built Cultural Heritage

A Cultural Heritage Resource Assessment (CHRA) was conducted as part of the study and is included in **Appendix B**. The assessment was undertaken by Archaeological Services Inc. (ASI). The purpose of the CHRA is to describe the existing conditions of the study area and present an inventory of above-ground built heritage resources and cultural heritage landscapes, assess potential impacts of the proposed undertaking, and propose appropriate mitigation measures and recommendations for minimizing and/or avoiding negative impacts on identified cultural heritage resources.

Key findings are summarized as follows:

- A total of seven cultural heritage resources were identified within and/or adjacent to the study area. The seven properties are detailed in **Table 3-2** and their locations are detailed in **Exhibit 3-7.**
- Five cultural heritage resources are listed on the Heritage Register for Mississauga (2020), one of these resources is additionally included on the Ontario Heritage Trust's Places of Worship Inventory, and two properties were identified during the field review.
- Identified cultural heritage resources are historically, architecturally, and contextually associated with land use patterns in the Village of Clarkson and more specifically representative of the early settlement of the intersections of Clarkson Road North and Clarkson Road South with Lakeshore Road West, as well as twentieth century development in the area.

Table 3-2 Summary of Cultural Heritage Resources (CHR)

CHR #	Location / Name	Heritage Recognition	Description
CHR 1	1084 Feeley Court (Clarkson-Barnett House)	Listed on the Heritage Register for Mississauga	Nineteenth-century residence
CHR 2	1764 Lakeshore Road West (Carman Methodist Church)	Listed on the Heritage Register for Mississauga. Included in Ontario Heritage Trust's Places of Worship Inventory	Former nineteenth-century church converted to commercial use
CHR 3	924 Clarkson Road South	Listed on the Heritage Register for Mississauga	Early twentieth-century Edwardian Classical style residence
CHR 4	972 Clarkson Road South (Pattinson House)	Listed on the Heritage Register for Mississauga	Early twentieth-century red brick residence
CHR 5	1715 Sunningdale Bend	Listed on the Heritage Register for Mississauga	Early twentieth-century residence
CHR 6	1117 Clarkson Road North	Identified during historical map and field review	Nineteenth- or early twentieth century residence
CHR 7	1741-1745 Lakeshore Road West	Identified during historical map and field review	Early- to mid-twentieth-century commercial bank

The potential impacts of the proposed undertaking and mitigation measures are discussed in **Section 7** of this report.

Exhibit 3-7 Cultural Heritage Resource Mapping

3.8.2 Archaeology

A Stage 1 Archaeological Assessment was conducted as part of the study and is included in **Appendix C**. The assessment was carried out by Archaeological Services Inc. (ASI) in accordance with the *Ontario Heritage Act* (1990, as amended in 2018) and the 2011 *Standards and Guidelines for Consultant Archaeologists*, administered by the Ministry of Tourism, Culture and Sport (MTCS). The purpose of the Stage 1 Archaeological Assessment is to:

- Provide information concerning the geography, history, and current land conditions of the study area
- Determine the presence of known archaeological sites within the study area
- Present strategies to mitigate project impacts to such sites
- Evaluate in detail the archaeological potential of the study area
- Recommend appropriate strategies for future archaeological assessment if some or all the study area is found to have archaeological potential

The Stage 1 background research and property inspection determined that no previously registered archaeological sites are located within one kilometre of the Study Area. The property inspection determined that part of the Study Area exhibits archaeological potential and will require Stage 2 assessment prior to any proposed impacts on these lands. The remainder of the Study Area does not exhibit archaeological potential within the existing road right-of-ways (ROWs) and twentieth-century commercial and residential development. The results of the Stage 1 assessment are illustrated in **Exhibit 3-8**.

3.9 Natural Environment Assessment

A Natural Environment Assessment (NEA) was completed by CIMA+ and is found in **Appendix D**. The purpose of the NEA is to assess the existing natural heritage features, identify any potentially significant environmental features and functions, and determine the potential impacts of the proposed undertaking on the existing natural environment. This report contains recommendations and measures to maintain, mitigate or enhance the natural heritage features in relation to the proposed undertaking. Background information was augmented by field review.

Exhibit 3-8 Results of the Stage 1 Archeological Assessment

Key findings of the NEA regarding existing conditions are summarized as follows:

- Study area is situated within Ecodistrict 7E (Lake Erie-Lake Ontario)
- Six vegetation communities are present
- The only aquatic feature present within the Study Area is Turtle Creek
- Although no fish were observed during the survey, based on review of background information, Turtle Creek provides fish habitat
- The Department of Fisheries and Oceans' (DFO) aquatic species at risk (ASAR) map indicated no known ASAR or associated critical habitat within a 1 km buffer of the Study Area
- Turtle Creek and the surrounding wooded area are designated as a Significant Natural Area, and Natural Green Space and Natural Hazards as per Schedule 3 – Natural System of the Mississauga Official Plan (2021)
- No Regionally or Municipally designated Significant Wetlands, Areas of Natural and Scientific Interest (Life or Earth Science ANSI) present
- Wildlife habitat observed within the Study Area was typical of an urban setting and based on field observation common species are expected to be present within these habitat features
- No SAR were identified within the Study Area during the 2020 site visit, however, the riparian area along Turtle Creek provides suitable habitat for at risk species

3.10 Tree Inventory

A Tree Inventory was completed by CIMA+ in October 2020 and is found in **Appendix E**. The purpose of the Tree Inventory is to review the trees potentially affected by the proposed intersection improvements in the study area. A total of 100 trees were surveyed withing the study area and the trees were numbered, identified, measured, and assessed for condition. The tree inventory table containing this information and locations drawings of the numbered trees surveyed are included in **Appendix E**.

3.11 Stormwater Management and Drainage

Due to the age of the existing infrastructure within the study area, existing drainage information and data is limited. From information obtained, it is deduced that existing minor system runoff within the study area is collected through existing storm sewers from high points approximately 50 metres west of Clarkson Road South, 50 metres south of Lakeshore Road West and 75 metres east of Clarkson Road North to a low point at Clarkson Road North and Lakeshore Road West intersection. From the low

point, the storm sewer is directed 85 metres northerly along Clarkson Road North to the culvert crossing Turtle Creek. Major system runoff within the study area drains overland toward a road low point following the same flow paths as the minor system drainage, which ultimately drains to Turtle Creek by the existing roadways and storm sewers.

A high-level review of the existing storm sewer network and its impacts due to the proposed improvements, is included in **Appendix F**. It is noted that the existing drainage system within the study area will be further reviewed in detail as part of the ongoing Lakeshore Road West Complete Streets study, also undertaken by the City of Mississauga.

3.11.1 Phase I Environmental Site Assessment

A Phase I Environmental Site Assessment (ESA) was conducted to determine the likelihood that one or more contaminants have affected any land or water on, in or under the study area. The Phase I ESA was completed by CIMA+, in general accordance with the *Phase I Environmental Site Assessment, Canadian Standards Association (CSA) Standard Z768-01 (2001, reaffirmed 2016)*. A site reconnaissance was conducted in October 2020.

The Phase I ESA identified the following potential issues of environmental concern in the study area:

- Potential for fill of unknown quality associated with any proposed roadway construction
- The property located at 1765 Lakeshore Road West, on the northwest corner of the Clarkson Road North intersection, is an Esso Gas and Service station with a convenience store and a car wash. The property was identified as a potential environmental concern for off-site contamination in the sidewalk or roadway related to site activities as a gas station and the car wash (oil/water separator).
- A former Petro-Canada station (currently an RBC) located at 1730 Lakeshore Road West, on the southeast corner of the intersection, is a potential area of concern for off-site contamination in the sidewalk or roadway related to historical site activities from the former gas station (three tanks were on the property, as identified in a previous ERIS report) and from a spill reported to have occurred in 1992 (there is limited information in the ERIS report). Confirmed soil contamination in a borehole was previously identified.
- There have been ongoing environmental investigations completed at 1101-1115 Clarkson Road North since approximately 2014 by JFM Environmental. A Phase Two ESA was completed, and a Record of Side Condition (RSC) filed with the MECP in 2020. A remedial excavation was completed around the property that was of concern. It was reported that all verification soil samples analyzed were less than the applicable Table 3 SCS. Following the remedial

activities completed in 2018, it was concluded that the Site meets the applicable Table 3 SCS for residential use. This property is located approximately 350 metres north of the intersection. Based on the distance from the intersection and the reported direction of groundwater flow, the activities at this property are of low environmental concern in relation to this study.

- Site activities at The Mississauga Auto Centre (1800 Lakeshore Road West), located approximately 160 metres southwest of the intersection, pose an environmental concern for potential off-site contamination in the sidewalk or roadway.

The complete Phase I ESA is provided in **Appendix G**.

3.12 Municipal Services and Utilities

The following municipal services and utilities are located within the study area:

- Municipal Services:
  - Watermain
  - Sanitary sewers
  - Storm sewers
- Illumination
- Underground gas line
- Hydro (Alectra)
  - Overhead hydro
  - Hydro pole with street lighting
- Telecommunications (Bell and Rogers)
  - Overhead coaxial cable
  - Overhead fiber optic cable

The improvements proposed as part of this study may conflict with the utility infrastructure in the study area. Potential utility conflicts are identified in **Section 6.10** and will be subject to further review in Detailed Design.

3.13 Problem and Opportunity

The intersections of Lakeshore Road West and Clarkson Road North / Clarkson Road South are offset by approximately 75 m, resulting in two closely spaced signalized intersections

Concerns have been raised by the public regarding the operation of the two closely spaced intersections and interspersed commercial entrances

There is an opportunity to review the Lakeshore Road West and Clarkson Road North / Clarkson Road South intersections and improve the operations, safety, and mobility for all road users at the intersection.

4 Alternative Solutions

4.1 Development of Solutions

Four improvement approaches were considered to help develop the potential alternative solutions for the intersections, and these were presented at the first Public Information Centre (PIC) held on December 03, 2020. The four approaches are illustrated in **Exhibit** 4-1 and include realigning Clarkson Road North, reconfiguring the intersections into a roundabout, installing a raised centre median between the two intersections, and prohibiting left-turn movements at the intersections.

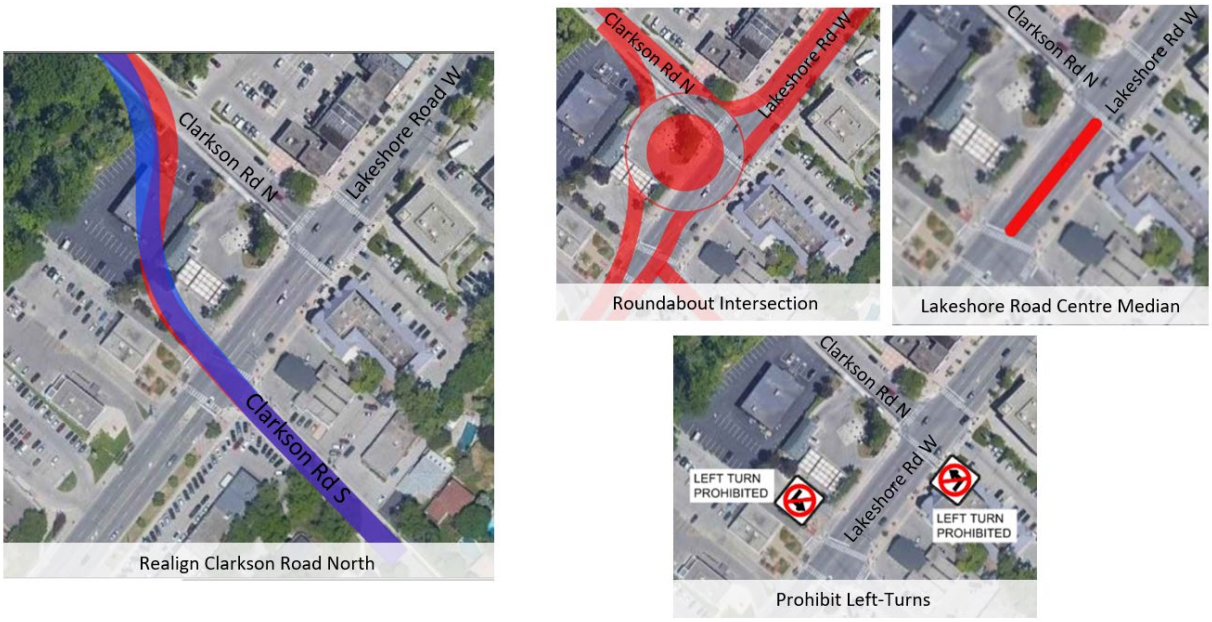

Exhibit 4-1 Improvement Approaches, as Presented at PIC #1

From public responses on the approaches received at the PIC #1: realign Clarkson Road North received the most support, while prohibit left-turn received the least support. Views on both the roundabout and centre median approaches were mostly unsupportive.

4.1.1 Roundabout Screening

To fully understand whether a roundabout design could be implemented instead of the two separate intersections, CIMA+ developed and assessed three potential roundabout designs. The assessment identified a roundabout design that was geometrically and operationally feasible and this is presented in **Exhibit 4-2** The roundabout is a four-leg elliptical roundabout that incorporates both Clarkson Road intersections. The roundabout is angled such that the southwest corner overlays the southeast corner of

the Clarkson Road South intersection, directly impacting the Benjamin Moore shop (listed heritage building). It would also require acquisition of the Esso gas station, real estate office and Tim Hortons, and impact the frontage of the Scotiabank farther west.

As the Benjamin Moore (listed heritage building) is considered a critical constraint and all efforts should be made to avoid impacts, it was recommended that a roundabout not be further considered by this study. A technical memorandum detailing the complete roundabout development and assessment is included in **Appendix H**.

Exhibit 4-2 Potential Roundabout Design

4.2 Description of Alternative Solutions

By incorporating elements of the remaining improvement approaches, a range of alternative solutions were developed to address the known operational and safety issues at the Lakeshore Road West and Clarkson Road North/South intersections. The

following sections summaries the alternative solutions considered, including their key advantages and disadvantages. The detailed assessment and evaluation table of the alternative solutions is included in **Appendix I**. Four alternative solutions were presented at Public Information Centre (PIC) #2, held November 10, 2021.

4.2.1 Do Nothing

For this EA study, a “Do Nothing” alternative was carried through the process for comparison purposes. The alternative maintains the existing conditions at the intersections, with ongoing traffic monitoring for further opportunities for optimization.

4.2.2 Solution 1: Realign Clarkson Road

Solution 1 includes the realignment of Clarkson Road North, from its culvert on Turtle Creek to then intersect Lakeshore Road West at the location of the Clarkson Road South intersection. The result is a single four-leg intersection rather than the two existing three-legged intersections on Lakeshore Road West: thus, solving the fundamental issue of the existing close intersection spacing. Solution 1 is illustrated in **Exhibit 4-3**. The now dis-used existing Clarkson Road north road, immediately north of Lakeshore Road West, is closed.

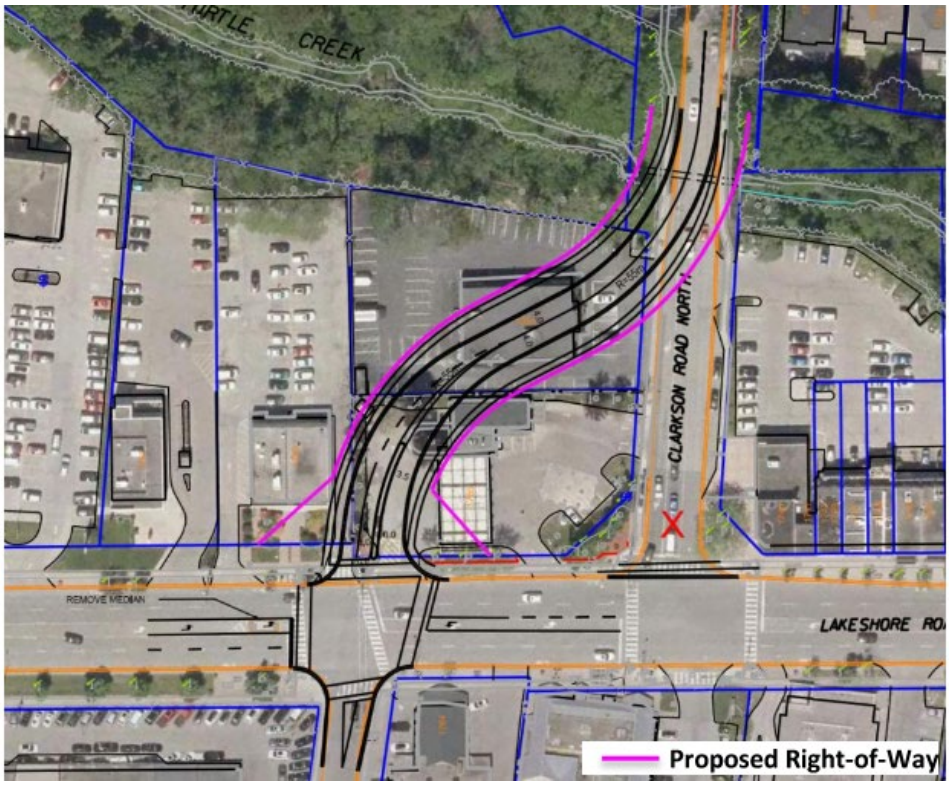

Exhibit 4-3 Realign Clarkson Road Design

Key Advantages:

- Most desired from the design perspective, as it eliminates the offset intersections

Key Disadvantages:

- Most property impacts
- Most costly
- Access impacts for businesses on Lakeshore Road West
- Likely need for soil remediation (Esso gas station property)

4.2.3 Solution 2: Lakeshore Road Centre Median

Solution 2, as shown in **Exhibit 4-4**, includes the installation of a raised median between the Clarkson Road North and South intersections, and a slight increase in pavement width to accommodate side-by-side left-turn lanes in between the intersections. As noted in **Section 3.3**, future operational issues at the intersections stem from the left-turn queues extending past existing storage lengths and either spilling back into the adjacent intersection or queuing into the through lanes, blocking traffic. Solution 2 mitigates this by providing the maximum storage length for the left-turn lanes between the two intersections. The raised median further aids in improving operations by physically prohibiting left-turning movements from the commercial accesses between the intersections.

Key Advantages:

- Lesser property impacts
- Lesser construction
- Retains full movements at existing intersections
- Lesser cost

Key Disadvantages:

- Access impacts to businesses along Lakeshore Road West
- Likely need for soil remediation (Esso gas station property)

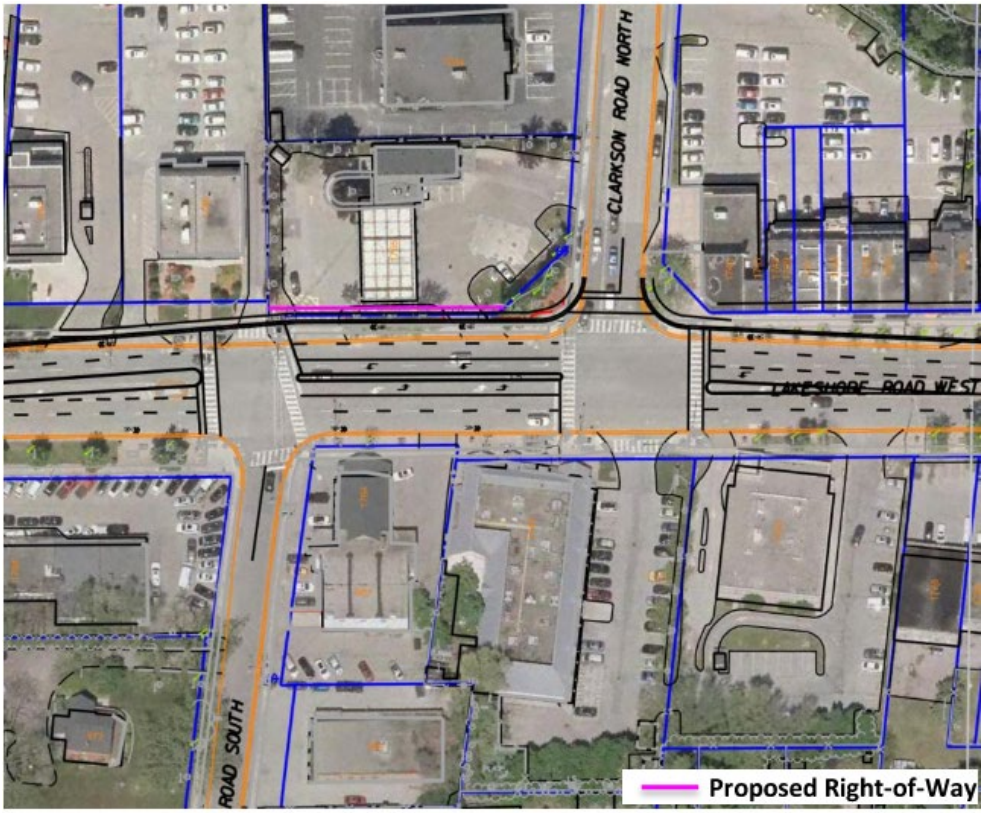

Exhibit 4-4 Lakeshore Road Centre Median Design

4.2.4 Solution 3: Centre Median and Eastbound Left-turn via "Laneway"

Solution 3 builds on centre median approach and the approach of using "laneways", as suggested by the City's Official Plan (as mentioned in **Section 2**). Laneways are smaller-width roadways used to facilitate access to and from lands abutting a main corridor, in this case Lakeshore Road West, and to consolidate vehicular access connections. The use of the laneway is illustrated in **Exhibit 4-5** and as it provides another connection from Lakeshore Road West to Clarkson Road North, it enables the eastbound left-turn to be prohibited at the Clarkson Road North intersection, with small impacts to traffic patterns. The prohibition of the eastbound left turn at Clarkson Road North enables the westbound left-turn lane to be extended to the maximum length between the intersections, without the need for any increase in pavement width (as required in Solution 2).

Key Advantages:

- Aligned with City Official Plan and Access Management plan and use of laneways

Key Disadvantages:

- Property / business impacts
- Moderate cost
- Access impacts to businesses along Lakeshore Road West
- Likely need for soil remediation (Esso gas station property)

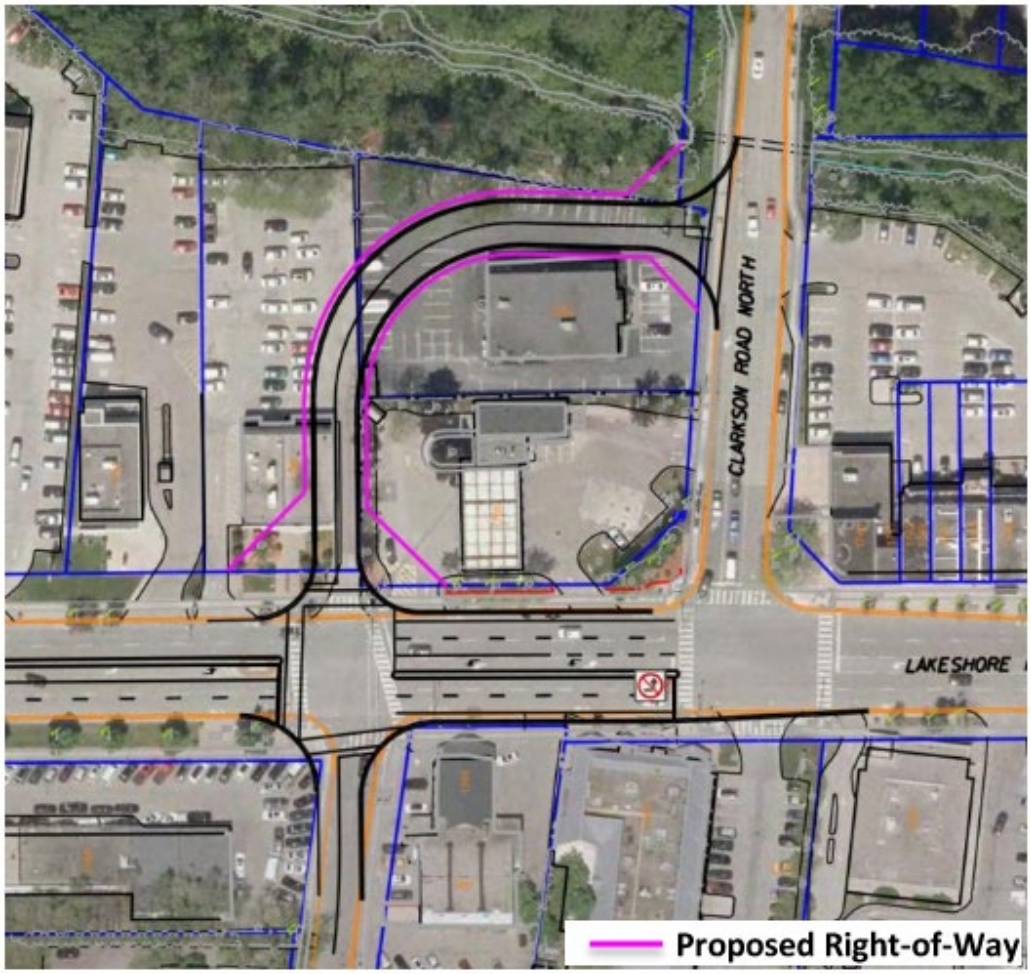

Exhibit 4-5 Centre Median and Eastbound left-turn via "Laneway" Design

4.3 Assessment and Evaluation of Alternative Solutions

The following sections outline the assessment and evaluation undertaken for the identified alternative solutions. Detailed evaluation tables for each solution are included in **Appendix I**.

4.3.1 Evaluation Criteria

The alternatives were assessed using a range of criteria developed to guide the assessment process, so that transportation planning, technical and environmental conditions are considered in the final recommended solution. The evaluation criteria included the following six factor areas.

- Socio-Economic Environment
  - Impacts to property
  - Impacts to existing businesses
  - Impacts to neighbourhoods
  - Noise and vibration
  - Air quality
  - Streetscape Amenities and Urban Design Improvement Opportunities
- Cultural Environment
  - Impacts to Archaeological Resources
  - Impacts to Cultural Heritage Features
  - Opportunity to improve community cultural experience
- Natural Environment
  - Impacts to environmentally sensitive areas
  - Impacts to wildlife, vegetation, aquatic species and habitat and species at risk
  - Drainage, stormwater management and erosion control
  - Climate change impacts and ability to reduce green house gas emissions
- Transportation
  - Safety for all users
  - Congestion and future travel demand
  - Pedestrian and cycling experience
  - Existing and planned transit services
  - Impacts to commercial accesses
  - Network connectivity
  - Commercial goods movement
- Engineering, Cost, Construction Complexity, and Implementation
  - Ease of construction including staging and traffic disruption
  - Potential utility relocations
  - Construction costs

  - Potential for soil and water remediation
  - Operation and maintenance costs
- City Building
  - Consistency with City's Strategic
  - Plans and Policies
  - Accommodates existing and planned development
  - Impacts to community facilities (e.g., parks and trails)

4.3.2 Assessment and Evaluation

The alternative solutions were assessed and evaluated, with each factor area ranked least preferred to preferred under each solution. A summary of the assessment of alternative solutions is presented in **Table 4-1** and detailed below.

- **Socio-Economic Environment: Solution 2** was preferred from the socio-economic perspective as while it has property impacts to an adjacent business, has a lesser impact to the surrounding neighbourhood and the least impact to business/residential access and accessibility within the area.
- **Cultural Environment: Solution 1** was preferred from a cultural environmental perspective as it creates the most space for vibrant public realm facilities, while also avoiding impacts to cultural heritage resources.
- **Natural Environment: Solution 2** was preferred from the Natural Environment perspective as it has no impact to Turtle Creek or its associated wooded area, will not have large impacts to surrounding stormwater and drainage area, and maintain the existing potential of streetscaping/planting on Lakeshore Road West.
- **Engineering, Construction Complexity and Implementation: Solution 2** was preferred from the Engineering, Construction Complexity and Implementation perspective as it is easier to construct and avoids impacting the Gas Station and any potentially hazardous soils the least.
- **Cost (includes estimated property costs): Solution 2** was preferred from a Cost perspective as it will cost the least.
- **City Building: Solution 3** was preferred from the City Building Perspective as it follows the City's access management plan for the community of Clarkson, the land severance and laneway would help promote future development and the laneway helps provide a further local connection to areas of public interest.

Table 4-1 Assessment and Evaluation of Alternative Solutions Summary

Criteria Factor Area	Do Nothing	Solution 1: Realigned Clarkson Road North	Solution 2: Centre Median and Widen Lakeshore Road West	Solution 3: Centre Median and Eastbound Left-turn via 'Laneway'
Socio-Economic Environment	Least Preferred	Less Preferred	**More Preferred**	No Preference
Cultural Environment	Least Preferred	**More Preferred**	Less Preferred	No Preference
Natural Environment	Least Preferred	No Preference	**More Preferred**	Less Preferred
Transportation	Least Preferred	**Most Preferred**	More Preferred	More Preferred
Engineering, Construction Complexity and Implementation	Least Preferred	Less Preferred	**More Preferred**	No Preference
Cost (includes estimated property costs)	Most Preferred	Least Preferred	**Most Preferred**	Less Preferred
City Building	Least Preferred	More Preferred	No Preference	**Most Preferred**
Overall Recommendation			**Most Preferred**	

The initial assessment identified Solution 2 as the preliminary preferred alternative (which was presented at PIC #2), as it improves safety and operations at the intersection with minimal property impacts and much lower construction costs, compared with the other solutions.

However, upon further review and consultation with the public and key stakeholders, the preferred solution was further refined to include a phased approach of Solution 2 and Solution 1. Rationale is further detailed in **Section 4.3.4**.

4.3.3 Screened Solution: Prohibit Left-turns at Clarkson Road South

A fourth solution was developed, progressed to the assessment of alternative solutions, and previously presented to key project stakeholders. This solution included a raised median from Clarkson Road North, continuing westerly and through the Clarkson Road South intersection. This resulted in prohibiting all left-turns at Clarkson Road South and enforcing right-in / right-out for Clarkson Road South and all commercial accesses on Lakeshore Road West, west of Clarkson Road North.

However, this solution was screened out shortly prior to the completion of the evaluation, as the detailed assessment identified that it was too impactful to local community services (including School Bus routes and Emergency Service routes/response times) and local accessibility.

4.3.4 Refinements to the Preferred Solution

Following PIC #2, the preliminary preferred solution (Solution 2) was further refined to be included with Solution 1 as a phased approach for improvements at the intersections. This recommendation was presented at PIC #3 and due to the following rationale:

- Solution 2 is desirable compared to the other solutions; however, it only mitigates and does not solve the fundamental issue of the close intersection spacing.
- Solution 1 solves the fundamental issue; however, its significant cost and impacts to existing businesses is a significant disadvantage
- Public feedback at PIC #2 highlighted the desire for a community design, with a focus on all modes of transportation and an emphasis on Clarkson Village.
- The City of Mississauga sees an opportunity to fulfill current needs while still planning for a longer-term vision, by recommending the two solutions as the ‘Interim Preferred Solution’ (Solution 2) and ‘Preferred Solution’ (Solution 1).

- The significant property and cost impacts of Solution 1 mean that the timing of the improvements will be subject to future redevelopment and/or future available funding. Solution 2 will then be able to address the operational and safety needs of the intersections, until the time when Solution 1 could be implemented.

5 Consultation

5.1 Key Points of Contact

External agencies, utilities, emergency service providers, residents, business owners, and Indigenous communities were contacted directly at key milestones to provide input to the study and feedback on the decision-making process. The key points of contact are listed in **Table 5-1**.

At the outset of the study, a direct mailing list of residents and businesses within a 300-metre radius of the study area, relevant agencies, elected officials, and utilities was assembled. The mailing list was updated throughout the study based on engagement and feedback received.

Members of the public were made aware of the study through notification in the local newspaper (Mississauga News) and were invited to contact the project team to join the project mailing list. Members of the public requesting to be on the mailing list received direct notification of subsequent study milestones.

A dedicated project webpage was established through the City of Mississauga's website at the beginning of the study. Project updates were posted on the webpage and communicated via the City's social media channels.

Website: www.mississauga.ca/lakeshore-clarkson

Twitter: @citymississauga

Facebook: facebook.com/citymississauga

Three (3) Public Information Centres (PICs) were held throughout the study. The PIC materials (e.g., Notices, display material, virtual PIC portal) were posted on the study webpage. All Notices and study materials included the City Project Manager's contact information to facilitate direct contact from interested members of the public.

Table 5-1: Key Points of Contact

Date	Notification	Purpose
Notice of Study Commencement / Public Information Centre #1 **November 2020**	• Notice was first issued to property owners / mailing list and newspaper adverts – November 19, 2020 • External Agencies and Stakeholders – November 25, 2020 • Streamlined EA Project Information Form sent to MECP – November 25, 2020	To introduce and invite participation in the study and request preliminary comments and invite interested parties to participate in the first virtual Public Information Centre held online from December 3 to December 31, 2020
Public Information Centre #2 **November 2021**	• Notice sent to property owners / mailing list – November 1, 2021 • Newspaper – November 4 / 11, 2021 • External Agencies and Stakeholders – November 10, 2021 • Indigenous Communities – November 10, 2021	To notify and invite interested parties to view and participate in the second virtual Public Information Centre held online from December 16, 2021, to January 21, 2022.
Public Information Centre #3 **April 2022**	• Notice sent to property owners / mailing list – April 11, 2022 • Newspaper – April 14 / 21, 2022 • External Agencies and Stakeholders – April 14, 2022 • Indigenous Communities – April 14, 2022	To notify and invite interested parties to view and participate in the third virtual Public Information Centre held online on April 27, 2022.

Date	Notification	Purpose
Notice of Study Completion **October 13th, 2022**	• Notice sent to property owners / mailing list –October 13th, 2022 • Newspaper – October 13th and 20th, 2022 • External Agencies and Stakeholders – October 13th, 2022 • Indigenous Communities – October 13th, 2022	To announce completion of the Class EA study and notify interested parties of the 45-calendar day review period of the Project File.

A copy of the Notice of Commencement and Public Information Centre #1 is saved in **Appendix J** and **K,** respectively. Notice of Public Information Centre #2 and #3 and other Public Information Centre materials are saved in **Appendix L** and **M**, respectively.

5.2 Public Information Centre #1

The first Public Information Centre (PIC #1) was held virtually on the study webpage between December 3 and 31, 2020. The purpose of the PIC was to introduce the project to the community and gather initial feedback on problems and opportunities and potential solutions identified for the study.

The presentation information highlighted the important elements including the official plan right-of-way and the lane configuration and intersection type. The presentation also defined the constraints in the area with property (gas station, CIBC, heritage properties) as well as the Turtle Creek located north of Lakeshore Road West.

The online engagement portal enabled participants to learn about the project, provide input on the key issues and concerns along the study corridor and share ideas with the project team. The PIC also included a crowd map that allowed participants to “pin” comments to a map of the study area. A total of 404 visitors attended the virtual PIC throughout the month and 76 participants indicated 38 crow map locations.

The PIC presented four potential solutions:

- Solution 1: Realign Clarkson Road North
- Solution 2: Roundabout Intersection at Clarkson Road North / Lakeshore Road West
- Solution 3: Centre Median on Lakeshore Road West

- Solution 4: Prohibit Left Turns on Lakeshore Road West at Clarkson Road North / South

Participants were asked to provide their feedback on each solution. Potential Solution 1 was the most liked option with 74 percent of participants indicating they like the idea of a realignment of Clarkson Road North. This was followed by Solution 3 at 31 percent, Solution 2 at 27 percent and Solution 4 at 10 percent. Concerns have been raised by residents regarding the operation of the two closely spaced intersections and interspersed commercial entrances.

A summary of the introductory PIC #1 and public feedback received is provided in **Appendix K** and **Appendix N**.

5.3 Public Information Centre #2

The second Public Information Centres (PIC #2) for the Lakeshore Road and Clarkson Road Intersection Improvements EA was held online between November 10 and December 10, 2021 and included a live Q&A meeting on November 24, 2021. The purpose of the second PIC was to update the public and other stakeholders on the work completed to date since the introductory PIC held in December 2020 and provide an opportunity for participants to share feedback on the evaluation of alternative solutions, evaluation criteria, the preliminary preferred solution, and next steps for the project.

The PIC included a project portal, downloadable display boards accessible via the portal, and a virtual Q&A meeting. The PIC had a total of 458 visitors and of those visitors, 86 participants submitted information using the interactive tools on the online engagement portal. Participants who provided their contact information were added to the project contact list.

The virtual Q&A meeting was held on November 24, 2021, at 6:30 p.m. The meeting consisted of a presentation of the PIC display boards and breakout sessions (approximately 5-10 people per breakout room) facilitated by City staff. This provided a venue for the public and other stakeholders to provide their input to the project and pose questions to the Project Team.

Participants were asked to share comments on the preliminary preferred solution as well as general comments about the project. Not all 86 participants chose to share comments, but of the 64 who did, approximately 17 were supportive of the preliminary preferred solution and 20 were unsupportive of the plan.

From both engagement platforms, there was a slight public preference for Solution 1: Realign Clarkson Road North over the preferred alternative: Solution 2: Centre Median and Widen Lakeshore. Road. Common reasons for not supporting Solution 2 include

perceptions of preference towards vehicle traffic and a lack of a community feel, and doubts that the improvements will accommodate the future traffic/mobility needs better than Solution 1.

A summary of PIC #2 and public feedback received is provided in **Appendix L** and **Appendix N**.

5.4 Public Information Centre #3

The third Public Information Centre (PIC #3) was held online on April 27, 2022. The purpose of the third PIC was to provide updates on further refinement to the preferred solution presented at PIC #2 and next steps for the project. The information display boards were posted on the project website for review.

Approximately 140 registered for the event with approximately 100 attending. The meeting consisted of a presentation of the PIC display boards and breakout sessions (approximately 10-15 people per breakout room) facilitated by City staff. During the breakout sessions, participants were asked to share their feedback on the Interim Preferred Solution and Preferred Solution. Common comments shared by participants included:

- General support for the implementation of the interim and ultimate preferred solutions.
- Concerns about the cost to implement the ultimate preferred solution
- Uncertainty about the timing to implement the interim and ultimate preferred solutions.
- Support for cycle tracks on Lakeshore Road.

A summary of PIC #3 and public feedback received is provided in **Appendix M** and **Appendix N**.

5.5 Agency and Stakeholder Consultation

A list of relevant agencies was assembled at the beginning of the study. External ‘agencies’ (including regulatory/review agencies, utilities, school boards) and interested stakeholders received project notifications via email during the study informing them of project milestones (Study Commencement, PIC #1, PIC #2, PIC #3, and Study Completion) and soliciting their comments.

The following external agencies and stakeholders were included on the study mailing list:

- Provincial Agencies

  - Ministry of Environment, Conservation and Parks
  - Ministry of Northern Development, Mines, Natural Resources and Forestry
  - Ministry of Tourism, Culture and Sport (MHSTCI)
  - Credit Valley Conservation (CVC)
- Municipal Agencies and Staff
  - MiWay (Mississauga Transit)
  - Mississauga Cycling Advisory Committee
  - City of Mississauga Staff
  - Region of Peel Staff
- Utilities
  - Bell Canada
  - Rogers Communications Canada
  - Alectra Utilities
- School Boards
  - Peel District School Board
- Stakeholders
  - Potentially Impacted Property Owners
  - Clarkson Village Business Improvement Association
  - Technical Standards & Safety Authority
  - Rate Payers Associations

Throughout the study, the Project Team corresponded with various agencies to provide information and updates on the study and seek input on specific study components. A summary of key agency correspondence is provided in **Table 5-2**. A copy the written correspondence is included in **Appendix N**. Notes of all meetings are on file with the City.

Table 5-2: Agency / Stakeholder Correspondence

Agency / Stakeholder	Key Correspondence	Course of Action
Provincial Agencies		
Ministry of Environment,	• Provided letter via email dated January 5, 2021, acknowledging study and outlining expectations of	• Schedule 'B' MEA Class EA process followed for the study

Agency / Stakeholder	Key Correspondence	Course of Action
Conservation and Parks (MECP)	study process for a 'Schedule B' MEA Class EA	
Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF)	• Project notification provided to MNDMNRF at key study milestones	• Natural Heritage Assessment completed to identify natural features and resources within the study area
Ministry of Tourism, Culture and Sport (MHSTCI)	• Provided letter via email dated December 3, 2020, recommending a Heritage Impact Assessment (HIA) be completed if potential or known heritage resources exist. The letter acknowledged that the Stage 1 Archaeological Assessment had been submitted and was awaiting review.	• Cultural Heritage Resource Assessment (CHRA) completed to identify existing conditions, assess preliminary impacts associated with the study, and recommend mitigation measures. • Stage 1 Archaeological Assessment undertaken to determine potential for archaeological sites in the study area and recommend further assessment to be completed (if required). • The Stage 1 Arch Report was entered into the register on December 20, 2021 and the final heritage report is on file with the Ministry.
Credit Valley Conservation (CVC)	• Signed data sharing agreement provided via email November 2020 • Met with Project Team on March 10, 2022, to review	• Technical reports submitted to CVC for review prior to completing the Project File

Agency / Stakeholder	Key Correspondence	Course of Action
	recommended improvements and discuss potential mitigations and commitments to future work.	• Input from CVC about potential mitigations and commitments to future work included in the Project File
Municipal Agencies and Staff		
City of Mississauga Staff	• Met with Project Team on April 29, 2021, to provide input on alternative solutions • Met with Project Team on April 27, 2022, to provide input on interim and ultimate preferred solutions and next steps	• Input incorporated into the assessment and evaluation of alternative solutions to identify the preferred solution • Input incorporated into the mitigation and commitments to further work
Region of Peel Staff	• Met with Project Team on April 27, 2022, to provide input on interim and ultimate preferred solutions and next steps	• Input incorporated into the mitigation and commitments to further work
Stakeholders		
Potentially impacted property owners	• Project Team met with representatives of 1763 Lakeshore Road West on April 26, 2022, to review the interim and ultimate preferred solution • Project Team met with representatives of the property at 1763 Lakeshore Road West on May 2, 2022, to review the interim and ultimate preferred solution	• Input incorporated in mitigation and commitments to further work. Potential property impacts to be confirmed in subsequent phase.

Agency / Stakeholder	Key Correspondence	Course of Action
	• Project Team met with representatives of 1765 Lakeshore Road West on May 10, 2022, to review the interim and ultimate preferred solution	

5.6 Indigenous Community Engagement

In correspondence dated January 5, 2021, the Ministry of Environment, Conservation and Parks (MECP) identified the following Indigenous communities to be engaged for this project:

- Mississaugas of the Credit First Nation
- Six Nations of the Grand River (both Six Nations Elected Council and Haudenosaunee Confederacy Chiefs Council)
- Huron-Wendat Nation (only if there are potential archaeological impacts)

A summary of correspondence with Indigenous communities in provided in **Table 5-3**. A copy of the written correspondence is included in **Appendix N**.

Table 5-3 Summary of Indigenous Community Correspondence

Indigenous Community	Key Correspondence	Course of Action
Mississaugas of the Credit First Nation (MCFN)	Email correspondence in April 2021 regarding Stage 1 Archaeological Assessment Report, including establishing agreement to review. Emails sent April, August and October 2021, and April 2022, regarding project updates (i.e., PICs)	Stage 1 Archaeological Assessment Report was reviewed October 2021, and no comments or concerns were raised regarding the project.
Six Nations of the Grand River Elected Council	Emails sent April, August and October 2021, April, September, and October 2022 regarding project updates (i.e., PICs) and	Stage 1 Archaeological Assessment Report was reviewed September 2022 and confirmed no comments

Indigenous Community	Key Correspondence	Course of Action
	offer to review Stage 1 Archaeological Assessment Report.	or concerns regarding the project.
Haudenosaunee Confederacy Chiefs Council c/o Haudenosaunee Development Institute	Emails sent April, August, October 2021, and April 2022 regarding project updates and offer to review Stage 1 Archaeological Assessment Report. Letter, Application for Engagement and Consultation, and Stage 1 Archaeological Assessment Report mailed to Haudenosaunee Development Institute September 2022.	No response received.
Huron-Wendat Nation	N/A	Per MECP letter, to be contacted only if there are potential archeological impacts. With the identified proposed improvements, no impacts are anticipated to areas of archaeological potential.

6 Recommended Plan

The following section summarises the key elements of the proposed improvements, identified by this EA study. Preliminary design plates of the improvements are provided in **Appendix P** for the Interim Preferred Solution, and **Appendix Q** for the Preferred Solution.

The study investigated several alternative solutions to improve traffic operations and safety for vehicles, pedestrians, and cyclists at the Lakeshore Road and Clarkson Road North / South intersections. As detailed in **Section 4.3.4**, **Solution 2** was identified as the **Interim Preferred Solution** and **Solution 1** was identified as the **Preferred Solution**. The study therefore proposes an overall **Recommended Plan** for the intersections, which includes interim and ultimate phased improvements:

- **Interim Preferred Solution Improvements** will be Solution 2: Centre Median and Widen Lakeshore Road West
    - These improvements are anticipated to be constructed as part of an Integrated Road Project for Lakeshore Road West, combining recommendations of this study and the concurrent Lakeshore Road West Complete Streets Study
- **Preferred Solution** will be Solution 1: Realign Clarkson Road North.
    - There is currently no anticipated timeframe for the Preferred Solution. Due to the significant impacts and cost, the improvements will be contingent on future redevelopment and/or future available funding.

6.1 Roadway Design

The proposed improvements will include improvements to the cross-section of Lakeshore Road West, and with Solution 1, changes to the horizontal alignment of Clarkson Road North. Key geometric design elements of the interim and ultimate improvements are summarized in **Table 6-1** and **Table 6-2,** respectively.

An overview of the interim improvements is illustrated in **Exhibit 6-1.** The improvements include a slight increase in pavement width to accommodate ‘side-by-side’ left-turn lanes in between the intersections.

An overview of the ultimate improvements is illustrated in **Exhibit 6-2.** The improvements include a realignment of Clarkson Road North, from its culvert on Turtle Creek to then intersect Lakeshore Road West at the location of the Clarkson Road South intersection. The result is a single four-leg intersection rather than the two existing three-legged intersections on Lakeshore Road West.

Table 6-1 Summary of Key Geometric Design Elements – Interim Preferred Solution (Solution 2)

Design Criteria	Existing Conditions	City Standards (2211.010 & .181 & Changing Lanes)	TAC 2017 / OTM Book 18 Standards	Proposed Standards (Lakeshore Rd W)
Posted speed (km/h)	40	-	-	40
Travelled lanes				
Curb	4.6 – 5.0	3.5-3.75[1]	3.0 – 3.7	3.5
Through (m)	3.3 inside	3.3-3.5[1]	3.0 – 3.7	3.0
Left turn (m)	3.0	3.0	3.0	3.0
Median (m)	N/A	-	1.5 - 2.0	1.5
Active Transportation				
Cycle Tracks (m)	N/A	Min: 2.0 [2] Max: 2.5 [2]	Min: 1.5 [3] Max: 2.5 [3]	2.0
Buffer (m)	N/A	-	0.6 – 1.0 (0.3 min)	0.5 [4]
Sidewalk (m)	2.0	1.5 [5]	1.5	1.8[5]

Notes:

1. Per City of Mississauga Changing Lanes Complete Streets Guide, Table 4.9
2. Minimum and maximum recommended widths identified in City's Active Transportation Masterplan, Appendix V: Bicycle Facility Design Best Practices, Table V-1 and per City Standard Drawing 2240.081.
3. Per OTM Book 18: Cycle Tracks
4. Buffer of 0.5 m is recommended. It is acknowledged that, per OTM Book 18 on roadways with speeds of 40 km/h or less, it is acceptable to provide no buffer beyond the width of the curb. In this condition, it is recommended a 100 mm solid white edge line, marked 200 mm from the back of curb, should be used to encourage cyclists to ride away from the curb edge. It is noted that a buffer between sidewalk and cycle track is desired, and it is recommended it be further reviewed in Detailed Design.
5. Any new sidewalk constructed is recommended to have a minimum width of 1.8 m, per the City of Mississauga Pedestrian Masterplan

Table 6-2 Summary of Key Geometric Design Elements – Preferred Solution (Solution 1)

Design Criteria	Existing Conditions	City Standards (2211.010 & .181 & Changing Lanes)	TAC 2017 Standards	Proposed Standards (Clarkson Rd N)
Posted speed (km/h)	50	40[1]	40 [3]	40 [3]
Minimum Radius (m)	Tangent	120 [2]	55 [3]	55
Minimum Grade (%)	-	0.5	0.5	0.5
Maximum Grade (%)	-	6.0	8.0	2.3
Maximum Grade through intersections (%)	-	3.0	3.0	1.3
Intersection Angle (°)	90	70-90	70-90	82
Travelled lanes				
Lane widths – Through (m)	4.0 - 4.4	3.5[1]	3.0 – 3.7	3.5[4]
Lane widths – Auxiliary (m)	3.5	3.0	3.0	3.0
Median (m)	N/A	-	1.5-2.0	2.0
Active Transportation				
Cycling[4] (m)	-	-	-	-
Sidewalk (m)	2.0	1.5	1.5	1.8[5]

Notes:

1. Per City of Mississauga Changing Lanes Complete Streets Guide, Tables 4.7 and 4.8 for Posted Design Speed, Table 4.9 for Lane Widths
2. Per TAC 2017 Table 3.2.8
3. A posted speed of 40 km/h is recommended. The requirement of an ‘S-curve’ at this location leads to the design using a minimal-value approach to mitigate footprint impacts. Per TAC 2017, it is recognized that drivers have developed a higher threshold of discomfort on low design speed urban roads and as such, they are willing to accept a higher lateral friction. Using a higher lateral friction, the minimum radius at normal crown is 55 m (per TAC Figure 3.2.4). Normal crown (-2%) is proposed on the curves on approach to the intersection, to enable back-to-back curves that do not require cross-fall transition.
4. Improvements will tie into the existing 4.0 m lanes at Turtle Creek culvert.
5. Any new sidewalk constructed is recommended to have a minimum width of 1.8 m, per the City of Mississauga Pedestrian Masterplan.

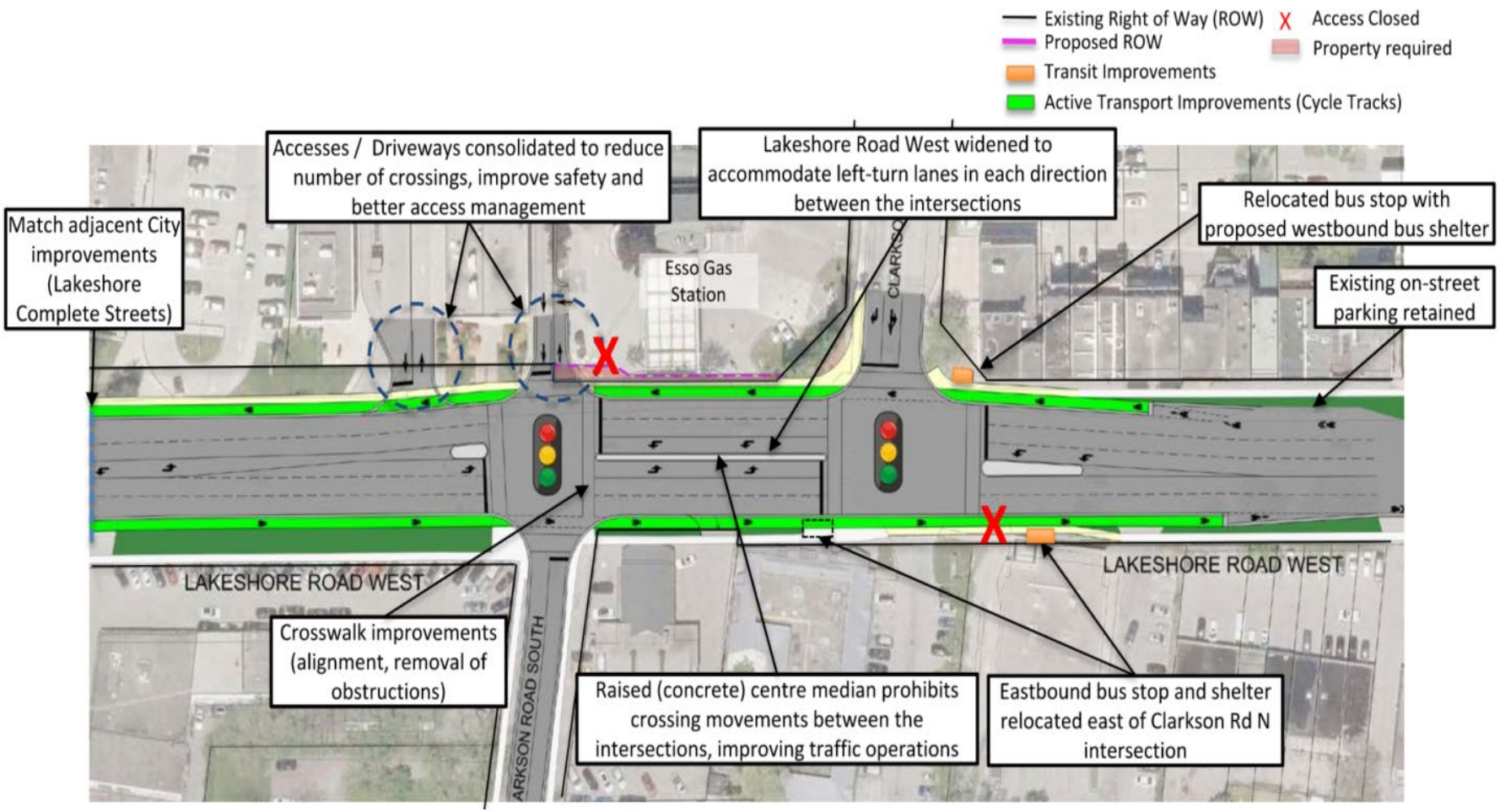

Exhibit 6-1 Recommended Plan - Interim Preferred Solution – Overview

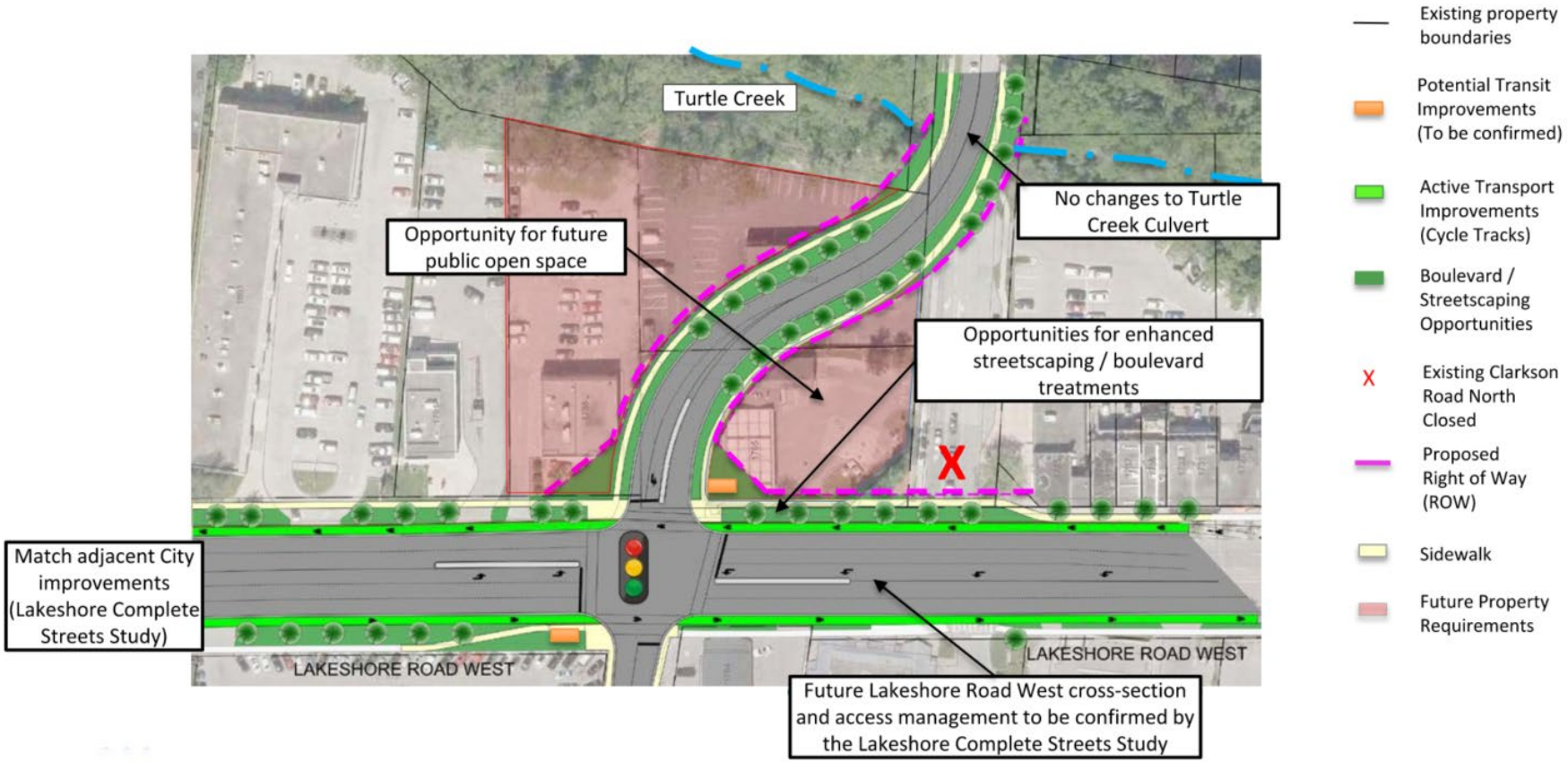

Exhibit 6-2 Recommended Plan – Preferred Solution - Overview

6.2 Active Transportation

For the Interim Preferred Solution, active transportation improvements are recommended on Lakeshore Road West, through the implementation of new cycle tracks in the boulevard. Cycle tracks are bikeways that are physically separated (i.e., horizontally, and vertically separated) from the travelled portion of the roadway by a curb, and ideally a horizontal buffer. The cycle tracks will have widths of 2.0 metres and as Lakeshore Road West Right-of-Way at this location is constrained and to mitigate property impacts in the interim, it is recommended that the cycle tracks be separated by just the curb (as detailed in **Table 6-1** and in the Preliminary Design plates included in **Appendices P and Q**). Either side of the Clarkson Road intersections, the Cycle Tacks are anticipated to connect with other active transportation facilities identified by the ongoing Complete Streets Study for Lakeshore Road West, undertaken by the City.

For the Preferred Solution, the realignment of Clarkson Road North affords the opportunity to reconfigure the Lakeshore Road West cross-section, as the 'side-by-side' left-turn lanes will not be required. The realignment is contingent on future redevelopment plans, and this redevelopment can also open the opportunity to widen the Lakeshore Right-of-Way (ROW): the Official Plan designates this segment requiring a ROW of 35 metres though the existing ROW varies around 30 m. Both considerations would provide further opportunities to improve the active transportation facilities, including wider sidewalks and/or realignment of the cycle tracks to provide a buffer to the road. As the ultimate improvements are contingent on future redevelopment and/or available funding, the final design of the ultimate condition will be confirmed closer to the time of its construction and during Detailed Design.

As detailed in the Traffic Safety Performance Review conducted by the study (included in **Appendix A**), a multi-model level of service analysis was conducted on the existing facilities and in addition to a recommendation of separated/designated cycling facilities, several segments of sidewalk were recommended to be improved, including locations at the intersections. Where existing sidewalks are either relocated or impacted in both the interim preferred and preferred solution, the sidewalks are recommended to be improved to a minimum width of 1.8 metres following the proposed standards of the City's Pedestrian Masterplan. An exception will be on Clarkson Road South, south of the intersection, which will be changed to the minimal extent possible due to its location directly adjacent a designated cultural heritage property.

The use of cycle tracks and sidewalks on both sides of the road provide the following benefits for the local community:

- Better convenience and is more desirable for commuter cyclists.

- Better service to businesses that are on both sides of the road.
- Provides greater access to all surrounding areas, without a requirement of additional crossings.
- Improvements maintain the emphasis on a pedestrian/cyclist-oriented realm.

6.3 Access Management

For the Interim Preferred Solution, the following changes to access management will occur:

- The west outbound (‘right-out’) access of the gas station (1765 Lakeshore Road West) onto Lakeshore Road will be closed and access replaced with a in- and out-bound access that is combined with the outbound access of the adjacent vacant commercial property (1785 Lakeshore Road West). This access will constitute the northern leg of the Lakeshore Road and Clarkson Road South intersection.
- The inbound access of the vacant commercial property (1785 Lakeshore Road West) will be combined with the in- and outbound access of the Scotiabank property (1791 Lakeshore Road West)
- The raised concrete median between the Clarkson Road North and South intersections will prohibit left-turn movements from commercial accesses between the intersections, either from the ‘right-in’ access at the gas station (illegal move) or from the access to the Benjamin Moore shop (1764 Lakeshore Road West).
- The right-in only access to the RBC Bank (1730 Lakeshore Rd West) is located immediately adjacent the intersection of Lakeshore Road West and Clarkson Road North, and the spacing does not conform to the standards set out by the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads. It appears the original purpose of this access was for a drive-through that is currently not used by the building. In pursuit of better conforming to current design standards and reducing the number of conflict points with pedestrians/cyclists, it is recommended this access be closed. It is noted that the RBC Bank property can also be accessed from both the south leg of the Clarkson Road North intersection and another in- and outbound access with Lakeshore Road approximately 20 to the east.

Agreements between the property owners will be required for the accesses to be combined. The City will further consult with impacted properties after the completion of this study and ahead of anticipated construction.

The Preferred Solution includes the realignment of Clarkson Road North. The realignment is dependant on future redevelopment and/or available funding and would require the acquisition of the three commercial properties in the northwest quadrant of the Clarkson Road North intersection. Also, the Lakeshore Road West cross-section will also be changed due to removed need of the side-by-side left-turn lanes. As such, the accesses / commercial driveways along Lakeshore Road West in the study area would be subject to significant changes and access management will need to be further reviewed during Detailed Design.

6.4 Traffic Safety

As described in **Section 3.6**., a traffic safety assessment undertaken by this study included a field investigation which identified initial recommendations. These recommendations have been considered in relation to the proposed improvements and have either been incorporated or adapted. Improvements to traffic safety incorporated by the Interim Preferred and Preferred Improvements are detailed in **Table 6-3**.

Table 6-3 Traffic Safety Improvements - Interim/Ultimate Conditions

Field Investigation Finding	Initial Recommendation	Interim Preferred / Preferred Improvements
Excessive horizontal offset of ground-mounted signs	Relocate ground-mounted signs along Lakeshore Road West and Clarkson Road North to a horizontal offset between 30 centimetres and 2 metres from the curb (reinstall each sign on individual posts).	Incorporated: it is recommended the identified signs be reinstalled, conforming to OTM standards.
Faded crosswalk pavement markings	Repaint faded crosswalk markings.	Incorporated: Where not realigned, all existing crosswalks are recommended to be repainted.
Utility/illumination poles within the clear zone	Consider relocating the hydro poles on the east side of Clarkson Road South outside the clear	Clarkson Road South at the intersection is recommended to be changed to minimal extent possible to avoid impacts to the

Field Investigation Finding	Initial Recommendation	Interim Preferred / Preferred Improvements
	zone. Alternatively, consider installing barrier curb to provide additional protection at low speeds.	designated cultural heritage adjacent. City to consider implementing barrier curb as part of any future improvements to the roadway.
Obstacles aligned with crosswalks	Relocate obstacles aligned with the NE quadrant crosswalk at Clarkson Road South, and at the SE quadrant at Clarkson Road North. Alternatively, consider realigning crosswalks.	Incorporated: improvements require relocation of utility and/or signal poles, also improvements to crosswalks.
Tactile plates extending to the stop bar	Replace tactile plates to match the width of the crosswalk on the NE quadrant at Clarkson Road South	Incorporated: all intersection improvements are recommended to conform with AODA standards
Secondary traffic signal head not visible in advance of intersection	If feasible, consider relocating the secondary traffic signal head for the northbound direction at Clarkson Road South to be visible within 110 metres in advance of the intersection.	Incorporated: Clarkson Road South signals will be relocated / improved as part of the intersection improvements.
Discrepancy on vehicular clearance intervals on the east-west direction at Clarkson Road North and Clarkson Road South	Shorten the amber interval at the specified intersection from 4 to 3 seconds. Increase the all-red interval to 2.4 seconds and 3.2 seconds for Clarkson South and Clarkson North, respectively.	Adapted: Signal optimization in conjunction with traffic monitoring is recommended.

Field Investigation Finding	Initial Recommendation	Interim Preferred / Preferred Improvements
Non-AODA pushbuttons	Upgrade all pushbuttons to meet AODA requirements.	Incorporated: all intersection improvements are recommended to conform with AODA standards
Potential conflict at gas station exit on Lakeshore Road West	Re-design exit-only access at gas station to enforce right-out only, along with a left-turn movement prohibition.	Incorporated: interim improvements include a raised median to prohibit left-turns.
Potential conflict at ‘inner’ crosswalks on Lakeshore Road West	Consider removing the ‘inner’ pedestrian crosswalks at Clarkson Road North and Clarkson Road South.	Adapted: intersection improvements include improvement to crosswalk alignments. Raised median helps reduce pedestrian-conflicting movements between intersections.
Pedestrian signal head located 6 metres from crosswalk	Relocate the pedestrian signal head on the NW quadrant of Lakeshore Road West & Meadow Wood Road, so that the lateral distance between the crosswalk and the pedestrian signal head to be within 1.5 metres.	Incorporated: northern signal / utility poles will be relocated as part of the intersection improvements.
Absence of dedicated bicycle facilities	Consider adding dedicated bike lanes on Burnhamthorpe Road West (separate facility such as separate bicycle lanes, buffered paved shoulders or in-boulevard active transportation pathway).	Incorporated: intersection improvements include the provision of Cycle Tracks. These will tie into improvements identified under the ongoing Complete Streets Study.

Field Investigation Finding	Initial Recommendation	Interim Preferred / Preferred Improvements
	Recommendation to be addressed as part of the Multi-Modal Review.	
No reflective signal backboards	Consider adding 3-inch retroreflective sheeting to signal backboards.	Incorporated: intersection improvements include relocation/improvements to signals

6.5 Transit

For the Interim Preferred Solution, both east- and westbound stops in the vicinity of the intersections will be impacted by the improvements. The westbound stop located in the northeast quadrant of the Clarkson Road North intersection (fronting CIBC) will be shifted northerly with the slight widening of the roadway pavement. This study has identified the opportunity for a new shelter in this quadrant (currently it is only a stop), thus providing improved transit facilities. There is an existing tree planter in this quadrant, to which the shelter would be adjacent, and the City has requested that a 1.8 metres barrier-free route be provided for pedestrians to navigate around planter and shelter. The preliminary design has indicated this is feasible and this is to be confirmed in Detailed Design.

The implementation of the cycle track in the constrained Right-of-Way means that the eastbound stop, located in the southwest quadrant of the Clarkson Road North intersection (fronting Pump and Patio), will require relocation. The proposed new location is approximately 50 metres downstream and will front 1730 Lakeshore Road (RBC building). Due to the constrained boulevard, it is recommended that the Cycle-track be narrowed to 1.75 metres at that location to enable a stop and shelter be accommodated within the existing ROW. The locations of the east- and westbound transit stops are detailed in **Exhibit 6-1** and MiWay have been consulted with as part of this study. As part of the Lakeshore Road West Complete Streets Study,

MiWay has indicated a desire for the Lakeshore Road West and Clarkson Road North/ Clarkson Road South intersections to include shelters on the north and south sides, which matches the Interim Preferred Solution. It is noted MiWay have also designated this intersection for future express service with potential enhanced shelters (8 m by 2 m, 12 m by 2 m or 16 m by 2 m) and far-side stops with potential transit priority measures. These details will be confirmed by the Lakeshore Road West Complete Streets Study

and other future studies, however due to the constrained ROW, such enhanced facilities may only be feasible with the Preferred Solution. The stops and shelters are recommended to be constructed in accordance with MiWay standards and further consultation should be conducted with MiWay during Detailed Design.

For the Preferred Solution, the realignment of Clarkson Road North would require relocation of both east- and westbound stops however the reshaping of the ROW limits will present opportunities for desirable designs and locations for the shelters. Potential shelter locations are illustrated in **Exhibit 6-2** and will be confirmed, with further consultation with MiWay, closer to the time of implementation and Detailed Design of the Preferred Solution.

6.6 Structural Engineering

The Interim Preferred Solution will not require any new structures, nor impact any existing structures. A toe wall is likely required in the frontage of the Gas Station as there will be a small elevation difference between the new sidewalk and the existing Gas Station platform.

The Preferred Solution includes a realignment of Clarkson Road North that begins its changes in alignment at the Turtle Creek culvert. The Turtle Creek Culvert is a 2.9 metres x 6.0 metres concrete structural culver that conveys Turtle Creek under Clarkson Road in the east-to-west direction. By using minimum radii (per TAC 2017) it is feasible to realign Clarkson Road North to intersect the Clarkson Road south intersection without requiring the extension of this culvert. However, minimal works will still need to occur on Clarkson Road North over the culvert. This includes slight pavement widening/reconstruction and relocation of sidewalk. The proposed condition vs existing condition is illustrated in **Exhibit 6-3** and the final design and works will be confirmed in Detailed Design. **Exhibit** 6-3 includes the consideration of cycle tracks on Clarkson Road North, as a ‘worst case’ condition, and only grading modifications would be required on top of the culvert. No culvert extension, nor other significant changes, are anticipated to be required.

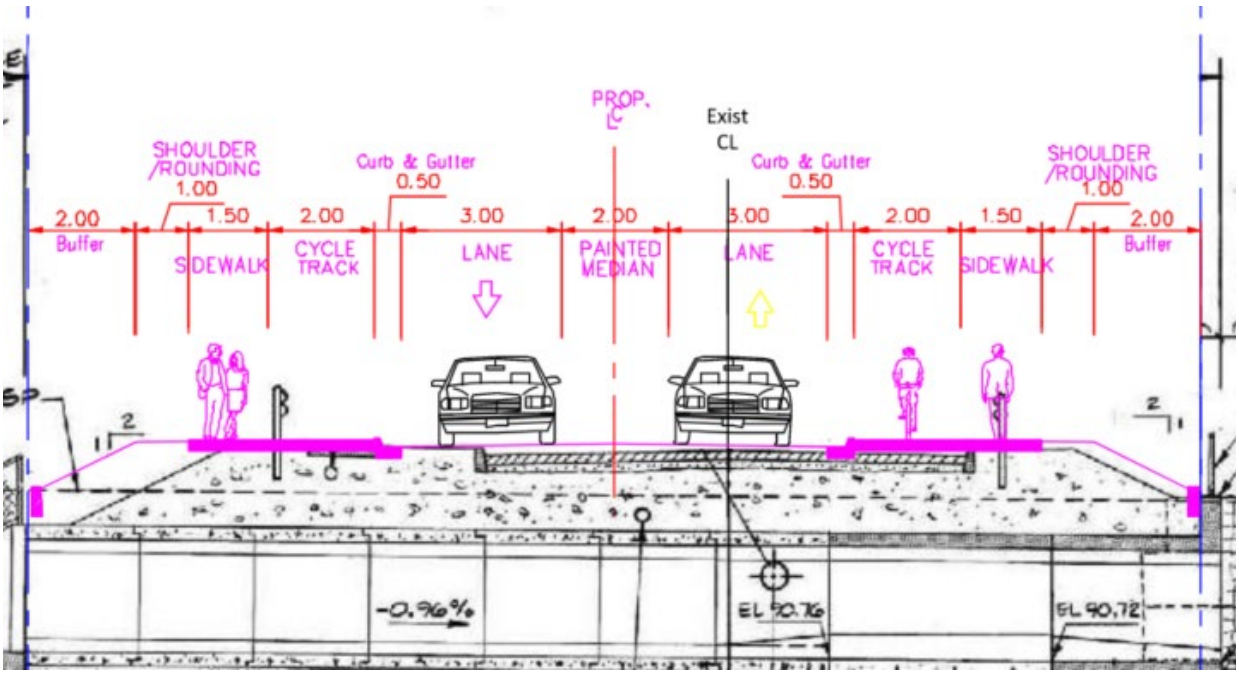

Exhibit 6-3 Preferred Solution - Cross-section at Turtle Creek Culvert

6.7 Drainage and Stormwater Management

Impacts to the drainage system would be caused by increases in impervious area, modifications to minor storm sewers and modifications to roadways changing the major stormwater conveyance paths. As the study area under existing conditions is already fully urbanized, the Interim Preferred Solution will have negligible impacts on the overall imperviousness within the study area. This will cause no changes to the runoff volume and the quality of stormwater runoff. The storm sewer for minor system runoff will not have any modifications other than minor catch basin relocations along the north side of Lakeshore Road West, to accommodate the pavement widening and boulevard improvements. There will be no impacts to the major system drainage as all existing roadways will remain, no changes will be made to the slopes of the existing roadways and no roadways will be built within the project limits. Details of the modifications will be confirmed in Detailed Design and supported by further information gathered / assessment undertaken by the ongoing Lakeshore Road West Complete Streets Study.

The Preferred Solution is not anticipated to have any culvert extension and have a reduced footprint at the culvert and within the floodplain. Solution 1 will have minimal impacts to the flood plain at Turtle Creek Crossing. Although with a high level review, no impact to Turtle Creek is assumed, a complete hydraulic and SWM analysis will need to be completed in the detailed design stage to determine cut/fill balance as well as to

ensure that there are no negative impacts to the floodplain and be presented to the Credit Valley Conservation Authority

The high level analysis shows that the interim preferred solution and preferred solution will not create any additional impact to the existing watercourse. It is recommended that during the detailed design stage, a complete hydraulic analysis be completed to ensure there are no negative impacts to the floodplain.

The drainage and stormwater memo can be found in **Appendix F.**

6.8 Noise Impact

A Noise Impact Assessment has been completed by this study and is further detailed in **Section 7.1.2,** and included in **Appendix R**. Noise impacts due to the proposed improvements will only relate to those produced during its construction and so no physical mitigation measures (i.e. noise barriers) are proposed as part of the improvements. An analysis of potential worst-case construction sound levels has been conducted based on generic data (equipment types and activities) and the analysis assumed all construction activities will be confined within the existing right-of-way. The closest receivers to the roadway construction on Lakeshore Road West are residential homes located approximately 90 meters south from the road centreline. The sound levels at these receivers resulting from roadway construction are predicted to be approximately 69 dBA. The analysis shows that construction sound levels generally decrease as distance to the NSAs increases. Moreover, the construction noise is temporary in nature and will vary based on the activities that take place.

6.9 Construction Staging

The final construction staging plans and durations will be confirmed in Detailed Design and during construction, it is recommended that all accesses to adjacent commercial properties and residences remain open to the extent possible. Where closures are absolutely required, alternate/temporary access are recommended to be provided. For the Interim Preferred Solution, it is anticipated the improvements could be completed within one construction season. However, as the recommendations for the study area are expected to be combined with those of the Lakeshore Road West Complete Streets study as an Integrated Road Project, the final construction duration will be confirmed with the confirmation of Integrated Road Project scope of works.

To facilitate the construction of the improvements, the following main steps are anticipated. It is expected that the required utility modifications and/or relocations will be

complete prior to roadway construction. Short-term, temporary lane reductions during construction may also be required.

- Shift traffic southerly, using narrowed lanes, to provide a workspace along the northern curb of Lakeshore Road West. This will enable the slight widening of pavement and reconfiguration of boulevard for the active transportation improvements. During this stage, the proposed access consolidations will also be constructed.
- Shift the westbound traffic to the northern side while retaining the eastbound in the first staging condition. This will provide workspace to construct the raised centre median and other median improvements.
- Shift traffic to the proposed final condition.

The Preferred Solution is anticipated to require a multi-year timeframe; however, impacts to traffic are expected to be for a short duration of the total construction length. As the realigned Clarkson Road is to be constructed on acquired property, its construction will not impact the existing Clarkson Road North or Lakeshore Road West, until the time when it is tied into the existing network. At that time, impacts to Clarkson Road North will be minimal. Impacts to Lakeshore Road West will be slightly more significant as the cross-section will be revised to accommodate the realignment. It is noted that the slight pavement widening, and cross-section improvement constructed during the Interim Preferred Solution could help facilitate the shifting of lanes of lanes in the future.

6.10 Municipal Services and Utilities

A Utility Conflict Plan has been prepared by this study and is included in **Appendix S** and is focused on the Interim Preferred Solution. Most impacts are experienced along the northern side of Lakeshore Road West through the intersections. Key impacts due to the slight widening of pavement to the north and the boulevard improvements will include the relocation of several Hydro Poles and potential relocation of a gas line. Utility impacts will be confirmed in Detailed Design, following further consultation with utility companies, and following the confirmation of final design of the Integrated Road Project.

For the Preferred Solution and closer to the time of its construction, all utilities within the study area will have to be re-identified and conflicts reassessed. Through consultation with the Region, it is understood that a trunk sewer is currently located under Clarkson Road North and is considered infeasible to relocate. Impacts to this sewer and other key municipal infrastructure shall be confirmed in the future Detailed Design phase, and with further consultation with the Region.

6.11 Illumination

Currently, illumination at the intersections is partly provided by fixtures that are mounted on the Hydro poles running along the northern side of Lakeshore. As the Hydro Poles will be relocated in the Interim Preferred Solution, the illumination at the intersections will require reconfiguration. While currently signal heads and light fixtures are supported by the Hydro Poles, this is not a desirable condition and so new poles for the light fixtures and signals are anticipated at the northern arms of the Clarkson Road South and Clarkson Road North intersections.

A lighting evaluation report is included in **Appendix W** and details the illumination analysis for the area of construction. The results show that there is a potential design that would provide illumination meeting RP-8 guideline requirements. The illumination layout considered is illustrated in **Exhibit 6-4**.

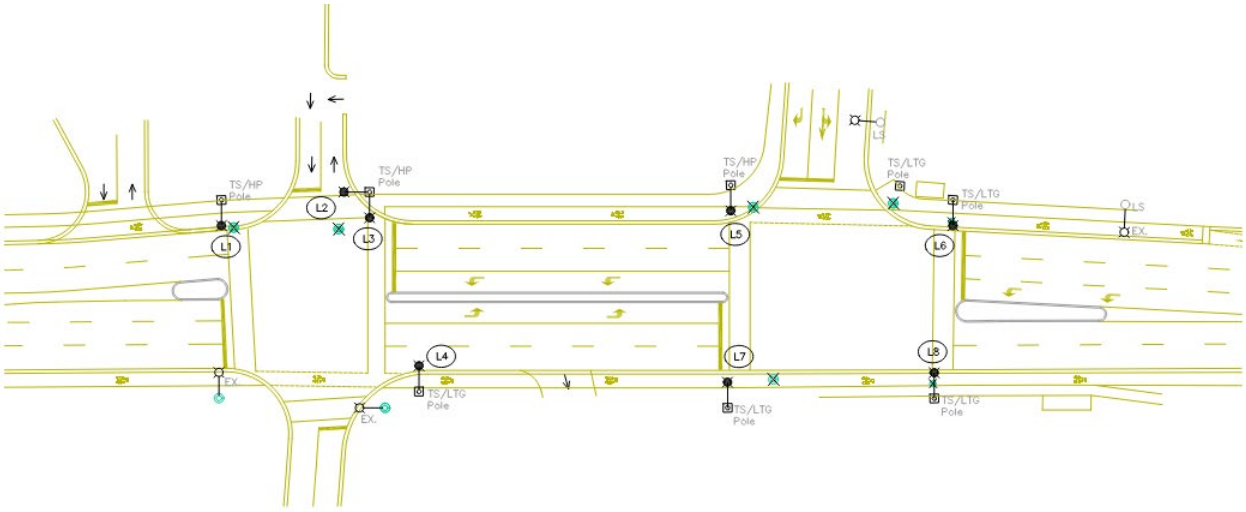

Exhibit 6-4: Preliminary Illumination Layout

For this preliminary assessment, it has been assumed that relocated poles will be replaced in kind, i.e., streetlights attached to hydro poles. Relocated hydro pole locations have been assumed and will require confirmation in Detailed Design and in further consultation with utility companies. It is acknowledged that utility companies typically desire infrastructure to remain separate; however, given the constrained ROW, the existing approach of combining infrastructure is a likely solution. Final lighting designs will be completed in Detailed Design and in conjunction with the finalization of the design for the Integrated Road Project.

For the Preferred Solution, full illumination is expected to be provided along the length of the realigned Clarkson Road North. Illumination along Lakeshore Road West will require further evaluation during the Detailed Design phase.

6.12 Landscaping/Streetscaping

For the Interim Preferred Solution, there are limited landscaping / streetscaping opportunities due to the constrained Right-of-Way (ROW) and the desire to provide dedicated active transportation facilities (i.e., the cycle tracks). Impacts to existing features have been kept to the minimum extent possible, with the avoidance of impacting an existing planter in the northeast quadrant of the Clarkson Road North intersection and impacts to existing trees between and immediately adjacent the intersections. The impacts to the trees between and immediately adjacent the intersections are further described in **Section 7.2.1**. Due to the constrained ROW, there is limited opportunity for remedial planting / further landscaping features between the intersections however there may be an opportunity to compensate for this in other areas along Lakeshore Road and this will be confirmed in Detailed Design and through the conclusion of the ongoing Lakeshore Road West Complete Street Study.

The Preferred Solution will provide significant opportunity for landscaping / streetscaping and will be confirmed in its future Detailed Design phase. These elements can include plantings, trees, flowerbeds, planters, benches etc. and potential locations include along the length of the realigned Clarkson Road North and along Lakeshore Road West, as the Preferred Solution also provides an opportunity to expand the ROW. A preliminary Landscape Plan for the preferred solution is included in **Appendix V**.

It is noted that Clarkson Village is identified as an Amended Boulevard Treatment Area, per the June 2016 Amended Boulevard Treatment Council Report, and all boulevard improvements are recommended to follow these City standards and practices where feasible.

Also, the Clarkson Road North intersection was noted by the City's Cultural Districts Implementation Plan (2020) as an underused public space with potential for activation. The Interim Preferred Solution will limit opportunities for activation (i.e., further streetscaping / temporary art / cultural pop-ups) at this location, due to the pavement widening and recommendation of a new transit shelter.

6.13 Geotechnical Considerations

Due to the nature of the Interim Preferred Solution improvements (i.e., relatively small pavement widening and roadway cross-section improvements), the study team

concluded that geotechnical investigations and analysis would not be cost-effective at this preliminary stage. For the Preferred Solution, the scope of the geotechnical investigations and analysis will have to be completed closer to the time of construction and with the final design of the improvements. Therefore, the geotechnical investigations and analysis will be completed in the Detailed Design phase of both improvement phases.

6.14 Property Requirements

For the Interim Preferred Solution, one property (1765 Lakeshore Road West located between the intersections of Clarkson Road North will be impacted along its frontage. A relatively small area of property acquisition is required and will not result in the closure of the business. The property owner has been consulted with as part of this study and will be further consulted with by the City, throughout the following phases including Detailed Design and construction.

For the Preferred Solution, three properties located east of Clarkson Road North will be directly impacted and impacted to the extent that full property purchase is considered likely. These properties are 1765 Lakeshore Road West 1034 Clarkson Road North and 1785 Lakeshore Road West). As acknowledged by the evaluation, these impacts are significant socio-economic and cost impacts and as a result, the timing of the Preferred Solution is dependant on future redevelopment and/or available funding.

6.15 Preliminary Cost Estimates

Preliminary cost estimates have been completed by this study and their breakdowns are included in **Appendix T**. Preliminary estimates identified construction costs of approximately **$0.9M** for the Interim Preferred Solution (Solution 2) and approximately **$1.5M** for the Preferred Solution (Solution 1).

These preliminary cost estimates include costs for road work, addition of streetlights and traffic signals, landscaping, traffic control, and engineering services; however, property acquisition costs are not included in the estimate.

7 Potential Environmental Impacts and Mitigation

In consultation with agencies and other stakeholders, the proposed improvements have incorporated measures to mitigate negative impacts to the environment, where possible. Where impacts cannot be entirely avoided and specific mitigation measures during detailed design and construction have been developed to minimize or avoid impacts.

Preferred Solution

As detailed by this report, the study identified a phased-improvements approach for the intersections of Clarkson Road North and South: Interim Preferred Solution (Solution 2) and the Preferred Solution (Solution 1). Due to its impacts and cost, the timing of the Preferred Solution is dependant on future redevelopment and/or available funding and therefore its construction is likely outside the timeframe for which this EA is considered valid (as detailed in Section 8.1.1, if a lapse in time of project exceeds ten (10) years, the proponent shall review the planning and design process and the current environmental setting to ensure that the project and the mitigation measures are still valid given the current planning period).

As such, several technical assessments in support of the Preferred Solution are recommended to be further assessed and confirmed in its Detailed Design phase and closer to the timing of its construction. Also as referenced in this report, the ongoing Lakeshore Road West Complete Streets Study will be providing recommendations along Lakeshore Road West which will also influence the final design of Solution 1.

In the addition to the final design being completed in the Detailed Design phase for the preferred solution, the following technical assessments and considerations would also require completion during this time and upon confirmation of the final design:

- Stormwater Management and Drainage
- Municipal Services and Utilities
- Natural Environment Assessment
- Noise Impact Assessment
- Air Quality Impact Assessment
- Geotechnical Investigations

Due to this, the following section detailing mitigations have a focus on the Interim Preferred Solution: Solution 2.

7.1 Socio-Economic Environment

7.1.1 Properties and Access

Impacts to property and changes in access are detailed in Section 6.13. Final impacts to private property will be confirmed during detailed design.

Proposed Mitigation

- The City will continue to consult with any affected property owner on an individual basis during detailed design and any acquisitions will occur in accordance with the City's procedures.
- Prior to construction, specific notices and contact information will be delivered to area residents and property owners informing them of construction details, including temporary impacts to driveway access prior to construction and in advance of work related to their access.
- During construction, the City will endeavour to maintain access at all times where feasible.

7.1.2 Noise

7.1.2.1 Noise Assessment

As this project focuses on localized improvements (i.e., no capacity expansion or similar), the project is expected to cause no change in future operational sound levels which are anticipated to be within the provincial and city guidelines criteria and therefore permanent noise mitigation is not required. The complete Noise Assessment is provided in **Appendix R**.

7.1.2.2 Noise During Construction

Noise will be generated during construction and the project will be subject to City Noise By-Law No. 360-79. The potential for construction noise issues will be further reviewed during detailed design, when the construction methodology and schedule are fully developed.

Construction sounds is temporary in nature and will vary over time as different construction activities change location within the right-of-way. The estimated construction sound levels have the potential to be an annoyance to noise sensitive areas within the study limits of this project. Conceptual noise mitigation measures have therefore been provided below to minimize the potential for any noise impacts. Furthermore, the City of Mississauga noise by-law prohibits nighttime construction activities and on Sundays and statutory holidays unless an exemption is granted.

Proposed Mitigation

- There should be explicit indication that Contractors are expected to comply with all applicable requirements of the contract and local noise by-laws. Enforcement of noise control by-laws is the responsibility of the Municipality for all work done by Contractors.
- All equipment should be properly maintained to limit noise emissions. As such, all construction equipment should be operated with effective muffling devices that are in good working order.
- Monitor and maintain haul routes to minimize movement over rough ground and potholes which in turn can generate noise.
- All equipment shall be kept in good working order as deterioration may increase equipment sound levels. A documented, regular inspection and maintenance program must be implemented.
- Vehicle on-site speed limits must be met and shall be enforced. Idling vehicles shall be kept to a minimum.
- In the presence of persistent noise complaints, all construction equipment should be verified to comply with MOE NPC-115 guidelines.
- In the presence of persistent complaints and subject to the results of a field investigation, alternative noise control measured may be required, where reasonably available. In selecting appropriate noise control and mitigation measures, considerations should be given to the technical administrative and economic feasibility of various alternative.
- Additional means to reduce annoyance and the risk of persistent complaints may be beneficial for the closest residences. This can include installation of temporary localized noise barriers.

7.1.3 Air Quality

7.1.3.1 Air Quality Assessment

An air quality assessment was undertaken to evaluate the potential change in air quality associated with the recommended plan, details of which are provided in **Appendix U**.

The Interim Preferred Solution is not expected to have significant impacts on nearby sensitive receptors. Although the assessment indicates exceedances of the applicable threshold for some contaminants, these exceedances are primarily the results of existing elevated background concentrations within the study area.

Therefore, no mitigation measures are identified required.

7.1.3.2 Air Quality During Construction

During construction of the intersection and roadway, dust is the primary contaminant of concern. Other contaminants including NOx and VOC's may be emitted from equipment used during construction activities.

Due to the temporary nature of construction activities, there are no air quality criteria specific to construction activities. However, the Environment Canada 'Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities' document provides several mitigation measures for reducing emissions during construction.

Proposed Mitigation

- Material wetting or use of chemical suppressants to reduce dust; use of wind barriers; and limiting exposed areas, which may be a source of dust and equipment washing.
- It is recommended that these best management practices be followed during construction of the recommended plan, to reduce any air quality impacts that may occur.
- Furthermore, during construction all vehicles, machinery and equipment will be in good repair, equipped with emission controls, as applicable, properly maintained and operated within regulatory requirements.

7.1.4 Climate Change Considerations

The Ministry of the Environment and Climate Change (MOECC) guide, titled 'Consideration of Climate Change in Environmental Assessment in Ontario', sets out Ministry expectation and supports the province's Climate Change Action Plan by outlining climate change considerations for EA studies.

The guide notes that 'climate consideration' within a project refers to:

- Consideration has been given to methods to reduce greenhouse gas emissions; and
- Developing a design that is more resilient to future changes in climate and helps maintain the ecological integrity of the local environment in the face of a changing climate.

Consideration for how a project may contribute to climate change, through greenhouse gas emissions or its effects on the natural landscape, is important during the planning process to ensure climate mitigation measures are being considered to avoid, reduce, or offset any impacts.

Climate Change Action Plan (2021)

The City of Mississauga's Climate Change Action Plan (CCAP) is built around a central long-term vision that over the next 30+ years. Mississauga will be a low carbon and resilient community. The plan identifies five (5) action pathway categories that the City plan to accomplish within the next five to ten years, centered around two (2) key goals: mitigation and adaption. These five action pathways include:

- Building & Clean Energy
- Resilient & Green Infrastructure
- Accelerating Discovery & Innovation
- Low Emissions Mobility & Transportation
- Engagement & Partnerships

By introducing and implementing key specific actions for each category, the City of Mississauga will be positioned to mitigate, respond, and adapt to any local impacts of climate change, such as extreme or flash flooding, wind and ice storms or extreme heat waves.

The CCAP's goals and action pathways have been factored into the project-specific climate considerations discussed below.

Proposed Mitigation

- The **Interim Preferred Solution** involves the modification of Lakeshore Road West to accommodate adjacent left-turn lanes between the Clarkson Road North and Clarkson Road South intersections, as detailed in Section 6.1. Limited construction is required, however, some traffic disruption and staging on Lakeshore Road will be required and developed during detailed design to accommodate local access. The improvements will aid in reducing future congestion which will reduce idling and queueing on Lakeshore Road, contributing to the goal of reducing greenhouse gas emissions. Due to the reduction in boulevard width to accommodate the roadway widening, opportunities for streetscaping or tree planting between both intersections are limited. However enhanced streetscaping opportunities will be investigated at other locations along Lakeshore Road West in conjunction with the recommendations from the ongoing Lakeshore Road West Complete Street Study. The solution includes improvements to active transportation facilities and improved transit facilities, encouraging low emission mobility and transportation.
- The **Preferred Solution** involves the realignment of Clarkson Road North from Turtle Creek culvert, westerly to intersect with Clarkson Road South forming a single intersection, as detailed in Section 6.1. More construction is required,

which is mainly off-line from the existing network, resulting in less traffic disruption, but potential noise and vibration impacts to adjacent residential areas. The ultimate condition continues to support the reduction of idling and queueing on Lakeshore Road following the interim condition, and the realignment creates opportunities for streetscaping and planting helping to further reduce greenhouse gases. Furthermore, construction of new drainage infrastructure can be designed to accommodate climate change. The solution includes improvements to active transportation facilities and improved transit facilities, encouraging low emission mobility and transportation.

- Other mitigation measures include the use of Low Impact Development (LID) strategies, which could be incorporated into the interim and preferred solutions.

Further opportunities to contribute to the City's CCAP action pathways should be considered during detailed design.

7.1.5 Contaminated Areas

A Phase I Environmental Site Assessment (ESA) was completed as part of this study. The results of the Phase I ESA and potential sub-surface impacts are summarized in Section 3.10. Potential Contaminating Activity (PCA) was identified at four sites within the study area. This includes 1730 Lakeshore Road West and 1765 Lakeshore Road West that are located in the vicinity of the intersections and the proposed improvements. A subsurface investigation (i.e., Phase Two ESA) involving sampling and analysis of soil and groundwater within the limits of the proposed construction works would be required to confirm the potential for contamination from the identified PCAs and the management of materials generated during construction.

Proposed Mitigation

- Additional testing is required during Detailed Design to confirm management of excess excavated soils. Additional testing and preparation of additional planning documents it may be necessary to meet the new O. Reg. 406/19 "Excess Soil Regulation" requirements.
- Activities related to management of excess soil through construction should be completed in accordance with MECP's new regulation released December 2019, titled "On-Site and Excess Soil Management" (O. Reg. 406/19). This document provides guidance on proper management of excess soils, ensuring valuable resources don't go to waste and to provide clear rules on managing and reusing excess soil. New risk-based standards referenced by this regulation help to facilitate local beneficial reuse which in turn will reduce greenhouse gas emissions from soil transportation, while ensuring strong protection of human health and the environment.

- If soil removed during construction is determined to be contaminated, the disposal of contaminated soil is to be consistent with Part XV.1 of the Environmental Protection Act and Ontario Regulation 153/04, Records of Site Condition, which detail the requirements related to site assessment and clean up. In addition, should contaminated soil be present at the site, the MECP District Office is to be contacted for further consultation.
- Should there be discharge of a contaminate into the natural environment, notice of the discharge must be provided in accordance with the provisions of the Environmental Protection Act, R.S.O 1990, c. E. 19 (EPA).
- If, at any time, the management of excavated soil or excess soil causes an adverse effect, such as odour, litter, dust, noise, or other impacts to the natural environment or water quality, appropriate preventive and remedial actions will immediately be taken to alleviate the adverse effect or impact. Until these issues are addressed, all soil management activities may need to be suspended, including soil excavating, transporting, or receiving.

7.1.6 Cultural Heritage

The Cultural Heritage Resource Assessment can be found in **Appendix B**. Regarding the Interim Preferred Solution, no direct adverse impacts to the identified Built Heritage Resources (BHRs) are anticipated due to the proposed improvements.

Proposed Mitigation

- During Detailed Design and where feasible, the improvements should be designed to avoid direct and indirect adverse impacts to these identified BHRs. To ensure the structures on these properties are not adversely impacted, construction and staging for the improvements should be suitably planned to avoid all impacts to these properties. Suitable mitigation measures could include the establishment of no-go zones with fencing and issuing instructions to construction crews to avoid the BHRs.
- Direct impacts to BHR 2 (1764 Lakeshore Road West) are anticipated to include the slight realignment of the driveway to the parking lot. However, construction activities are not anticipated to have direct adverse impacts to the potential cultural heritage value or interest of the BHR or identified potential heritage attributes. The property at 1764 Lakeshore Road West is listed by the City of Mississauga. Given that no structures or apparent landscape features of significant CHVI within the property are anticipated to be impacted, City staff have waived the requirement for a HIA in this case subject to suitable mitigation measures including post construction rehabilitation being implemented, with sympathetic plantings as applicable. Suitable mitigation measures may also

include establishing no-go zones with fencing, issuing instructions to construction crews to avoid the BHR.

- Vibrations during construction activities may impact BHR 2, BHR 4, and BHR 7 because of their location to the proposed improvements. To ensure the structures on the properties at 1764 Lakeshore Road West (BHR 2), 972 Clarkson Road South (BHR 4) and 1741-1745 Lakeshore Road West (BHR 7) are not adversely impacted during construction, a baseline vibration assessment should be undertaken during detailed design. Should this advance assessment conclude that the any structures will be subject to vibrations, a vibration monitoring plan should be prepared and implemented as part of the detailed design phase of the project to lessen vibration impacts related to construction. As the limits of the proposed interim improvements are not adjacent to BHR 1 (1084 Feeley Court - also known as 1056 Clarkson Road North), BHR 3 (924 Clarkson Road South), BHR 5 (1715 Sunningdale Bend), and BHR 6 (1117 Clarkson Road North) and the proposed alignment will be more than 50 metres from the structures within those BHRs, no further cultural heritage reporting is recommended.

For the Preferred Solution, construction activities and staging should be suitably planned and undertaken to avoid unintended negative impacts to identified BHRs.

Proposed Mitigation

- Avoidance measures may include, but are not limited to: erecting temporary fencing, establishing buffer zones, issuing instructions to construction crews to avoid identified BHRs, etc. 1764 Lakeshore Road West (BHR 2) is listed by the City of Mississauga Given that no structures or apparent landscape features of significant CHVI within the property are anticipated to be impacted, City Staff have waived the requirement for a HIA in this case subject to suitable mitigation measures including post construction rehabilitation being implemented, with sympathetic plantings as applicable. Suitable mitigation measures may also include establishing no-go zones with fencing, issuing instructions to construction crews to avoid the BHR.
- Indirect impacts to 1764 Lakeshore Road West (BHR 2), 972 Clarkson Road South (BHR 4) and 1741-1745 Lakeshore Road West (BHR 7) are anticipated because of their location adjacent to the proposed alignment. To ensure these properties are not adversely impacted during construction, a baseline vibration assessment should be undertaken during detailed design. Should this advance monitoring assessment conclude that the structure(s) on these properties will be subject to vibrations, prepare and implement a vibration monitoring plan as part of the detailed design phase of the project to lessen vibration impacts related to construction.

- The re-alignment of Clarkson Road, as proposed in the preferred alignment, would result in the elimination of the jog in the roadway at Lakeshore Road West. As the jog has been in place since the first half of the nineteenth century and has influenced the spatial arrangement and settlement of the surrounding area, documentation of the intersection is recommended to occur prior to alteration to record the historical transportation network for archival purposes.

Should future work require an expansion of the study area and/or changes are made to the preferred alignment then a qualified heritage consultant should be contacted to confirm the impacts of the proposed work on potential heritage resources.

7.1.7 Archaeology

The Stage 1 Archaeology Assessment was completed and determined that no previously registered archaeological sites are located within one kilometer of the study area. Most of the study is disturbed and the parts of the study area that exhibit archaeological potential are located just north of Turtle Creek, and west of Clarkson Road South, and these are areas not impacted by either the Interim Preferred Solution or the Preferred Solution. The Stage 1 Archaeological Assessment in **Appendix C**.

Proposed Mitigation

- Should future work require an expansion of the study area, complete additional Stage 1 AA to determine archaeological potential of surrounding lands

7.1.8 Streetscaping/ Urban Design

As mentioned previously in this report, the existing ROW is constrained, and the roadway improvements will impact some existing trees and landscaped features in the boulevard.

Proposed Mitigation

- Where impacts to trees cannot be avoided, compensation will be provided as per a compensation strategy developed during Detailed Design. A Tree Preservation Plan has been identified for the Interim Preferred Solution and is included in **Appendix V**.
- Impacted features will be restored or relocated, where feasible in conjunction with the recommendations from the Lakeshore Complete Streets Study. A Landscape Plan has been identified for the Preferred Solution and is included in **Appendix V**.

7.2 Natural Environment

The Interim Preferred Solution is not within the footprint of any valued ecosystem components or the boundaries of the Turtle Creek floodplain, including the 30 metres setback, although construction of a centre median and widening of Lakeshore Road West has the potential to cause ecological impacts. As a result, it is anticipated that most impacts will be associated with site preparation, demolition, and construction activities.

7.2.1 Vegetation, Trees, and Significant Woodlands

The Interim Preferred Solution is anticipated to have minimal impact to vegetation within the study area due to the existing urban, built environment. An ecosite which meets the criteria of significant woodlands as per the Mississauga Official Plan (2021) (FODM7-2), will not be impacted by project construction as it is approximately 75 metres from the limits of construction.

In total, approximately 13 trees will be impacted by the Interim Preferred Solution, the extent of which will be confirmed in Detailed Design; however, will likely require removal. A tree removal and protection plan is included in **Appendix V**.

West of Clarkson Road South, two trees will require removal however it is highlighted that there is an area of available ROW immediately north of these trees in which remedial trees/plantings are feasible. On the south side of Lakeshore Road, tree protection during construction will be used to facilitate the cycle track construction and minimise impacts to existing in-boulevard trees. Also, impacts may be reduced depending on the design of the adjacent Lakeshore Road West Complete Streets Study improvements and the tie-in to the proposed cycle tracks of that study.

On the north arm of the Clarkson Road South intersection, three trees are proposed to be removed however it is noted that two trees are currently in a poor/dead condition.

In between the Clarkson Road Intersections, four trees will require removal however due to the constrained ROW at this location, there are no opportunities for replanting / remediation in the immediate vicinity of the impacted trees.

East of Clarkson Road North, four streetscaping trees located adjacent the roadway will be impacted by the implementation of the cycle tracks. The westbound cycle track design has been modified to reduce impacts to the extent possible however like the west limits, impacts at this east limit will have to be confirmed in Detailed Design and per the improvements identified by the Lakeshore Road West Complete Streets Study. Due to the constrained ROW at this location, there are limited opportunities for

replanting/remediation in the immediate vicinity of the impacted trees however this will need to be confirmed in Detailed Design.

Proposed Mitigation

- Clearly define construction limits using tree protection fencing to avoid unnecessary vegetation removal where tree protection measures are recommended. A Tree Preservation and Protection Plan is included in **Appendix V**.
- Mitigate dust by moistening areas of bare, dry soil with water during construction to reduce the amount of dust produced.
- Where impacts to vegetation cannot be avoided, compensation will be provided as per a compensation strategy developed during Detailed Design. Compensation for loss of vegetation communities will be in accordance with the CVC and City guidelines and in conjunction with the recommendations from the Lakeshore Road West Complete Streets Study.

7.2.2 Drainage, Erosion, Sediment Control and Protection of Aquatic Habitat

The project site does not encompass any waterways, or fish habitat; however, it is located approximately 100 metres from Turtle Creek which does provide fish habitat. Construction work associated with the intersection improvements, is proposed south of Turtle Creek and is planned within the previously developed area.

Credit Valley Conservation (CVC) is required to review development and alteration applications under the *Conservation Authorities Act* (O.Reg. 174/06) for projects located within the regulatory limit of CVC. For the Interim Preferred Solution, no alteration and/or disturbance are anticipated to occur within the regulated limit associated with Turtle Creek, therefore, a permit from CVC will likely not be required. However, CVC should be contacted upon detail design to review the construction limits in relation to the regulatory limits of Turtle Creek.

It is anticipated that any impacts to water quality and fish habitat in the nearby Turtle Creek which may occur will be due to site preparation, demolition, and construction activities (e.g., accidental spills and malfunctions). These activities may result in impacts due to improper site drainage, erosion, and sedimentation if improperly managed.

Proposed Mitigation

- Erosion and sedimentation control (ESC) plans will be prepared in accordance with applicable guidelines. This includes Standard Notes for Drawings Submitted for CVC Review and applicable Ontario Provincial Standard

Drawings (OPSDs). All plans shall clearly identify the limit of disturbance and the ESC fence encompassing the disturbed area.

- In the future and as part of the detailed design phase of the Preferred Solution (Solution 1), an updated Natural Environment assessment will be required to assess existing environmental conditions as they exist at the time. It is anticipated that Solution 1 will likely have some edge impacts to the Turtle Creek corridor, and it is recommended the detailed design minimize the footprint of the new construction, to the extent possible.

7.2.3 Wildlife, Significant Wildlife Habitat, and Migratory Birds

Several wildlife species were documented through background data review and have been confirmed through field investigations. Wildlife and associated habitat observed within the Study Area was typical of a disturbed setting and based on field observation common species are expected to be present within these habitat features all with secure habitats in Ontario. No significant wildlife habitat has been identified within the proposed construction footprint.

Several bird species have been previously recorded in the study area and the street trees provide suitable breeding bird habitat. Vegetation removal planned as part of the proposed intersection improvements has the potential to impact migratory birds and their nesting activities unless planned in accordance with the appropriate timing windows.

Project construction has the potential to directly impact the CVI_1, and CVC_1 ecosites. Use of heavy machinery, increased human presence, noise and light pollution, soil compaction, stockpiled earth, and sedimentation of existing terrestrial habitat has the potential to indirectly impact common wildlife and wildlife habitat in adjacent areas. However, with proper implementation of avoidance and mitigations such as site clearing outside of the active season, and proper isolation of the construction areas, these impacts are anticipated to be temporary and methods to restore the disturbed areas post-construction should be implemented.

Proposed Mitigation

- No clearing or disruption to vegetation to occur between April 1 and October 31 to avoid the breeding season for the majority of the bird species protected under the Migratory Birds Convention Act (MBCA) and to avoid injury / mortality to bats.
- Preparation of restoration planting plans / landscaping planning plan, with consideration of invasive species management and ecological offsets in

accordance with CVC guidelines and policies as required and determined during Detailed Design.

7.2.4 Species at Risk

At this time, no Species at Risk (SAR) or their habitats have been identified in the buildable area within the Study Area; however, there is potential for SAR (i.e., birds, bats, and turtles) to travel through the study area during construction activities.

7.2.5 Source Water Protection

The study area is within the Credit Valley Source Protection Area. The Ministry of Environment, Conservation and Parks' (MECP) Source Protection Information Atlas was queried to identify potential sensitivities of the study area with respect to source water protection. The Credit-Valley-Toronto and Region-Central Lake Ontario (CTC) Source Protection Plan, MECP Source Water Protection Information Portal (SWPIP), and local and regional policies were reviewed to identify potential drinking water threats and mitigation measures relevant to this project. The results are discussed in **Table 7-1**.

Table 7-1: Source Water Protection Areas

Vulnerable Areas	Definition	Within Study Area?	Mitigation Discussion
Wellhead Protection Area	The area that surrounds a well through which contaminants are reasonably likely to move toward or reach the well.	No	--
Wellhead Protection Area E (GUDI)	The area around a well where water quality could be influenced by surface water. GUDI Well: Groundwater Under the Direct Influence of Surface Water.	N/A	--

Vulnerable Areas	Definition	Within Study Area?	Mitigation Discussion
Intake Protection Zone	The area around an intake pipe in a lake or river that draws in the surface water used to supply the municipal drinking water system. Three zones (1,2,3) are identified based on the distance around the intake pipe or the length of time for a contaminant to reach the intake.	Yes, Lorne Park IPZ-2, score 4.5 ('low' vulnerability)	Per the SWPIP, the application and handling of road salt and storage of snow are low risk source water protection threats to IPZ-2. To protect the environment from the negative impacts of road salts, the Region of Peel and City of Mississauga have developed a Salt Management Plan and incorporated practices to support proactive salt management in their winter maintenance programs. Practices include using more brine equipment to limit the use of road salt, environmentally responsible handling of 'dirty' snow to ensure it melts slowly and is treated before being released into the environment, and protection of salt from rain and snow during storage and handling.
Issue Contributing Area	The area where land-based activities contribute to the	No	--

Vulnerable Areas	Definition	Within Study Area?	Mitigation Discussion
	presence of unwanted substance in the water source.		
Highly Vulnerable Aquifer	An underground water supply, or aquifer, which can be easily contaminated because overlaying soil layers are thin or permeable.	Yes, HVA, score 6 (‘high’ groundwater vulnerability)	Under existing conditions, the study area is fully urbanized. Runoff from the area will be conveyed via the existing storm sewer system to an appropriate outlet and therefore will not permeate to aquifer.
Event Based Area	The area within a watershed where a spill could pollute the drinking water supply because of sanitary sewers, sewage treatment plans or pipelines that are close to rivers, streams, or other waterbodies.	N/A	--
Wellhead Protection Area Q1	The area where activities that take water without returning it to the same source may be a threat.	No	--
Wellhead Protection Area Q2	The area where activities that reduce recharge may be a threat.	No	--

Vulnerable Areas	Definition	Within Study Area?	Mitigation Discussion
Intake Protection Zone Q	Drainage area that contributes surface water to an intake, and the area that provides recharge to an aquifer that contributes to groundwater discharge to the drainage area. Part VI.7 of the Technical Rules specifies the rules with respect to delineation of IPZ-Q (Matrix, 2016)	No	--

7.3 Technical Considerations

7.3.1 Utilities

As detailed in Section 6.10 and **Appendix T**, there are existing utilities that will conflict with proposed improvements.

Proposed Mitigation

- A relocation plan will be developed during Detailed Design, as required, and in further consultation with the impacted utility companies.
- All utility information will be updated prior to construction to ensure that the data is accurate and to finalize relocation requirements as necessary, in consultation with utility companies.

7.3.2 Construction Detours/ Temporary Lane Restrictions

Section 6.9 provides an overview of the anticipated construction staging and during this time, some short-term traffic disruption and inconvenience during construction is anticipated.

Proposed Mitigation

- Impacts will be temporary in nature. The City will attempt to mitigate impacts as much as possible.

- During Detailed Design, a traffic management plan will be developed to determine how traffic will be accommodated during construction and how access to properties adjacent

7.4 Monitoring

The City of Mississauga will fulfill all monitoring requirements. Monitoring may encompass the following aspects:

- Monitoring of EA commitments to further work through future detailed design and construction phases to ensure these commitments are addressed.
- Monitoring associated with any conditions of approvals/permits to be obtained.
- Monitoring during construction (by City and/or Contractor) to ensure construction mitigation measures are implemented as planned.
- Monitoring of site restoration aspects including landscape plantings (under warranty).
- Other monitoring requirements may be identified in future project phases.

8 Timing of Implementation and Future Commitments

8.1 Project Schedule

As part of the Environmental Assessment process, this Project File Report is to be filed and placed on the public record for 45 calendar days for review by the public and review agencies.

As per the recently amended through Bill 197, Covid-19 Economic Recovery Act, 2020, the City cannot proceed with the project until at least 30 days after the end of the comment period provided for in the Notice of Completion. Further, the City may not proceed after this time if:

- a Section 16 (Part II) Order request has been submitted to the ministry regarding potential adverse impacts to constitutionally protected Aboriginal and treaty rights, or
- the Director has issued a Notice of Proposed Order regarding the project.

If after 30 days following the public review period, provided that no Section 16 Orders are received regarding potential adverse impacts to constitutionally protected Aboriginal and treaty rights and a Notice of Proposed Order regarding the project is not issued, the City may proceed to Phase 5 of the Class EA process – design and construction.

8.1.1 Lapse of Time

According to the Municipal Class EA process (2015), if the period of time from the filing of the Notice of Completion of PFR in the public record or the MECP's denial of a Section 16 Order request(s), to the proposed commencement of construction for the project exceeds ten (10) years, the proponent shall review the planning and design process and the current environmental setting to ensure that the project and the mitigation measures are still valid given the current planning period. The review shall be recorded in an addendum to the PFR which shall be placed on the public record.

Notice of Filing of Addendum shall be placed on the public record with the PFR and shall be given to the public and review agencies, for a minimum 30-day public review period. The notice shall include the public's right to request a Section 16 Order during the 30-day review period. If no Order request is received the proponent is free to proceed with implementation and construction.

8.2 Commitments of Future Work

The Project File Report identifies specific items to be reviewed and confirmed during Detailed Design. Some of these commitments will address specific concerns raised by property owners and review agencies during the EA process. Items of particular interest to be addressed are listed below.

8.2.1 Property and Access

Final impacts to private property will be confirmed during detailed design. The City of Mississauga will continue to consult with affected property owners.

Property acquisitions will occur in accordance with the City of Mississauga's procedures.

Permission to enter or temporary construction easements may be required at some locations. These locations will be finalized in detailed design.

The City of Mississauga will contact property owners well in advance of construction to seek permission to enter private lands and consult with them during the development of construction staging plans to maintain access to properties and minimize impacts (as feasible).

8.2.2 Indigenous Community Engagement

The City of Mississauga remains committed to engagement of Indigenous communities and will continue to provide information and invite feedback from Indigenous communities during the next phases of the project.

8.2.3 Natural Environment

Review opportunities to reduce the design footprint and minimize impacts to natural features during the next phases of design. Site preparation, demolition and construction will be 30 meters from the Turtle Creek watercourse.

Although it is understood that the defined CVC_1 Business Sector and CVI_1 Transportation will be most directly impacted, the defined Significant Natural Features in proximity to the construction (within 120 m) site must be protected. During Detailed Design, a plan is to detail the staging, access points and demolition (construction activities) will be in relation to the Natural Heritage features defined in this EA, to assist in the City's review. It is the City's desire that all development projects strive for an overall enhancement to the natural heritage system, with no encroachment, removal, or degradation to the natural features.

Credit Valley Conservation (CVC) is required to review development and alteration applications under the Conservation Authorities Act (O.Reg.174/06) for projects located within the regulatory limit of CVC. As per the Interim Preferred Solution selected for this project, no alteration and/or disturbance are anticipated to occur within the regulated limit associated with Turtle Creek, therefore, a permit from CVC will likely not be required. However, CVC should be contacted upon detail design to review the construction limits in relation to the regulatory limits of Turtle Creek. Based on CVC mapping, the Preferred Solution is located within CVC's regulated area. As such, a CVC permit will be required and other features of CVC interest include Peel Core Greenlands, significant woodland, candidate Significant Wildlife Habitat (SWH) migratory landbird stopover, and potential for bat maternal roosts. Prior to the issuance of a CVC permit, confirmation from the City of Mississauga will be required that temporary easement (if required for the preferred solution) is in place.

Confirm specific timing windows during Detailed Design. To comply with the requirements of the Migratory Birds Convention Act (MBCA) and to avoid injury / mortality to bats it is recommended that disturbance, clearing or disruption of vegetation where birds may be nesting should be completed outside the window of April 1 to October 31 to avoid the breeding bird season for the majority of the bird species protected under the act.

Develop various plans during Detailed Design, in consultation with CVC's Plant Selection Guidelines and Offsetting Guidelines, and tailored to existing conditions and restoration requirements including:

- Site Plan
    - A clear site plan indicating the location of any access, staging, storage, and work areas. Efforts must be made to locate these items outside of the Natural Heritage System features. Setbacks may also be appropriate given the potential impacts to watercourses and other natural areas. Forestry must be involved in the determination of any natural feature boundaries.
    - Based on the nature of the development (encroaching on Significant Natural Areas) please ensure to include a clear figure illustrating the following:
        - A line indicating a 30 m setback from the watercourse.
        - A line indicating a 15 m setback from the watercourse.
        - A line indicating a 10 m setback from the Significant Woodland.
        - A line indicating the Significant woodland's dripline.
        - A line indicating the existing developed area.
        - A line indicating the proposed development limit.

- Landscaping Planting/Restoration Planting Plan
  - This will be required for any areas adjacent to or within the city's natural heritage system that cannot be otherwise avoided. Native species common to Mississauga must be used exclusively. City Forestry must be involved in the review of this plan. Any new tree in sod corridors will be 2.5 metres wide and unencumbered by utilities above and below grade and any amended corridors will be 2.0 metres wide corridor unencumbered by utilities above and below grade. Consideration can also be made towards coordinating with the Clarkson Business Improvement Association (BIA) regarding planters etc. in areas where trees cannot be planted.
  - The Preferred Solution presents an opportunity to protect, enhance and expand the City's Natural Heritage. There is an existing sidewalk adjacent the significant woodland (along Clarkson Road North) and instead of relocating in kind, an alternative can be the use of softer material (i.e., a trail with permeable sidewalk material) that still meets AODA standards. The paved/planted furnishing zone on either side of the realigned Clarkson Road North should be replanted according to Forestry's restoration guidelines and protected from urban impacts (i.e., a fence between the trail and replanted area).
- Tree Inventory and Preservation Plan
  - City Forestry must be involved in the review of this plan.
  - If tree removal is proposed within the significant woodland and valleyland associated with Turtle, a detailed compensation planting plan will be required. This plan must be reviewed and approved by the appropriate conservation authority and Forestry (The City).
- Erosion and Sediment Control Plan
- Invasive Species Management Plan
  - Consult Section 6.0 Management of Invasive Flora in the City of Mississauga's Invasive Species Management Plan to avoid introducing invasive flora as this is a critical component of protecting, managing, and enhancing Mississauga's Natural Heritage as outlined in the City's Official Plan
- Edge Management Plan
  - City Forestry are to be consulted with respect to site-specific vegetation clearing and tree cutting prior to activity occurring on site.
- Environmental Inspection and Monitoring Plan
- Natural Environment and Wildlife surveys for Turtle Creek

  - Including but not limited to Significant Wildlife Habitat (SWH) surveys, vegetation surveys, breeding bird surveys, invasive species surveying, species specific surveys based on feature presence and what NAS data shows has been present in the area. Providing mitigation approaches for all direct, indirect, and cumulative impacts to these present features and associated species.
  - Of the 23 potential SAR, 8 have potential suitable habitat in neighbouring Natural Heritage features. This includes threatened species such as barn swallows, Chimney Swift, and various bat species. The various species have the potential to travel through the study area during construction activities. In addition to further surveys, further consultation will also be conducted with the Aurora District NDMNRF and MECP during Detailed Design.
- Habitat and vegetation restoration monitoring
- Water quality monitoring program
- Construction and post-construction monitoring plans
- Confirm if in-water works are required
- DFO self-assessment to determine if serious harm to fish or fish habitat is expected due to activities
- Dust Management Plan will be developed by the contractor prior to construction

8.2.4 Drainage and Stormwater Management

It is recommended that during the detailed design stage, a complete survey of the existing storm sewer should be completed due to the lack of consistent data available of the area.

An Environment Compliance Approval (ECA) may be required from the MECP for the stormwater management measure that would be considered during the detailed design phase.

Review of LID treatment opportunities to store drainage during storm events beyond the minimum requirements will be explored during Detailed Design.

A review of the current practice on road salt management and an evaluation of the potential impacts on surface water from the increase salt load of the pre-development versus post-development roadway salt impacts shall be completed during detail design.

During Detailed Design explore opportunities to eliminate or reduce the flood hazards (including spill), to the greatest extent possible.

During the Detailed Design phase of the preferred solution (Solution 1), further drainage and stormwater analysis will be required including updates to the hydraulic modelling, floodplain assessment and revisions to CVC floodplain mapping shall be completed in consultation with CVC. The following additional analysis is recommended during the detailed design phase for the preferred solution (Solution 1):

- Capacity assessment of existing storm sewers as the new storm sewers will be connected to the existing system.
- Review potential LID measures such as pervious pavement and infiltration galleries if that can be implemented along the sidewalk area.
- Provide quality control measure, potentially OGS, for the runoff of new roadway area.
- Conduct hydraulic analysis of Turtle Creek and prepare flood plain mapping to ensure that there are no negative impacts to the floodplain. Additional consultation may be required with the CVC in this aspect.

In Detailed Design, it is recommended the preferred solution have minimal impacts to the flood plain and valley slopes at Turtle Creek Crossing by reducing the proposed footprint to the extent possible. Although through a high-level review, no impact to Turtle Creek is anticipated, a complete hydraulic and SWM analysis will need to be completed in the Detailed Design stage to confirm no negative impacts to the floodplain and be presented to the Credit Valley Conservation (CVC). Geotechnical investigation and slope stability analysis will be required as the proposed works involve modification to the valley slope. Slope stability analysis is to be completed in accordance with CVC's Slope Stability Guideline.

8.2.5 Built and Cultural Heritage

Should future work require an expansion of the study area and/or any significant changes to the proposed improvements, a qualified heritage consultant to confirm the impacts of the proposed work on potential heritage resources.

City staff have confirmed that a HIA is not required for 1764 Lakeshore Road West (BHR 2) if suitable mitigation measures including post construction rehabilitation are implemented, with sympathetic plantings as applicable.

To ensure 1764 Lakeshore Road West (BHR 2), 972 Clarkson Road South (BHR 4) and 1741-1745 Lakeshore Road West (BHR 7) are not adversely impacted during construction, a baseline vibration assessment should be undertaken during detailed design. Should this advance monitoring assessment conclude that the structure(s) on these properties will be subject to vibrations, prepare and implement a vibration

monitoring plan as part of the detailed design phase of the project to lessen vibration impacts related to construction.

Documentation of the Clarkson Road intersection is recommended to occur prior to alteration to record the historical transportation network for archival purposes.

8.2.6 Archaeology

In review of the Archeology Stage 1 Assessment, no areas of archaeological potential are anticipated to be impacted by the interim preferred solution or preferred solution.

Should the proposed work extend beyond the current anticipated construction limits or Study Area, further Stage 1 archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands, or Stage 2 archaeological assessment will be required on areas of potential along Turtle Creek.

If archaeological remains are found during subsequent construction activities, the consultant archaeologist, approval authority, and the Cultural Program Unit of the MHSTCI should be immediately notified.

8.2.7 Noise and Air Quality Impacts

As described in Section 7 of this report, the timing of the Preferred Solution is dependant on future redevelopment and/or available funding due to its cost and impacts. Therefore, its construction is likely outside the timeframe for which this EA is considered valid (as detailed in Section 8.1.1 if a lapse in time of project exceeds ten (10) years, the proponent shall review the planning and design process and the current environmental setting to ensure that the project and the mitigation measures are still valid given the current planning period). As a result, while both the Noise and Air Quality Impact Assessments identified no mitigation measures required for the Interim Preferred and Preferred Solutions (other than during construction), further assessment of Noise and Air Quality Impacts may be required for the Preferred Solution if there has been a significant change in surrounding sensitive receptors or the warrant of noise and air quality mitigation by the time of its Detailed Design and construction.

8.2.8 Contamination and Materials Management

If subsurface work is to be conducted in the vicinity of any of the properties identified with potential environmental concern, further investigations including Phase II ESAs will be undertaken during Detailed Design. If impact is encountered, it will be managed in consultation with a qualified professional.

8.2.9 Utility Relocation

Utility relocations shall be coordinated to minimize service disruptions where possible through liaison and contract requirements.

All utilities and their locations within the study area shall be confirmed in Detailed Design and, if required, a protection plan or utility relocation will be completed.

8.2.10 Construction Monitoring and Traffic Management

Develop traffic management plan and staging concept to determine how vehicular and pedestrian traffic will be accommodated during construction and how access to properties adjacent to Lakeshore Road will be maintained.

8.2.11 Geotechnical Investigation

Complete geotechnical investigation during Detailed Design to confirm founding soil conditions for the both the Interim Preferred and Preferred solutions. This should include testing during to confirm recommendations for management of excess excavated soils in accordance with current regulations.

8.2.12 Streetscaping and Landscaping Improvements

A landscape plan for the Preferred Solution is included in **Appendix V** however this will need to be confirmed in conjunction with the recommendations from the ongoing Lakeshore Road West Complete Street Study and develop a streetscaping plan, including individual tree planting locations, during Detailed Design.

8.2.13 Timing of Improvements

The City intends to phase the improvements by implementing the interim preferred solution in the short to medium term and the preferred solution in the longer term.

The City will look to leverage coordination opportunities with other infrastructure renewal requirements such as road resurfacing along Lakeshore Road West to implement the interim preferred solution as part of a future Integrated Road Project. The final construction timing of the Integrated Road Project will be confirmed through detail design following completion of the ongoing Lakeshore Road West Complete Street Study and will be subject to annual Council review and prioritization.

The City does not currently have an estimate timing year for the preferred solution. The implementation of the preferred solution will be subject to opportunities created through the redevelopment of the area and funding considerations.

A

Appendix A: TRAFFIC OPERATIONS AND SAFETY REPORT

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Appendix B: CULTURAL HERITAGE RESOURCE ASSESSMENT REPORT

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Appendix C: STAGE 1 ARCHAEOLOGY ASSESSMENT REPORT

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Appendix D : NATURAL ENVIRONMENT ASSESSMENT REPORT

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Appendix E: ARBORIST REPORT AND TREE INVENTORY

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Appendix F: STORMWATER MANAGEMENT AND DRAINAGE TECHNICAL MEMORANDUM

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Appendix G: PHASE 1 ENVIRONMENTAL SITE ASSESSMENT REPORT

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Appendix H: ROUNDABOUT SCREENING TECHNICAL MEMORANDUM

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Appendix I: DETAILED EVALUATION

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Appendix J: NOTICE OF COMMENCEMENT

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Appendix K : PUBLIC INFORMATION CENTRE #1

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Appendix L: PUBLIC INFORMATION CENTRE #2

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Appendix M: PUBLIC INFORMATION CENTRE #3

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Appendix N: CORRESPONDANCE RECORD

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Appendix O: INDIGENOUS COMMUNITY ENGAGEMENT

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Appendix P: PRELIMINARY DESIGN PLAN – INTERIM PREFERRED SOLUTION

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Appendix Q: PRELIMINARY DESIGN PLAN – PREFERRED SOLUTION

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Appendix R: NOISE REPORT

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Appendix S: UTILITY CONFLICT PLAN – INTERIM PRFERRED SOLUTION

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Appendix T: PRELIMINARY COST ESTIMATES

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Appendix U: AIR QUALITY

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Appendix V: TREE PRESERVATION PLAN AND LANDSCAPE PLAN

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Appendix W: LIGHTING EVALUATION REPORT

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