Sheridan Park Drive Extension Municipal Class Environmental Assessment

Project File Report

City of Mississauga

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Record of Revisions

Revision	Date	Description
0	August 25, 2017	Initial Submission to City (Progress Report 1)
1	December 12, 2017	Second Submission to City (Progress Report 2)
2	January 10, 2018	Final Draft Submission to City
3	January 12, 2018	Draft Executive Summary Submission to Agencies
4	February 5, 2018	Final Report for 30-Day Public Review Period

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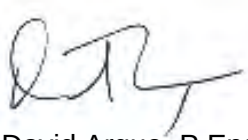

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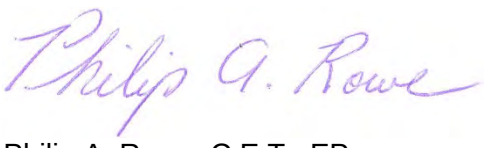

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Glossary

City	City of Mississauga
CVC	Credit Valley Conservation
EA	Environmental Assessment
ESA	Environmental Site Assessment
MNRF	Ministry of Natural Resources and Forestry
MOECC	Ministry of the Environment and Climate Change
MOP	Mississauga Official Plan
MTO	Ontario Ministry of Transportation
MUT	Multi-Use Trail
OP	Official Plan
PIC	Public Information Centre
POR	Point of Reception
PPS	Provincial Policy Statement
ROP	Region of Peel Official Plan
ROW	Right-of-Way
SWH	Significant Wildlife Habitat
SAR	Species at Risk

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1.0 Introduction

The City of Mississauga (City) has undertaken a Municipal Class Environmental Assessment (EA) to investigate the proposed extension of Sheridan Park Drive between Homelands Drive and Speakman Drive in the southwestern area of Mississauga. R.J. Burnside & Associates Limited (Burnside) has facilitated the EA on behalf of the City.

The Study has followed a comprehensive planning and design process in order to explore the opportunity to connect the east and west sections of Sheridan Park Drive, improve the road network connectivity in the residential neighbourhood and business area, create options for alternative routes and improve multi-modal network connectivity. The Study has been completed in accordance with the requirements of a Schedule B Undertaking as outlined in the Municipal Engineers Association Municipal Class Environmental Assessment Document (October 2000, as amended 2007, 2011 and 2015), which is an approved process under the Ontario *Environmental Assessment (EA) Act, 1990.*

The variety of land uses within and adjacent to the Sheridan Park Drive right-of-way (ROW) presented a unique landscape upon which to study. Existing land uses include a residential area (Sheridan Park Homelands neighbourhood), a utility corridor, a multi-use recreational trail, a City-owned ROW and naturalized areas on privately owned lands that are part of the Sheridan Park Corporate Centre. The Municipal Class EA process has allowed for all uses of this corridor to be considered and balanced when evaluating different alternatives.

1.1 Description of Study Area

The Study Area is generally bordered by a utility corridor to the north, Winston Churchill Boulevard to the west, Speakman Drive / Homelands Drive to the east and naturalized private lands to the south. The Study Area is illustrated on Figure 1.1. The proposed extension of Sheridan Park Drive falls within the existing City-owned ROW, which runs through the centre part of the Study Area.

The Study Area includes a unique combination of uses including the Sheridan Park Corporate Centre (Sheridan Park), a utility corridor that includes a multi-use trail (MUT) and the Sheridan Homelands residential neighbourhood.

Sheridan Park is a 340 acre corporate centre, which is primarily designated Business Employment in the Mississauga Official Plan (MOP). The majority of Sheridan Park is occupied by private industries and businesses, which include in their landholdings significant natural areas particularly on the north side of corporate centre, within the Study Area. These naturalized areas include two wooded areas that are identified as

Significant Natural Areas in the City's Natural Areas System (2017 Update). Sheridan Park is also identified as one of the City's cultural landscapes due to its scenic and distinct visual qualities.

The City maintains a paved MUT through the utility corridor from Winston Churchill Boulevard to Homelands Drive / Speakman Drive. The trail then continues east along the south side of Sheridan Park Drive to Erin Mills Parkway. To the west of Winston Churchill Boulevard, the trail continues through the hydro corridor in Oakville. The trail provides recreational opportunities to the local residents and commuter cyclists.

Figure 1.1: Study Area

1.2 Municipal Class EA Process

The planning of major municipal infrastructure projects or activities is subject to the *EA Act, 1990* and requires the proponent to complete an EA. The Municipal Class EA process was developed by the Municipal Engineers Association, in consultation with the Ministry of the Environment and Climate Change (MOECC). The Municipal Class EA solicits input and approval from regulatory agencies, the municipality and the public at the local level. This process leads to an evaluation of the alternatives in view of the significance of environmental impacts and the choice of effective mitigation measures.

1.2.1 Municipal Class EA Process

There are three categories of assessment within the Municipal Class EA process that are dependent on the complexity and potential for environmental impact.

- **Schedule A** - Projects are limited in scale, have minimal adverse environmental impacts and require no public notification or documentation.
- **Schedule A+** - Projects are limited in scale, have minimal adverse environmental impacts and require no documentation. The public is to be advised prior to implementation.
- **Schedule B** - Projects have the potential for some adverse environmental impacts. The proponent is required to undertake a screening process, involving mandatory contact with the directly affected public and regulatory agencies, to ensure that they are aware of the Project and that their concerns are addressed. Schedule B Projects require that a Project File be prepared and made available for public review. Proponents undertaking Schedule B Projects are required to complete Phase 1, 2 and 5 of the Municipal Class EA Process.
- **Schedule C** - Projects have the potential for significant environmental impacts and must proceed under the full planning and documentation procedures of the Municipal Class EA document. Schedule C projects require that an Environmental Study Report (ESR) be prepared and filed on the public record for review by the public and regulatory agencies. Proponents undertaking Schedule C Projects are required to complete Phase 1 through 5 of the Municipal Class EA Process.

The phases of the Municipal Class EA are summarized in the Municipal Class EA document as follows:

- **Phase 1** - Identify the problem (deficiency) or opportunity.
- **Phase 2** - Identify alternative solutions to address the problem or opportunity by taking into consideration the existing environment, and establish the preferred solution taking into account public and review agency input. At this point, determine the appropriate schedule for the undertaking and document decisions in a Project

File for Schedule B projects, or proceed through the following phases for Schedule C projects.

- **Phase 3** - Examine alternative methods of implementing the preferred solution, based upon the existing environment, public and review agency input, anticipated environmental effects and methods of minimizing negative effects and maximizing positive effects.
- **Phase 4** - Document, in an ESR, a summary of the rationale, and the planning, design and consultation process of the project as established through the above phases, and make such documentation available for scrutiny by review agencies and the public.
- **Phase 5** - Complete contract drawings and documents, and proceed to construction and operation; monitor construction for adherence to environmental provisions and commitments. Where special conditions dictate, also monitor the operation of the completed facilities.

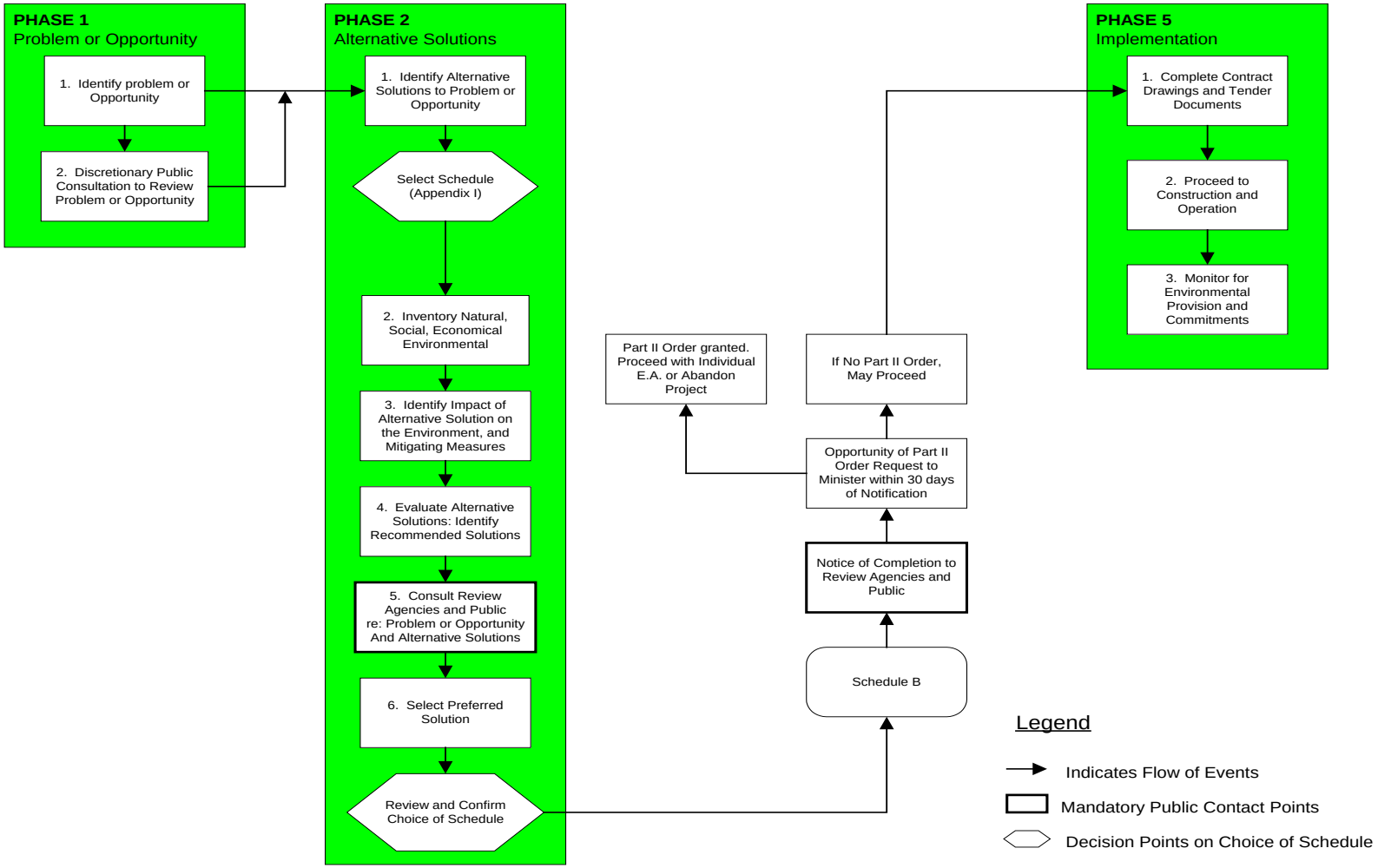
1.2.2 Class EA Schedule Confirmation

The proposed extension of Sheridan Park Drive is identified as a **Schedule B Project** under Appendix 1 - Project Schedule on page 1 to 5 under Item 21 of the Municipal Class EA document.

> *"Construction of new roads or other linear paved facilities (e.g., HOV lanes) and the construction value is less than 2.4 million."*

At the time of conducting this Study, the proposed extension is anticipated to cost under $2.4 million to construct. As such, this Study has followed the Schedule B Municipal Class EA Process that is illustrated in Figure 1.2.

Figure 1.2: Municipal Class EA Process for Schedule B Undertakings



2.0 Need / Justification

The proposed extension of Sheridan Park Drive between Homelands Drive / Speakman Drive and Winston Churchill Boulevard is supported by the directives of both provincial and regional policy. Further to this adherence to policy, the City has also identified several opportunities that the proposed extension will offer the Study Area and surrounding residents.

2.1 Project Opportunity Statement

Through this Study, the City is exploring the opportunity to connect the east and west sections of Sheridan Park Drive to create options for alternate routes. At present, the east-west accesses through the neighbourhood are via Homelands Drive (through a residential neighbourhood) or Speakman Drive (through the business park). The implementation of this link would be an important piece of the City's overall road network, which would improve the connectivity in Sheridan Park and the surrounding commercial areas and create an overall reduction of traffic and alternative route to reduce traffic in the Sheridan Homelands neighbourhood. Linking the east and west segments of Sheridan Park Drive will also improve access for emergency services within the Study Area.

The science and technology facilities in Sheridan Park will continue to develop to support the growth of a contemporary science and business park, and new office uses may also be developed. At the same time, the natural areas of Sheridan Park should be protected while continuing to provide aesthetic benefits to the employees within Sheridan Park.

The City fully recognizes that this Study Area offers diverse and complimentary land uses that need to be carefully considered when looking at the opportunity to extend / link Sheridan Park Drive.

Through this EA, the City has an opportunity to:

- Improve network redundancy in the wider road network to improve traffic flow and increase access routes for emergency services;
- Support multi-modal transportation and encourage transit;
- Reduce traffic volumes in the Sheridan Homelands neighbourhood; and
- Maintain the natural feel and recreational benefits of the Study Area by minimizing impacts to existing natural heritage features and introducing low impact development features and plantings to increase biodiversity.

2.2 Planning Overview

This Study is a step in the ongoing implementation of the City of Mississauga's Strategic Plan process as well as the City's Official Plan and the Draft Sheridan Park Land Use Master Plan. The objective of these plans is to create complete, multi-modal oriented communities that are a meaningful place for all citizens and also continues to attract businesses, growth and investment into the cities key industries, while meeting employment needs.

In addition to these municipal planning initiatives, the Study must consider applicable provincial and regional planning policies including the Provincial Policy Statement and the Growth Plan for the Greater Golden Horseshoe.

2.2.1 Provincial Planning Policies

2.2.1.1 Provincial Policy Statement

The 2014 Provincial Policy Statement (PPS) is the complimentary policy document to the *Planning Act, 1990*, issued under Section 3 of the Act.

The PPS states that municipal projects should be directed to existing settlement areas, create stronger and improved communities, and have little to no impact on the natural features of the area. In general projects should have consideration for future needs to ensure the benefits of the project are far-reaching. Section 1.6 of the PPS contains specific guidance on Infrastructure and Public Service Facilities:

> *"1.6.1 Infrastructure and public services facilities shall be provided in a coordinated, efficient and cost-effective manner that considers impacts from climate changes while accommodating projected needs.*
>
> *Planning for infrastructure and public service facilities shall be coordinated and integrated with land use planning so that they are:*
>
> *a) financially viable over their life cycle, which may be demonstrated through asset management planning; and*
> *b) available to meet current and projected needs.*
>
> *1.6.3 Before consideration is given to developing new infrastructure and public service facilities:*
>
> *a) the use of existing infrastructure and public service facilities should be optimized; and*

b) opportunities for adaptive re-use should be considered, wherever feasible.

1.6.5 Public service facilities should be co-located in community hubs, where appropriate, to promote cost-effectiveness and facilitate service integration, access to transit and active transportation."

As such, improvements made to public infrastructure, including the potential extension of Sheridan Park Drive are consistent with the PPS.

2.2.1.2 Growth Plan for the Greater Golden Horseshoe

The Growth Plan for the Greater Golden Horseshoe (2017) is a Provincial Plan that directs how regional growth in the Greater Golden Horseshoe (GGH) is to be managed up to 2041. The plan carries policies forward from the Provincial Policy Statement (PPS), working to reduce development sprawl and providing direction in where intensification should take place. There are several provisions within the policy that are relevant to the Sheridan Park Drive extension. Section 3.2.2 of the Growth Plan outlines the general provisions of Transportation for the GGH. According to this policy, the transportation system within the GGH will be planned and managed to:

a) "Provide connectivity among transportation modes for moving people and moving goods;

b) Offer a balance of transportation choices that reduces reliance upon the automobile and promotes transit and active transportation."

Section 4 of the Growth Plan details the protection of natural features within the GGH. Within the Natural Heritage System:

iii. "the removal of other natural features, not identified as key natural heritage features and key hydrologic features is avoided, where possible. Such features should be incorporated into the planning and design of the proposed use wherever possible."

Climate change is also addressed in Section 4 of the Growth Plan. According to the growth plan, in planning to reduce greenhouse gas emissions and address the impacts of climate change, municipalities are encouraged to:

a) "develop strategies to reduce greenhouse gas emissions and improve resilience through the identification of vulnerabilities to climate change, land use planning, planning for infrastructure including transit and energy, green infrastructure, and low impact development, and the conservation objectives in policy 4.2.9.1."

2.2.2 Region of Peel

With the major theme of sustainability and smart growth, the Region of Peel Official Plan (ROP) reinforces the policies of the PPS and the Growth Plan, allocating growth targets to municipalities. While providing direction for local Official Plans (OPs), the ROP focuses on policies affecting regional systems and services. The City is located within the Region's urban system and Sheridan Park is designated as an employment area.

2.2.3 Strategic Plan

The Mississauga Strategic Plan identifies five Strategic Pillars for Change, intended to provide guidance towards the creation of a city for the 21st century.

The most relevant include to this study include:

- Increasing transportation capacity by creating additional links in street networks and active mobility choices;
- Creation of complete streets with inclusive cross-sections and an urban form that supports walking and active modes of transportation;
- Develop walkable, connected communities;
- Build and maintain infrastructure;
- Maintain a safe city;
- Attract innovative businesses;
- Meet employment needs; and
- Conserve, enhance and connect natural environments by minimizing impacts to existing natural heritage features and introducing low impact development features and plantings to increase biodiversity.

2.2.4 City of Mississauga Official Plan

The Mississauga Official Plan (MOP) provides a policy framework to protect, enhance, restore and expand the Natural Areas System, protect the health of the natural environment and the climate, to direct growth to where it will benefit the urban form, support a strong public transportation system, and address the long term sustainability of the City.

As a key element to the consolidated MOP the City adopted a new approach to land use planning in Mississauga, one that blends transportation, land use, and urban design objectives. Key to the delivery of this new approach is the MOP's section on building a multi-modal city by:

- Developing and promoting an efficient and safe transportation system for all users;
- Promoting a transportation network that connects nodes with a range of transportation modes;
- Implementing a viable, active transportation network for cyclists and pedestrians;
- Encouraging the application of transportation demand management techniques;
- Developing a seamless network of mobility hubs; and,
- Providing an alternative route for goods movement in the business park.

MOP defines the role of arterials as principal transportation corridors for high volumes of people and goods. Major collectors in neighbourhoods, like Sheridan Park Drive (proposed), will be designed to accommodate moderate volumes of traffic and encourage active transportation, by minimizing conflicts with the various uses of active transportation. The City supports opportunities for multi-modal uses where feasible.

Within MOP, Sheridan Park is identified as a special policy area, which will provide for employment uses and densities similar to major nodes (less density than downtown, but more than elsewhere). MOP Land Use Map (Schedule 10) designates most of Sheridan Park as Business Employment, which generally permits a wide range of commercial or industrial uses. However, the policies specific to the Corporate Centre supersede the general permissions.

MOP recognizes the strong role of life sciences, communication and information technology industries in the City. Section 10.1.5 states that the City will provide a large range of employment opportunities, including diversified employment uses, the City will:

- Strive to increase office employment;
- Encourage the establishment of knowledge based industries and support their growth; and
- Support smaller, more innovative industries and their growth.

2.2.5 Draft Sheridan Park Master Land Use Plan

In 2014, the City completed the Draft Sheridan Park Master Land Use Plan, a study to review existing conditions of the area and recommend amendments to the land use designations and zoning regulations within Sheridan Park. Future land use amendments would facilitate multiple businesses and increased accessory uses in Sheridan Park, while maintaining the unique campus feel of the area for nearby residents. The renewed focus of Sheridan Park is on pilot plants, innovation and science and technology; however, future land uses also include offices, daycare, utility and open spaces. Schools are permitted on a site-specific basis; however are not the preferred use of the land.

The existing zoning in Sheridan Park is primarily E2-5, which permits science and technology buildings and office uses. One of the zoning exceptions in Sheridan Park is E2-101, which permits a range of more diverse commercial and employment uses including hotels at the eastern end of Sheridan Park.

The Draft Land Use Master Plan is directed by Amendment No. 40 to the MOP. The purpose of the amendment is to update the Sheridan Park Corporate Centre character area policies to reflect the Draft Land Use Master Plan. The changes include:

- Changes to the 'Business Employment' designation to allow a broader range of uses; and
- Changes to Greenland mapping to reflect the presence of significant natural areas and natural hazard lands associated with Sheridan Creek.

The amended polices of allow a broader range of uses to encourage redevelopment to occur in Sheridan Park.

2.2.6 Moving Mississauga: From Vision to Action – Mississauga's Interim Transportation Strategy

Moving Mississauga (2011) was developed by the City as a first step in the development of a transportation master plan. Within the strategy document, the City has identified 46 actions to be pursued over a five year period following the release of the strategy. Moving Mississauga builds upon several key City initiatives including:

- City of Mississauga New Official Plan, 2010;
- City of Mississauga Strategic Plan Our Future Mississauga;
- City of Mississauga Cycling Master Plan, 2010;
- Strategic Transit Network Opportunities Study, 2008;
- Mississauga BRT Environmental Assessment, March 2010; and
- City of Mississauga Transit Ridership Growth Strategy.

The Vision of Moving Mississauga is:

> *"The City of Mississauga will have a safe and connected multi-modal transportation system that enhances our environment, supports our economy, connects people to places and moved goods to market."*

Moving Mississauga identifies a number of Emerging Issues. Two of those issues are:

Complete Streets

> *"As Mississauga intensifies to accommodate future growth the design of streets play a significant role in facilitating movement of pedestrians, cyclists, transit, trucks and the private automobile. Balancing this broad spectrum of potential users in the design of our road network is an important aspect as the City retrofits the existing road network that was originally designed predominantly for the automobile. To support the complete street concept the City's Official Plan re-defines the road hierarchy to ensure the design speeds and volume of traffic support the safe integration of pedestrians, cyclists and transit within the road right-of-way where appropriate."*

Context Sensitive Design

> *"Context Sensitive Design (CSD) is the art of creating public works projects that meet the needs of the users, the neighbouring communities, and the environment. It integrates projects into the context or setting in a sensitive manner through careful planning, consideration of different perspectives, and tailoring designs to particular project circumstances. Mississauga's Official Plan recognizes the benefits of the CSD approach by ensuring the design of roads have regard for existing and planned land sues, urban design and community needs."*

Through the process of several Stakeholder Advisory Committee meetings, Project Team meetings and a Public Information Centre the EA process has strived to find a balance to accommodate the many future uses of the proposed new and reconstructed roadways.

As such, the proposed road improvements and this Class EA are in alignment and consistent with the goals and approach outlined in Moving Mississauga.

2.2.7 Cycling Master Plan

The Mississauga Cycling Master Plan (2010) focuses on fostering cycling as a way of life in the City, building an integrated network of over 900 km on-road and off-road cycling routes over the next 20 years and aims to adopt a safety first approach to

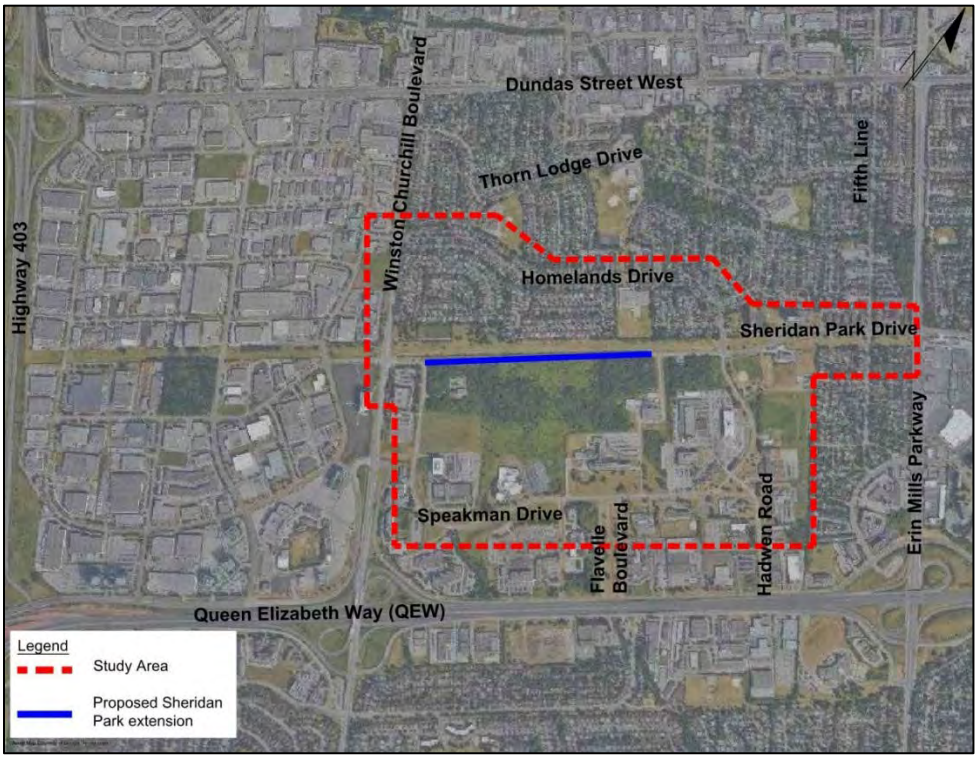
cycling. The plan is comprised of 17 recommendations and 79 action items including the establishment of a cycling office, fostering community cycling events, adding an average of 30 km/year to the cycling network, developing and implementing a comprehensive signage and way finding system and establishing an educational plan for motorists and cyclists.

The City recognizes the importance of cycling as an active and environmentally sustainable transportation option and is actively working to improve cycling facilities across the City. Within the Mississauga Cycling Master Plan (2010) Sheridan Park Drive was identified as a Primary off-road route and has been constructed within the utility corridor.

2.3 Transportation Forecasts and Operations

A Transportation and Traffic Analysis Report (Transportation Report) was completed as part of the EA Study; which assessed both the existing and future predicted traffic conditions within the Transportation Study Area illustrated on Figure 2.1. The Transportation Study Area varies slightly from the EA Study Area, which is illustrated on Figure 1.1 as the transportation analysis conducted as part of the Transportation Report included review of roads within the vicinity of the EA Study Area. A copy of the Transportation Report is provided in **Appendix A**. The key findings of this report are provided in the following sections.

Figure 2.1: Transportation Study Area



2.3.1 Existing Traffic Conditions

As part of the transportation analysis completed for the Transportation Report, the existing transportation system with in the Transportation Study Area illustrated on Figure 2.1 was evaluated. Sheridan Park Drive is discontinuous through the area shown for the proposed extension and this is a missing link in the roadway network to provide east-west connectivity.

Cycling and pedestrian movement is accommodated by a MUT within the utility corridor along the north side of the Sheridan Park corridor. There is a sidewalk on the north side of Sheridan Park Drive east of Homelands Drive. Between Winston Churchill Boulevard and Speakman Drive there is a sidewalk on the south side of Sheridan Park Drive. Residents and employees currently walk through the MUT area.

The Sheridan Homelands neighbourhood is serviced by transit on the arterial road network and within the neighbourhood via Route 29. Sheridan Park is serviced internally by Routes 45A and 71.

Key intersections in the Study Area were assessed to evaluate operations during the weekday morning (AM) and afternoon (PM) peak hours. Signalized intersections are operating at an overall level of service C during the weekday AM and PM peak hours. Priority for green time has been given to the north-south roads of Winston Churchill Boulevard and Erin Mills Parkway. This can result in reduced operations on the side streets (i.e., longer delays), but the movements are operating within capacity and the signal timings give priority to the higher traffic volume roads.

During the PM peak hours, it is common to observe queues within employment areas as employees typically exit around similar times especially if the employment use is similar within the area (e.g., majority office). This is the case at the Winston Churchill Boulevard / Plymouth Drive / Sheridan Park Drive intersection where westbound queues from Winston Churchill Boulevard were observed for through right turn movements. Through previous work undertake by the Region of Peel, the need for an exclusive westbound right turn lane was identified and has been added to their Development Charges Study. This improvement would reduce queues and improve operations for vehicles exiting Sheridan Park during the weekday PM peak hour.

The unsignalized two-way stop intersections assessed in the Transportation Study Area, the critical movement intersections critical movements are operating with level of service C or better and no changes are identified for these intersections.

The unsignalized four-way stop intersection movements are operating at level of service C or better with the exceptions of eastbound movements at the Fifth Line / Sheridan Park Drive intersection. This intersection has been identified as needing traffic signals in the future.

The City is undertaking a separate study to address Sheridan Homelands neighbourhood resident's concerns with respect to operations on their streets including speeding. The effect that the Sheridan Park extension could have on the neighbourhood in the future conditions has been considered.

Based on the traffic data available, it is observed that trucks (which include buses) are using Homelands Drive; however, there is no evidence that the trucks are using the route to access Sheridan Park Corporate Centre or the employment lands on the west side of Winston Churchill Boulevard. Included in the traffic data numbers are trucks and buses that would have a destination / purpose within the neighbourhood such as garbage pick-up and home delivery services. There is some evidence that trucks might be using Homelands Drive and Sheridan Park Drive (east of Homelands Drive) as an east-west route between Winston Churchill Boulevard and Erin Mills Parkway.

Some of the key findings of the existing traffic conditions review are illustrated on Figure 2.2.

Figure 2.2: Key Findings of Existing Traffic Conditions Review

2.3.2 Future Travel Demand

EMME Travel Demand Traffic Volume Projections

To assess effects of the various network scenarios, the City's EMME Travel Demand Model was utilized to project traffic volumes for 2021 and 2031 horizon years. In addition, the model was also utilized to assess the impact of the various network scenarios on travel along Homelands Drive / the Sheridan residential neighbourhood. This assessment was completed for the 2021 horizon year and examined the following::

1. How much traffic utilizes Homelands Drive when comparing the following scenarios:

    b) Do-nothing scenario – the Do-nothing scenario (assumes four lanes only on Sheridan Park Drive between Winston Churchill Boulevard and Speakman Drive west intersection).

    c) Sheridan Park Drive Extension (with four lanes on Sheridan Park Drive between Winston Churchill Boulevard and Speakman Drive west intersection).

    d) Speakman Drive widening to four lanes (no Sheridan Park Drive extension, four lanes on Sheridan Park Drive between Winston Churchill Boulevard and Speakman Drive west intersection)

2. Origin and destination of trips utilizing Homelands Drive

3. Origin and destination of trips utilizing the Sheridan Park Drive Extension

It should be noted that the EMME model is used for macro analysis to provide analysis / results generally at a higher level, i.e., freeways, arterials and major collectors. As such the numbers presented in this document should not be taken for exact but are intended to help in comparing how the various scenarios impact travel demand in the area.

The 2021 horizon year model runs were utilized to compare the impacts of the various road network options assumed as identified above. The key findings are as follows:

AM Peak Hour

- With the Sheridan Park Drive Extension, the model shows a decrease in traffic along Homelands Drive by approximately 2% (4 vehicles) in the eastbound direction and 16% (38 vehicles) in the westbound direction compared to the Do-nothing scenario.
- The widening of Speakman Drive to four lanes generally results in an increase in traffic along Homelands Drive as compared to the Sheridan Park Drive Extension scenario with approximately 16% (40 vehicles) more traffic in the eastbound direction and 18% (36 vehicles) in the westbound direction.
- With the Sheridan Park Drive Extension scenario, the greatest reduction in traffic will occur on the western end of Homelands Drive (west of the Thorn Lodge Drive east intersection) with volumes decreasing by approximately 29% (average for both directions) in the AM peak hour as compared to the Do-nothing scenario.
- With the Sheridan Park Drive Extension in place, the number of through trips ('cut through' traffic) utilizing Homelands Drive is projected to decrease by approximately 17% in the AM peak hour as compared to the Do-nothing scenario. This in comparison to the Speakman Drive widening to four lanes scenario, which results in a 22% increase in the number of through trips using Homelands Drive as compared to the Do-nothing scenario.

- The Sheridan Park Drive Extension will play an important role in providing additional access to and from the Sheridan Homelands Residential Community. During the AM peak hour approximately 77% of the trips that utilize the Sheridan Park Drive Extension either originate from or are destined to the residential area to the north of Sheridan Park Drive. This results in an increase in traffic on the eastern end of Homelands Drive (east of Thorn Lodge Drive east intersection) by approximately 24% (average for both directions) as the residential community travel patterns change and they divert to this section of Homelands Drive to access the extension. However, there is a corresponding drop in traffic on the western section of Homelands Drive.

PM Peak Hour

- During the PM peak hour the Sheridan Park Drive Extension results in an average decrease in traffic along Homelands Drive by approximately 3% (10 vehicles) in the eastbound direction and 4% (14 vehicles) in the westbound direction compared to the Do-nothing scenario.
- Comparing the Speakman Drive widening to four lanes scenario against the Sheridan Park Drive Extension scenario, the widening of Speakman Drive to four lanes results in an increase in traffic along Homelands Drive by approximately 3% (10 vehicles) in the eastbound direction and 9% (31 vehicles) in the westbound direction.
- As a result of the Sheridan Park Drive Extension, the greatest traffic reductions will be experienced on the western end of Homelands Drive with volumes decreasing by approximately 25% (average for both directions).
- As a result of the Sheridan Park Drive Extension, the number of through trips utilizing Homelands Drive is projected to decrease by approximately 13% as compared to the Do-nothing scenario. With the Speakman Drive widening to four lanes scenario, the model projects an increase in the number of through trips along Homelands Drive by approximately 9% as compared to the Do-nothing scenario.
- Similar to the AM Peak Hour, the Sheridan Park Drive Extension will have an important role in serving the Sheridan Homelands Residential Community to the north with approximately 72% of the traffic using the extension having an origin or destination in the residential community. This again results in a diversion in traffic in the residential community which can be seen by the 40% increase (average for both directions) in traffic utilizing the eastern end of Homelands Drive. There is an associated drop in traffic to the west on Homelands Drive.

In conclusion, the results indicate that the Sheridan Park Drive Extension will play an important role in providing additional opportunities for residents living in the Sheridan Homelands neighbourhood to access their neighbourhood. The extension results in an overall reduction in traffic along sections of Homelands Drive and in addition results in a decrease in through traffic on Homelands Drive. The widening of Speakman Drive to four lanes generally does not provide a benefit to the residents living in the Sheridan

Homelands neighbourhood as it does not reduce the amount of traffic utilizing Homelands Drive.

2021 Road Network

As identified for existing conditions, the addition of the westbound right turn lane has been assumed as part of the road network at the Winston Churchill Boulevard / Sheridan Park Drive / Plymouth Drive intersection.

A traffic operations analysis was conducted for 2021 traffic conditions for the AM and PM peak hours. To accommodate the 2021 traffic forecasts, the following improvements to the road network are recommended:

- The Sheridan Park Drive / Speakrman Drive (west leg) intersection will have a volume to capacity ratio of 0.78. To improve intersection operations, a roundabout is recommended to be installed with the Sheridan Park Drive Extension.
- The Sheridan Park Drive / Speakman Drive / Homelands Drive intersection will experience delays with or without Sheridan Park Drive Extension. Eastbound and westbound left turn lanes could be installed to improve operations; however, the best improvement would be a roundabout that would result in improving the level of service to B or better for each leg. Even if the extension was not in place, a roundabout would be required by 2031.
- At the Sheridan Park Drive / Fifth Line intersection, delays will be experience with or without the Sheridan Park Drive Extension. However, with the Sheridan Park Drive Extension a left turn in the east and westbound directions would be required plus the installation of traffic signals. Without the Extension, east and westbound left turn lanes would need to be installed by 2021; however, installation of traffic signals would be required by 2031.

At the signalized intersections to Winston Churchill Boulevard and Erin Mills Parkway, delays will be experienced for some movements and some movements will approach capacity; however, there is sufficient capacity to accommodate the demand.

2031 Road Network

A traffic operations analysis was conducted for the 2031 traffic projections. In addition to the transportation improvements identified for existing and 2021 traffic conditions, the following additional improvements are identified:

The Sheridan Park Drive / Fifth Line intersection will require traffic signals to be installed prior to 2031 without the Sheridan Park Drive Extension. It was previously identified as needing traffic signals by 2021 with the extension.

2.4 Safety Performance Review

A safety performance review was conducted of six intersections within the Transportation Study Area to identify any safety issues and deficiencies, locations with higher collision rates than projected, and to identify any potential mitigation measures. The six intersections included in the safety performance review are: Erin Mills Parkway / Sheridan Park Drive; Winston Churchill Boulevard / Sheridan Park Drive; Fifth Line West / Sheridan Park Drive; Homelands Drive / Sheridan Park Drive / Speakman Drive; Hadwen Road / Speakman Drive; and Speakman Drive / Flavelle Boulevard. A field investigation was undertaken as well as a review of collision history provided by the City and Region for the years 2010 through 2014 (five years of data). A copy of the Safety Performance Review Report is provided in **Appendix B**.

Over the five years, there were a total of 121 collisions at the six intersections reviewed. Collisions were either property damage (85% of collisions) or injury (15% of collisions) and there were no fatalities. Conditions such as wet versus dry roads or daylight versus nighttime did not influence the collision pattern. Rear end, and angle and turning collisions types accounted for the majority of collisions at 43% and 40% respectfully. There was no time of day pattern, other than at the Winston Churchill Boulevard / Sheridan Park Drive / Plymouth Drive intersection where 50% of collisions at the intersection occurred during the weekday PM peak period.

The Erin Mills Parkway / Sheridan Park Drive / Lincoln Green Way intersection experienced the highest number of collisions at 74 (60% of all collisions in the study area). This intersection also has a higher number of collisions than what is projected for similar intersections. To improve safety, left turn advances could be considered on the east-west traffic signal phase.

The Winston Churchill Boulevard / Sheridan Park Drive / Plymouth Drive intersection experienced the second highest number of collisions at 31 (26% of all collisions in the Study Area). However, this intersection is experiencing an average number of collisions as to what would be projected for a similar intersection. There is a pattern to rear end collisions for southbound traffic. There is a slight slope downwards and drivers may not be providing sufficient distance to allow stopping. The potential for safety improvement calculation indicates there is limited benefit to undertaking safety improvements at the intersection.

There were no significant patterns or number of collisions identified at the other area intersections. The proposed roundabouts will enhance road safety within the neighbourhood.

3.0 Description of the Environment

3.1 Transportation and Built Environments

3.1.1 Roads

The following sections provide brief descriptions of the existing roads within the Study Area and surrounding lands.

Sheridan Park Drive

Sheridan Park Drive is an east-west major collector road with a two lane cross-section. The road intersects Erin Mills Parkway in the east and Winston Churchill Boulevard in the west; however, at present the road terminates in two places where it intersects with Speakman Drive. The gap between these two terminuses is within a City-owned 35 m wide ROW. This gap is designated in the MOP as Future Major Collector. The speed limit on Sheridan Park Drive is 50 km/hr.

Speakman Drive

Speakman Drive is a minor collector road with a two lane cross-section. As noted above, Speakman Drive intersects with the east and west segments of Sheridan Park Drive. The speed limit on Speakman Drive is 50 km/hr with the exception of a 40 km/hr school zone.

Homelands Drive

Homelands Drive is an east-west minor collector road with a two lane cross-section that intersects with Sheridan Park Drive and Winston Churchill Boulevard. Thorn Lodge Drive is also a minor collector road that connects at both ends to Homelands Drive. The speed limit on Homelands Drive is 50 km/hr with the exception of a 40 km/hr school zone near Homelands Senior Public School.

3.1.2 Transit

There are three MiWay transit routes that provide service within the vicinity of the Study Area including:

- Route 29 Park Royal – Homelands
  - Provides daily regular north-south directional transit service between Erin Mills Transitway Station in the north to Orr Road in south (south of Lakeshore Road).
  - Major stops include the South Common Centre, Sheridan Centre and Clarkson GO Station.
  - Within the vicinity of the Study Area, Route 29 travels along Homelands Drive and eastern segment of Sheridan Park Drive.

- Route 45A Winston Churchill-Speakman
  - Provides daily rush hour north-south directional transit services between Meadowvale Town Centre and Clarkson GO Station.
  - Within the vicinity of the Study Area, Route 45A travels along Winston Churchill Boulevard to Speakman Drive.
- Route 71 Sheridan – Subway
  - Provides daily rush hour west-east service only between commercial shopping area in Oakville (Winston Park Drive) in the west to Kipling GO / TTC Station and Islington TTC Station in the east.
  - Within the vicinity of the Study Area, Route 71 travels along Sheridan Park Drive to Speakman Drive.

3.1.3 Active Transportation Facilities

The City maintains a paved MUT that runs through the Study Area within the utility corridor from Winston Churchill Boulevard to Homelands Drive / Speakman Drive. The MUT is part of the Sheridan Trail that continues east along the south side of Sheridan Park Drive to Erin Mills Parkway. To the west of Winston Churchill Boulevard, the trail continues through the hydro corridor in Oakville. The trail provides opportunities for active transportation within the Study Area including walking, jogging, cycling and roller skating. The Sheridan Trail is actively used by local residents, employees and residential / commuter cyclists.

3.1.4 Utilities

There are several existing utilities within the Study Area and surrounding lands including:

- **Hydro**: Alectra Utilities Inc. operates two above ground hydro lines that traverse the Study Area in an east-west direction. There are number of buried hydro lines within the Study Area with more concentration in the east end of the Study Area by the hydro transformer station located on the south side of Sheridan Park Drive.
- **Natural Gas**: Enbridge Gas operates a natural gas main within the Study Area that runs approximately 280 m east of Winston Churchill Boulevard through the City-owned ROW before it turns north and continues east along the utility corridor. The gas main continues through the utility corridor east of Homelands Drive.
- **Communications**: There are existing Bell Canada telecommunications services within the City-owned ROW running through the west end of the Study Area to service the properties in the west end of Sheridan Park. There are also Bell Canada services along the west side of Speakman Drive and the east side of Homelands Drive.

3.1.5 Underground Municipal Services

There are existing underground municipal services within the Study Area including:

- **Sanitary Sewers**: The Region of Peel maintains sanitary sewers within the Study Area including a 300 mm diameter sewer draining from the Sheridan Homelands neighbourhood connecting to a 375 mm diameter sewer that runs west along the City-owned ROW to Speakman Drive where it joins a 375 mm diameter sewer that drains south outside the Study Area. There is also short length of 250 mm diameter sewer along the north side of Sheridan Park Drive (approximately 60 m east of Winston Churchill Boulevard) that joins to the 375 mm diameter sewer running along Speakman Drive. There is 250 mm diameter sewer collecting wastewater from the Sheridan Homelands neighbourhood that runs across the utility corridor to the City-owned ROW and along the south side of Sheridan Park Drive to connect with a 375 mm sanitary sewer that runs south along Speakman Drive.
- **Watermains**: The Region of Peel maintains some watermains within the Study Area including a 600 mm diameter watermain through the City-owned ROW that connects in the west to a 600 mm diameter watermain on the east side of Winston Churchill Boulevard. This watermain continues along Sheridan Park Drive east of the Study Area. There is also a 600 mm diameter watermain that runs north to the Sheridan Homelands neighbourhood along the west side of Homelands Senior Public School.

3.1.6 Stormwater Management and Drainage

Sheridan Park Drive is located within the headwaters area of Sheridan Creek, which empties connects to Lake Ontario through the Rattray Marsh Conservation Area, some 6 km downstream of the Study Area. The channel meanders through a heavily urbanized area of the City.

There are remnants of natural drainage systems within the Study Area, but the area is drained predominantly by engineered drainage systems. Lands to the north have been developed as a residential subdivision, referred to as Sheridan Homelands. The development of these lands resulted in the conversion of open channels to a combination of storm sewers, to convey minor storms, and overland flow routes in the form of roads, with curbs, to convey major storm events to a suitable outlet.

There are two main storm sewer systems that drain the Sheridan Homelands subdivision through the Study Area. One system drains the westerly portion of the Sheridan Homelands development and the section of Sheridan Park Drive abutting Winston Churchill Boulevard, which currently terminates at Speakman Drive. The system outlets into an open channel via a 1,500 mm diameter storm sewer, roughly 330 m east of Winston Churchill Blvd, on the south of the Sheridan Park Drive ROW. The second system drains the easterly portion of the Sheridan Homelands development through the

Study Area. This system eventually drains into a concrete-lined channel on the south side of the ROW, via a 1,650 mm diameter storm sewer.

Based on information provided by the City, the minor storm sewer system appears to be based on the 1:10-year storm..

At the time that these systems were installed, they did not appear to incorporate any type of quantity control or water quality treatment. Today, these systems would include measures such as stormwater management facilities, to prevent flow increases associated with development and also to enhance water quality, prior to discharge to the natural environment.

3.2 Physical Environment

3.2.1 Physiography, Geology and Topography

The Study Area is located within the broad, low-lying area known as the Iroquois Plain physiographic region of southern Ontario. This physiographic region was formed by the lacustrine deposits of the historic Lake Iroquois, a waterbody that existed in the late Pleistocene Era. The Iroquois Plain extends around the western portion of Lake Ontario, from the Niagara River to the Trent River (Chapman and Putnam, 1984). As could be anticipated, conditions along this extensive region vary greatly depending on the location. The historic Lake Iroquois shorelines include bars, beaches, boulder and cliff pavements (Chapman and Putnam, 1984), while old sand and gravel bars are considered to be good aquifers and sources of aggregate material. The physiography in the vicinity of the Study Area is characterized by shale plains and is located north and west of two historic beaches and a shore cliff formed by Lake Iroquois. The reviewed surficial geology mapping in the region of the Study Area indicates that the Study Area is underlain by glaciolacustrine deposits of clay to silt till and Paleozoic bedrock (Ontario Geological Survey, 2010). MOECC water well records in the area of the Study Area indicate that the area is generally underlain by till and shale formations (red or grey in colour), the latter of which typically contained the water table.

3.2.2 Source Water Protection

The Study Area falls within the Credit Valley Source Water Protection Area. According to the Source Water Protection Information Atlas (MOECC, 2017), there are no Wellhead Protection Areas (WHPAs), Highly Vulnerable Aquifers (HVAs), Event Based Areas or Issue Contributing Areas (ICAs) within the Study Area. Sheridan Park Drive is located upstream and outside of the Intake Protection Zone (IPZ). There is a Significant Groundwater Recharge Areas (SGRA) with a score of 2 mapped at the west end of the Study Area along Sheridan Park Drive near the intersections of Speakman Drive and Winston Churchill Boulevard. This score indicated this SGRA has a low intrinsic vulnerability. Although no specific policies apply to this SGRA, any reduction of

groundwater recharge from this area will be offset by the provision for a stormwater bioretention features within the proposed road extension area. These features are discussed in Section 6.5.

3.3 Natural Environment

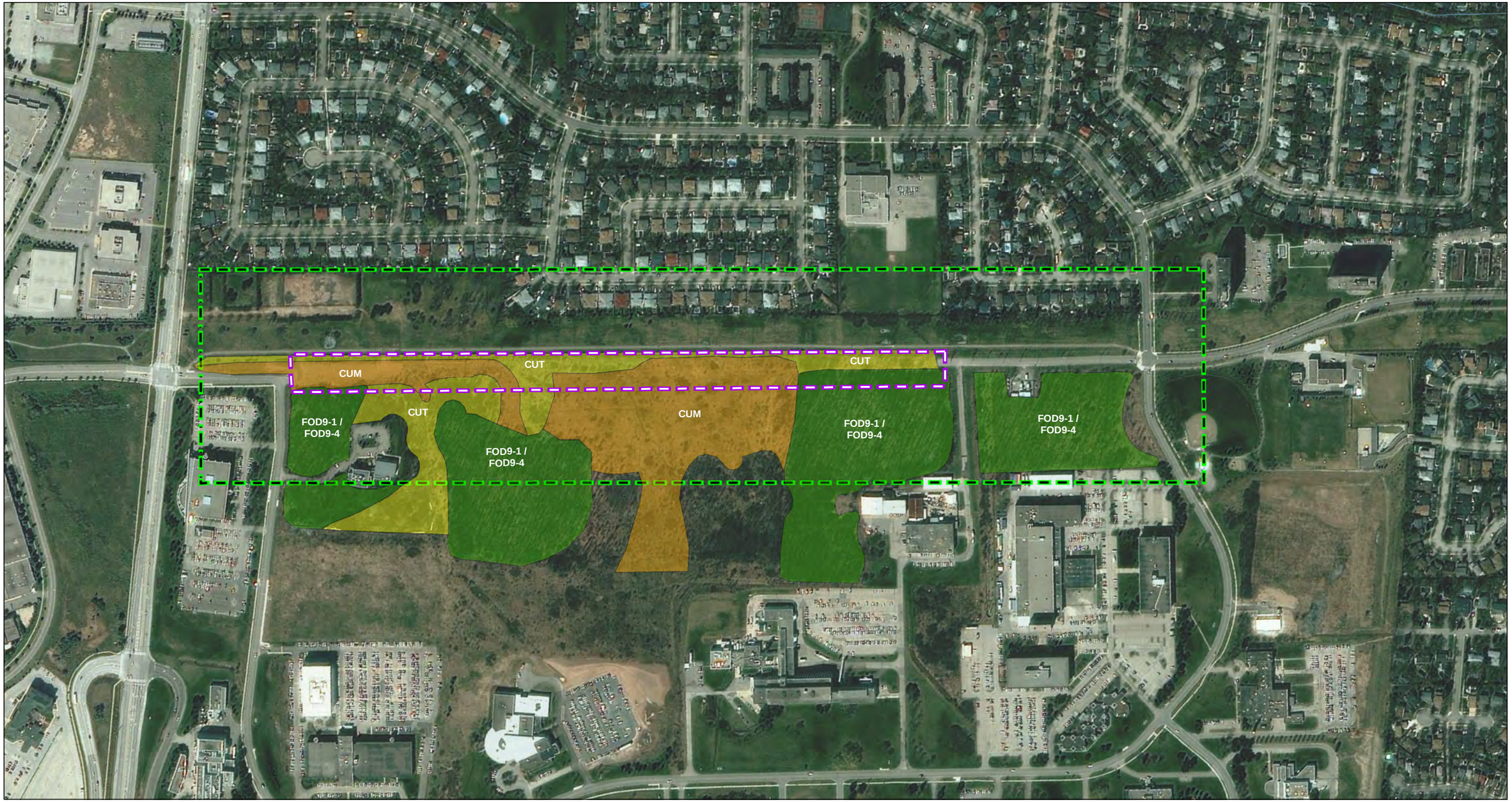
For the purposes of the Natural Environment Assessment, existing terrestrial and aquatic environment features were assessed within two defined areas: the Study Area, which includes the proposed road extension area and lands within approximately 120 m of the proposed road extension; and, the Study Area Vicinity, which includes lands within approximately 500 m of the proposed road extension beyond the boundaries of the Study Area and therefore outside the proposed road extension area. The existing features within these two areas are described in the following sections.

3.3.1 Terrestrial Environment

3.3.1.1 Vegetation Communities and Significant Natural Areas

Vegetation communities were characterized using the Ecological Land Classification (ELC) system at the ecosite level for the Study Area using protocols outlined in Lee *et al*. (1998). Information on the plant species encountered within the Study Area was also compiled into a plant inventory. Field surveys were conducted on June 7, 2017. Three vegetation community types were identified in the Study Area as illustrated on Figure 3.1, split between eight distinct vegetation community polygons. The communities identified were:

- Fresh-Moist Oak-Sugar Maple Deciduous Forest / Fresh-Moist Shagbark Hickory Deciduous Forest (FOD9-1 / FOD9-4);
- Cultural Thicket (CUT); and
- Cultural Meadow (CUM).



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Coord. System: NAD 1983 UTM Zone 17N	
Projection: Transverse Mercator	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Rotation: -51.2	Scale Factor: 0.99960

True North

0 100 200 300 400

Metres

Vegetation Community Classification

- CUT - Cultural Thicket
- CUM - Cultural Meadow
- FOD9-1 / FOD9-4 - Fresh Moist Oak-Sugar Maple Deciduous Forest / Fresh-Moist Shagbark Hickory Deciduous Forest
- Sheridan Park Drive Right-of-Way
- Study Area

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

BURNSIDE

Client

CITY OF MISSISSAUGA

Figure Title

SHERIDAN PARK DRIVE EXTENSION

ECOLOGICAL LAND CLASSIFICATION

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HN	PD	2018/01/09	3.1
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Provincially Significant Wetlands

No Provincially Significant Wetlands (PSW) were identified within the Study Area or on any adjacent lands from Natural Heritage Information Centre (NHIC) records. There are three headwater drainage features and tributaries located central to the natural portions of the Study Area. These areas were not identified as wetlands during ELC surveys.

A constructed linear drainage swale was also identified. This swale did have the presence of obligate wetland species such as Narrow-leaved Cattail (*Typha angustifolia*). This system was determined to be a constructed SWM feature, and as such has no potential to be evaluated as a PSW.

Significant Valleylands

It was determined based on aerial photo interpretation and background information, and confirmed during field investigations, that no valleylands are present within the Study Area.

Significant Woodlands

The MOP defines Significant Woodlands as any woodlands, excluding cultural savannahs, greater than or equal to four hectares (City of Mississauga, 2017). Significant Woodland was identified within the Study Area and confirmed during field studies to extend into the City-owned ROW based on the size criteria, as described in Section 5.1.3 of the Natural Environment Report (see **Appendix C**). The extent of the Significant Woodland within the ROW is 0.44 ha; however, based on the preliminary preferred design plan, less than 0.05 ha of the Significant Woodland would be impacted by the proposed road extension.

Significant Areas of Natural and Scientific Interest (ANSI)

No ANSI's were identified through the background information review for the Study Area or Study Area Vicinity.

3.3.1.2 Avifauna (Breeding Birds)

Breeding bird surveys were completed for this project on June 1 and 13, 2017 by an Avian Biologist. Breeding bird surveys were completed following the general principles outlined in the Ontario Breeding Bird Atlas (OBBA) Guide for Participants (OBBA, 2001), tailored to the needs of this project.

A total of 29 summer resident bird species exhibiting some level of breeding evidence were observed in the Study Area during the breeding bird surveys conducted in 2017. Two bird species listed as either provincially and/or federally significant were observed in the Study Area during the breeding bird surveys: Eastern Wood-pewee (*Contopus*

virens) (Special Concern) and Barn Swallow (Threatened). Suitable nesting habitat is present for Eastern Wood-pewee in the FOD9-1 / FOD9-4 ecosites of the Study Area. Based on a background review of the Study Area, other avian Species at Risk (SAR) may be present in the vicinity of the Study Area but were not observed during field investigations. The areas surveyed for breeding birds and the locations of Eastern Wood-pewee observations are illustrated on Figure 3.2

3.3.1.3 Herpetofauna (Amphibians)

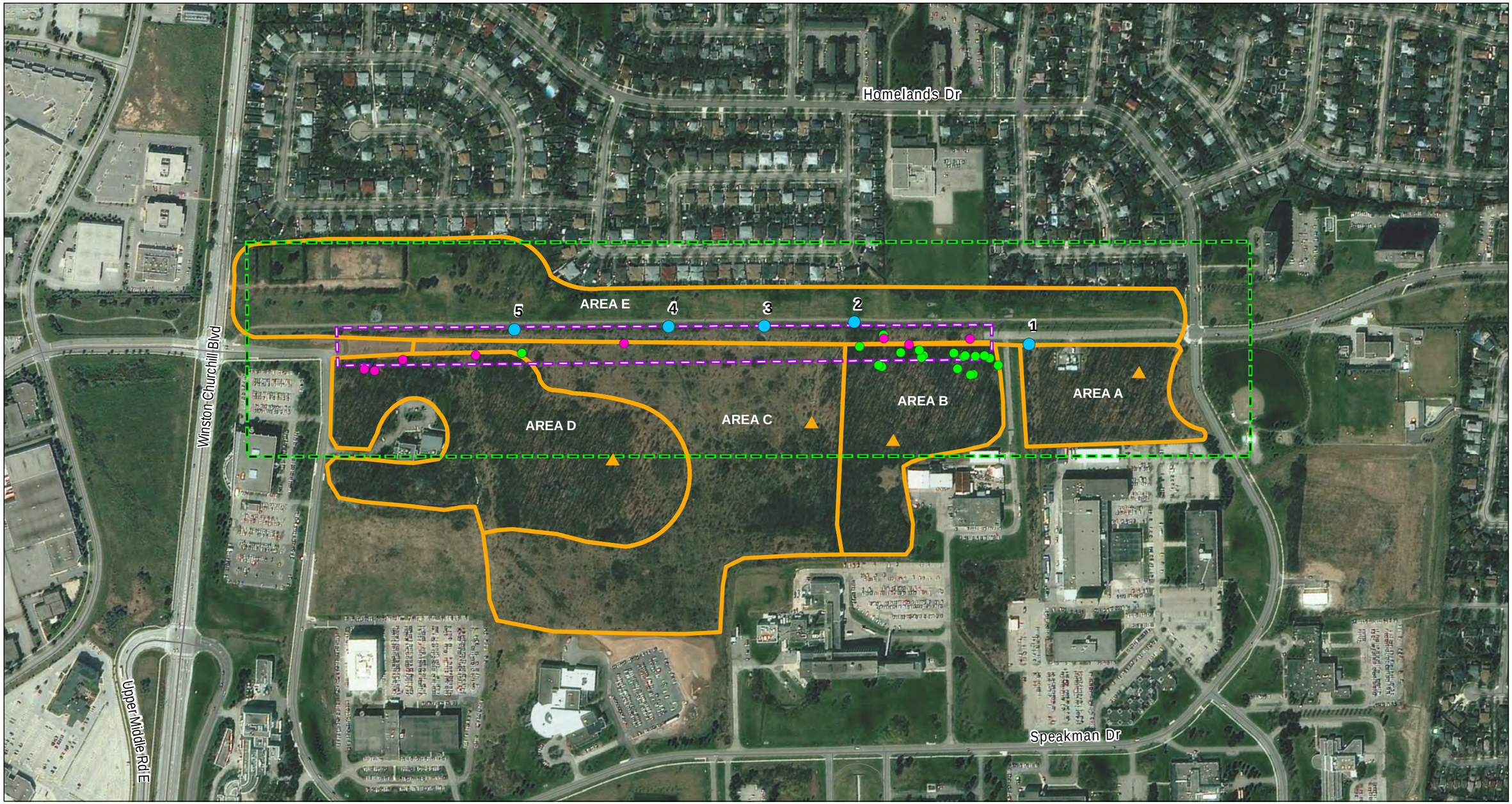
Amphibian breeding call surveys were conducted throughout the Study Area during the first two weeks of April, May, and June, 2016, respectively to determine the presence of breeding amphibians. No amphibians were heard calling during any of the monitoring events and no significant amphibian breeding habitat was identified within the Study Area. Locations of amphibian breeding call surveys are illustrated on Figure 3.2.

3.3.1.4 Bats

Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and Tri-coloured Bat (*Perimyotis subflavus*) are small, insectivorous species of the Family Vespertilionidae. The three species were emergency listed as Endangered on Schedule 1 of the federal *Species at Risk Act (SARA), 2002* in 2014 because of sudden and dramatic declines across the eastern portions of the ranges of Little Brown Myotis and Northern Myotis, and throughout the entire Canadian range of Tri-colored Bat. These declines are the direct result of white-nose syndrome (WNS). The single greatest threat to Little Brown Myotis and Northern Myotis is WNS. Because of the significance of WNS, where appropriate, this recovery strategy differentiates between areas affected by WNS and those not yet affected (e.g., within population and distribution objectives, threats, and recovery approaches).

In April 2017, the Ministry of Natural Resources and Forestry (MNRF) Guelph District released the Survey Protocol for Species at Risk Bats within Treed Habitats for Three of Ontario's Four Endangered Bat Species (Little Brown Myotis – *Myotis lucifugus*; Northern Myotis – *Myotis septontrionalis*; Tri-colored Bat – *Perimyotis subflavus*) (MNRF, 2017).

The 2017 protocol is separated into two sub-protocols, a "leaf-off" and a "leaf-on" survey which each target different species. These two surveys focus on treed habitat features, including forests, swamps and cultural woodlands. The findings of these two surveys may result in the MNRF requirement for acoustic surveys to confirm the presence of endangered bat species within an area of study.



Datum: North American 1983	
Coord. System: NAD 1983 UTM Zone 17N	
Projection: Transverse Mercator	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Rotation: -51.2	Scale Factor: 0.99960

True North

0 100 200 300 400

Metres

- Candidate Bat Maternity Habitat Tree (Leaf-On)
- Candidate Bat Maternity Habitat Tree (Leaf-Off)
- Amphibian Monitoring Location
- EAWP Location
- Sheridan Park Drive Right-of-Way
- Breeding Bird Survey Location
- Study Area

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

BURNSIDE

Client

CITY OF MISSISSAUGA

Figure Title

SHERIDAN PARK DRIVE EXTENSION

ECOLOGICAL SURVEYS

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HN	PD	2018/01/09	3.2
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Leaf-off Survey

Leaf-off surveys of treed habitat for maternity / roosting colonies focus on Little Brown Myotis and Northern Myotis. These species roost in tree cavities or under loose bark. Leaf-off surveys were completed on April 11, 2017. The locations of Candidate Bat Maternity trees based on the Leaf-off survey are illustrated on Figure 3.2.

Leaf-on Survey

Tri-colored Bat show strong preference to roosting in the foliage of oak and maple trees, especially those that feature dead or dying clusters of leaves. This survey protocol targets these genera specifically. Leaf-on Surveys were completed on June 7, 2017.

Leaf-off surveys for bat maternity habitat (BMH) identified 19 candidate habitat trees for Northern Myotis and Little Brown Myotis, and leaf-on surveys found eight suitable habitat trees for Tri-colored Bat within the corridor of anticipated road impacts. The eight suitable bat habitat trees based on the Leaf-on survey are illustrated on Figure 3.2.

The Study Team has recommended compensation for the removal of the eight trees with a combination of either bat boxes or artificial bark at a 1:1 ratio. At the time of preparing this Project File, this recommendation was provided to MNRF for approval. A copy of this correspondence is provided in **Appendix M6**. The details of this compensation will be confirmed through correspondence with MNRF during the detailed design phase of the Project.

Further details about terrestrial habitat inventory and surveys can be found in the Natural Environmental Report in **Appendix C**.

3.3.2 Tree Inventory

191 trees 10 cm diameter at breast height (DBH) or greater were identified within the Sheridan Park Drive ROW. 27 species were observed (approximately 62% native to Ontario). No tree SAR were present. Based on the preliminary preferred design plan, some trees would need to be removed, while others can be protected and/or preserved. Approximately 62% of the trees for removal are Green Ash. There is concern about the long term survivability of Green Ash throughout most of Ontario due to Emerald Ash Borer (EAB). The City's policy is to remove ash species where necessary during construction due to their short lifespan.

Further details about trees included in the tree inventory can be found in the Tree Inventory and Preservation Report in **Appendix D**.

3.3.3 Aquatic Environment

The aquatic environment in the Study Area comprised of two watercourses and three headwater features of Sheridan Creek. All watercourses flow generally from northwest to southeast through the Study Area.

Watercourse 1

Watercourse 1 was assessed as likely intermittent. The segment of this watercourse within the Study Area features significant riparian vegetation that would provide shade and contribute to potential habitat to resident fish. Streambanks were identified as slightly unstable; undercutting was observed along limited sections of the banks. Small amounts of Watercress were observed along the eastern bank of the channel, which can be a potential indication of groundwater contribution.

Watercourse 2

Watercourse 2 was located southwest of Watercourse 1 and originated upstream of the paved trail. This watercourse likely receives its water from overland sheet flow contributed by surrounding lands. Downstream of the paved trail, the watercourse becomes ponded by a footpath, which indicated a barrier to potential fish migration. This watercourse was assessed as appearing to be incapable of providing direct fish habitat; it was noted, however, that this watercourse does likely contribute to water quality and quantity to Sheridan Creek during the spring freshet and in periods of extended precipitation.

Fish Habitat

No fish were observed during the field investigations and subject aquatic features appear to provide little to no potential to support direct fish habitat. Fish populations have also been identified as being likely limited in the upstream reaches of Sheridan Creek and its tributaries. These factors, intermittent or ephemeral flows, low water quantity, in-stream barriers, and potentially degraded water quality contribute to the conclusion that there is likely no direct fish habitat within the Study Area. No records of aquatic SAR were identified as potentially inhabiting the watercourse within the Study Area itself, or within the Sheridan Creek Watershed.

Further details about aquatic environment, habitat inventory and surveys can be found in the Natural Environmental Report in **Appendix C**.

3.3.4 Significant Natural Heritage Features

3.3.4.1 Significant Wildlife Habitat

The four categories of Significant Wildlife Habitat (SWH) are identified as:

1. Habitats of seasonal concentrations of animals;
2. Rare vegetation communities or specialized habitat for wildlife;
3. Habitat of Species of Conservation Concern; and
4. Animal movement corridors.

Table 3.1 summarizes Confirmed and Candidate SWH in the Study Area. It also lists Candidate SWH assessed as having moderate or high potential to be present in the Study Area Vicinity.

Table 3.1: Confirmed and Candidate SWH in the Study Area and Study Area Vicinity

Study Area (within 120 m of proposed project area)	Study Area Vicinity (within 500 m of proposed project area)
Seasonal Concentration Areas of Animals	
• Candidate Waterfowl Stopover and Staging Areas (Terrestrial) • Candidate Raptor Wintering Area • Candidate Bat Maternity Colonies • Candidate Reptile Hibernaculum • Candidate Monarch Butterfly Stopover Areas • Candidate Landbird Migratory Stopover Areas	• Candidate Waterfowl Stopover and Staging Areas (Terrestrial) • Candidate Raptor Wintering Area • Candidate Bat Maternity Colonies • Candidate Reptile Hibernaculum • Candidate Monarch Butterfly Stopover Areas • Candidate Landbird Migratory Stopover Areas
Rare Vegetation Communities or Specialized Habitat for Wildlife	
• Candidate Old Growth Forest • Candidate Amphibian Breeding Habitat (Woodland)	• Candidate Old Growth Forest • Candidate Amphibian Breeding Habitat (Woodland)
Habitat of Species of Conservation Concern	
• Candidate Shrub / Early Successional Bird Breeding Habitat • Confirmed Special Concern and Rare Wildlife Species – Eastern Wood-pewee – Monarch	• Candidate Shrub / Early Successional Bird Breeding Habitat • Confirmed Special Concern and Rare Wildlife Species – Eastern Wood-pewee – Monarch
Animal Movement Corridors	
• Candidate Amphibian Movement Corridors	• Candidate Amphibian Movement Corridors

In addition, Credit Valley Conservation (CVC) has provided mapping for candidate SWH based on the Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study (North-South Environmental Inc. *et al.*, 2009). City mapping showed the presence of three candidate SWH in the Study Area Vicinity (Migratory Land Bird Stopover Successional, Migratory Land Bird Stopover Natural, Foraging Areas with Abundant Mast).

3.3.4.2 Habitat of Endangered and Threatened Species

Burnside's background review and correspondence with MNRF area biologists revealed the potential for SAR in the Study Area and Vicinity. All findings can be found in the SCC and SAR screening table in the Natural Environment Report (see **Appendix C**). **Table 3.2** summarizes confirmed and candidate habitat for endangered and threatened species in the Study Area and Vicinity.

Table 3.2: Confirmed and Candidate Habitat for Endangered (END) and Threatened (THR) Species in Study Area and Vicinity

	Study Area (within 120 m of proposed project area)	Study Area Vicinity (within 500 m of proposed project area)
Confirmed Habitat Present	None	None
Candidate Habitat Present	• Little Brown Myotis (Endangered (END)) • Northern Myotis (END) • Tri-colored Bat (END) • Eastern Meadowlark (Threatened (THR)) • Butternut (END)	• Little Brown Myotis (END) • Northern Myotis (END) • Tri-colored Bat (END) • Barn Swallow (THR) • Eastern Meadowlark (THR) • Chimney Swift (THR) • Butternut (END)

3.3.4.3 Species at Risk

Two SAR were identified as being potentially present in the Study Area Vicinity but not within the Study Area itself. These species are Barn Swallow (THR) and Chimney Swift (THR).

No SAR were identified during Site-specific field studies conducted as part of the EA. Candidate habitat exists on the Study Area for Eastern Meadowlark (THR), Little Brown Myotis (END), Northern Myotis (END), Tri-colored Bat (END), and Butternut (END). In the Study Area Vicinity there is also potential habitat for Barn Swallow (THR) and Chimney Swift (THR).

The most effective way to minimize impacts to these candidate habitats is to reduce the footprint of road works as much as possible. In the event that tree removal will be required, trees to be removed must be assessed on a case-by-case basis to determine whether they may be suitable as BMH. If a BMH tree must be removed, permitting may be required from the MNRF to remove SAR habitat and compensatory offsetting may be required.

Although no Butternut trees were identified in the areas predicted to be impacted by the road, trees to be removed should be confirmed to the species level during the detailed design phase of the project to avoid the incidental removal of Butternut. No impacts to candidate habitat for Eastern Meadowlark are anticipated.

Further details about significant natural heritage features can be found in the Natural Environmental Report in **Appendix C**.

3.4 Socio-Economic Environment

As part of the EA Study, Burnside has completed a social and economic assessment of the Study Area to characterize the local economy and social environment. A review of municipal planning documents, relevant policy, land use plans and available data have been used to determine the character of the Study Area. A copy of the Socio-Economic Assessment Memo is provided in **Appendix E**.

According to the 2016 census published by Statistics Canada in 2016, the enumerated population of the City was 721,599. The land area of the City is 292.43 km^2 and the population density was 2,468 people/km^2. In 2016, there were 240,913 private dwellings occupied in the City, which represent a change of 2.7% from 2011. The population of the City is expected to increase to 878,000 by 2041 (currently 766,000). The population in Sheridan Homelands fell by 1.1% from 2011 to 2016. Employment fell by 12%, but is expected to increase again by the next census.

Within the Study Area, over 2,700 people are currently employed in Sheridan Park Corporate Centre (which is classified as a regionally significant center of business). The key existing economic clusters within the City include life sciences and CIT (community, information and technology), both of which are represented in Sheridan Park. These sectors are poised to experience continued growth into the future, as the City becomes a growing hub for these industries. The relevant policies have poised Sheridan Park Corporate Centre as a major area for economic growth within the city and regionally.

The Sheridan Homelands neighborhood consists of over 2,000 households, bounded to the north by Dundas Street, to the east by Erin Mills Parkway, to the south by the utility corridor, and to the west by Winston Churchill Boulevard. This area has a vibrant community lead by the Sheridan Homelands Ratepayers' Association (SHORA).

SHORA works to cultivate a strong sense of community with various events, community meetings, membership, and a neighborhood newsletter.

3.4.1 Archaeology

Archaeological Services Inc. (ASI) was retained to conduct a Stage 1 Archaeological Assessment for the Study Area. The Stage 1 Archaeological Assessment Report (July 2017) is provided in **Appendix F**. The Stage 1 background study determined that no previously registered archaeological sites are located within 1 km of the Study Area, however four sites are within 2 km of the Study Area. According to the background research, no previous reports detail fieldwork was undertaken within 50 m of the Study Area. The property inspection completed on May 12, 2017, determined that parts of the Study Area exhibits archaeological potential and will require Stage 2 assessment, prior to development. The remainder of the Study Area has been subjected to deep soil disturbance events associated with the construction of the existing ROWs, MUT, and buried utilities and do not retain archaeological potential. These areas do not require further survey.

Based on the recommendations of the Stage 1 assessment, ASI completed a Stage 2 Archaeological Assessment for the Study Area to assess archaeological potential. The Stage 2 Archaeological Assessment Report (October 2017) is provided in **Appendix G**. The Stage 2 field studies determined that there are no archaeological resources present within the areas of impact of the proposed road extension and no further investigation is required.

3.4.2 Built Heritage

ASI was retained to conduct a Cultural Heritage Resource Assessment for the Study Area. The Cultural Heritage Resource Assessment Report (July 2017) is provided in **Appendix H**. The results of background historic research and a review of secondary source material, including historical mapping, revealed a Study Area with a rural land use history dating back to the early nineteenth century. A review of federal registers and municipal and provincial inventories revealed that there is one previously identified feature of cultural heritage value adjacent to the Study Area, which is the Sheridan Park Corporate Centre. No significant cultural heritage impacts to this resource will result from the proposed extension of Sheridan Park Drive.

3.5 Air Quality

An Air Quality Impact Assessment has been completed for this project and is provided in **Appendix I**. Based on the forecasted 2031 traffic volumes, future predicted air quality levels with and without a road extension were compared to the existing air quality levels to understand the impact of a potential road extension on local air quality. Typical contaminants from automobile exhaust were evaluated including Particulate Matter

(PM2.5 and PM10), Total Suspended Particulates (TSP), Nitrogen Oxides (NOx), Carbon Monoxide (CO), 1-3 Butadiene, Benzene, Acrolein, Acetylaldehyde, and Formaldehyde.

The future predicted air quality levels at sensitive receptor locations (residential properties and the Homelands Senior Public School) were all below the MOECC criteria with the exception of Benzene, which already exceeds the criteria based on background air quality.

The Air Quality Impact Assessment shows that change in concentration of benzene at any location in the Study Area is negligible. The variability in the National Air Pollution Surveillance (NAPS) background measurements (standard deviation of 0.22 µg/m^3) is much higher than the predicted change in impact (0.0003 µg/m^3 worst case impact). The background benzene concentration is continuing to fall as shown in Figure 19 of the Air Quality in Ontario 2015 Report (MOECC, 2015). As a result, based on the analysis, there is no expectation that the benzene concentration will increase because of the project.

It should be noted that the elevated Benzene levels detected are not isolated to the Sheridan Park area, but observed all over the Province. Improvements to address benzene levels are being dealt with at a national and provincial level that in turn improves air quality at a local level. Local reductions have a limited effect as a result reducing benzene concentrations requires a provincial solution. According to Air Quality in Ontario 2015 Report (MOECC, 2015), over the 10 year period from 2005 to 2014, benzene concentrations have decreased 42%. A review of the National Pollutant Release Inventory (NPRI) data did not show any significant industrial / commercial operations emitting benzene in the vicinity of the project area.

Through initiatives to make buildings more green, improvements on vehicle emissions, and as improvements to other fuel burning equipment (such as high efficiency furnaces) continue to be made, it is expected that benzene levels should continue to drop. The City as a whole is encouraging sustainable development and growth. By providing alternative routes, which an extension to Sheridan Park Drive would do, the City is hoping to assist in lessening the environmental impact by minimizing congestion and vehicle idling throughout the city.

3.6 Noise

As part of the Sheridan Park Drive Extension EA, a noise study was undertaken to determine noise impacts as a result of the proposed Sheridan Park Drive extension. A copy of the Noise Impact Assessment Report is provided **Appendix J**. The noise study followed the Ontario Ministry of Transportation's (MTO) Environmental Guide for Noise (MTO Noise Guide) (MTO, 2006) and the City of Mississauga Policy 09-03-03, Noise Attenuation Barriers on Major Roadways (City Noise Policy) (City of Mississauga, 2015).

Based on the MTO Noise Guide, where an existing roadway is proposed to be modified / widened adjacent to a Noise Sensitive Area (NSA) or a new road is proposed, MTO requires that the future noise levels without the proposed improvements be compared to the future noise level with the proposed improvements. The assessment is done at the outdoor living area (typically backyards) of each NSA. The provision of noise mitigation is to be investigated should the future noise level with the proposed improvements result in a greater than 5 dBA increase over the future noise level without the proposed improvements. If noise mitigation is provided, the objective is a minimum 5 dBA reduction. Mitigation will attempt to achieve levels as close to, or lower than, the objective level.

For the purpose of the noise analysis carried out for this Class EA study, the City Noise Policy states "*Noise barriers may be constructed by the City in conjunction with a road widening project if no noise attenuation barriers exist, and the proposed additional lanes of traffic are found to adversely affect the daytime noise level beyond the established criteria (the noise level must be greater than 60 dBA (Leq daytime)"*. (Leq means "equivalent sound level" and daytime means 7:00 AM to 11:00 PM. Leq daytime means daytime average.)

The Sheridan Homelands neighbourhood to the north of the Study Area is considered an NSA. The outdoor living areas of three residential houses adjacent to the utility corridor as well as the Homelands Senior Public School yard were selected as representative Points of Reception (PORs) for the purposes of assessing future noise levels within the NSA. The future sound levels at the four PORs were predicted based on the traffic forecast for 2031 calendar year for three scenarios: Current, Future No Build, and Future Build. Future No Build scenario represents conditions in the future without proposed road extension; while Future Build scenario includes proposed road extension in the future.

The future predicted noise levels at these PORs were found to be no more than 1 dBA greater than the existing noise levels. Therefore, the extension has negligible impact on the noise levels in the neighbourhood. In general, sound level increases of less than 3 dBA are not noticeable to the human ear. Since the predicted future noise levels are below the MTO Noise Guide and City Noise Policy, no noise mitigation measures (sound barriers) are required.

3.7 Phase One Environmental Site Assessment

What is a Phase One Environmental Site Assessment?

Phase One Site Assessments are conducted to investigate the current and past history and uses of the property in question. These investigations determine if there are any conditions that are indicative of releases of petroleum or hazardous materials or chemicals at the Site, now or in the past; and if additional study is required. As such,

Phase One assessments are meant to identify recognized environmental conditions (REC) of a subject property.

A Phase One Environmental Site Assessment (ESA) was completed to identify and document the current and historical environmental conditions of the Site and assess the risk from both on-Site and off-Site sources of contamination. Based on the information collected as part of this Phase One ESA, the Study Area was agricultural in 1880 and the area within the City-owned ROW (the Site) has been vacant since 1934. There were no underground storage tanks or aboveground storage tanks identified on the Site currently or historically. There were no Potentially Contaminating Activities identified on the Site. The records review, interview and Site visit indicate there are no Areas of Potential Environmental Concern on the Site. A copy of the Phase One ESA is provided in **Appendix K**.

4.0 Assessment of Alternative Solutions

4.1 Identification of Alternative Solutions

The following alternative solutions were identified to address the Project Opportunity Statement:

- Alternative 1 – Do Nothing;
- Alternative 2 – Limit / Manage Growth;
- Alternative 3 – Extend Roadway; and
- Alternative 4 – Provide Alternative Routes for Existing and Future Traffic

4.1.1 Alternative 1 – Do Nothing

Under the 'Do Nothing' solution, the City would not make any changes or improvements to the existing road network. New roads including the extension of Sheridan Park Drive would not be constructed.

4.1.2 Alternative 2 – Limit / Manage Growth

Under the 'Limit / Manage Growth' solution, the City would limit growth in the surrounding areas by reducing or stopping the approval of development applications in order to stay within the current road capacity and infrastructure service capacity as it existing today.

4.1.3 Alternative 3 – Extend Roadway

Under the 'Extend Roadway' solution, the City would construct a new road segment along the City-owned ROW between Speakman Drive to Homelands Drive.

4.1.4 Alternative 4 – Provide Alternative Routes for Existing and Future Traffic

Under the 'Alternative Routes' solution, the City would implement improvements (e.g., widening of Speakman Drive, North Sheridan Way, etc.) of existing roads to enable existing and future traffic to use alternate route options in the surrounding areas.

4.2 Evaluation of Alternative Solutions

The overall objective of the evaluation was to identify a Preferred Solution among the four alternatives identified that would provide the most favourable solution to the Project Opportunity Statement.

To this end, a set of Evaluation Criteria were grouped under four key areas established as part of the Class EA process to comparatively evaluate the Alternative solutions identified above. The Evaluation Criteria included:

- Natural Environment;
- Socio-Economic Environment;
- Cultural Environment; and
- Transportation Engineering Environment.

4.2.1 Evaluation Results

The evaluation of the Alternative solutions was based on an assessment of potential impacts and a review of input received from the public and regulatory agencies during the study process. Table 4.1 provides a summary of the evaluation of alternative solutions. A detailed evaluation matrix is provided in **Appendix L**.

Alternative 1 (Do Nothing) and Alternative 2 (Limit / Manage Growth) are unable to address the Project Opportunity Statement with the exception of preserving the natural feel and recreational benefits of the Study Area.

Alternative 3 (Extend Sheridan Park Drive) can fully address the Project Opportunity Statement, because it:

- Supports multi-modal transportation for all users;
- Has the potential to divert traffic from the residential neighbourhood;
- Improves network redundancy;
- Improves access to the Study Area; and
- Will preserve the natural feel and recreational benefits of the Study Area by implementing appropriate mitigation.

Alternative 4 (Improve Alternative Routes) partially addresses the Project Opportunity Statement as it supports multi-modal transportation; however, it does not improve network redundancy or improve access to the Study Area.

Therefore, based on this evaluation, Alternative 3 was identified as the Preliminary Preferred Alternative.

Table 4.1: Summary of Evaluation of Alternative Solutions

Evaluation Criteria	Alternative 1: Do Nothing		Alternative 2: Limit / Manage Growth		Alternative 3: Extend Roadway (Sheridan Park Drive)		Alternative 4: Improve Alternatives Routes for Existing or Anticipated Traffic	
Natural Environment	●	No impacts to existing conditions.	●	No impacts to existing conditions.	◑	Requires tree / vegetation removals; however, impacts can be mitigated by tree plantings at a 2:1 replacement ratio. No tree SAR observed in Study Area. The proposed road extension will not directly affect wildlife habitat, any potential impacts will be mitigated. Road extension not anticipated to impact the form and function of vegetation and headwater drainage features.	◑	Avoids potential impact to natural environment in the Study Area, but potential for impacts to natural features along other roadways.
Socio-Economic Environment	◑	Future vehicle connectivity in area is limited without extension. No changes to pedestrian and cycling use of corridor.	◑	Future vehicle connectivity in area is limited without extension. No changes to pedestrian and cycling use of corridor.	●	Connectivity will be improved for all modes of transportation. Provides improved access routes for emergency services. No changes to pedestrian and cycling use of corridor.	◑	Providing alternate route options does not increase connectivity within the Study Area. No changes to pedestrian and cycling use of corridor.
Cultural Environment	●	No impacts to existing conditions.	●	No impacts to existing conditions.	◑	Based on archaeological assessment, there are no archaeological resources within the Study Area. No impacts anticipated to cultural heritage features.	◑	No impacts to existing conditions within the Study Area. Some potential for impacts to archaeological resources and cultural heritage resources in other corridors.
Transportation Engineering Environment	○	Not consistent with City planning policies (e.g., Official Plan). Does not address anticipated transportation needs. Does not improve network connectivity or provide alternate route options for all travel modes.	○	Not consistent with City planning policies (e.g., Official Plan). Does not address anticipated transportation needs. Does not improve network connectivity or provide alternate route options for all travel modes.	●	Consistent with City planning policies (e.g., Official Plan). Addresses anticipated transportation needs. Improves network connectivity and provides alternate route options for all travel modes.	○	Would potentially provide capacity in other corridors; however, does not improve network connectivity or provide alternate route options for all travel modes within the Study Area.
Addresses Project Opportunity Statement	✘		✘		✓		✘	
Overall Summary	**Not Carried Forward**		**No Carried Forward**		**Carried Forward**		**Not Carried Forward**	

4.2.2 Preliminary Preferred Solution

Based on the results of the evaluation, Alternative 3 (Extend Sheridan Park Drive) was identified as the preliminary preferred solution. The Study Team presented Alternative 3 as the Preliminary Preferred Solution at the Public Information Centre (PIC) held on June 27, 2017. A preliminary design plan was also presented to give attendees an idea what the proposed road extension might look like if implemented.

4.2.3 Consideration of Stakeholder Input

The Study Team received comments from a number of local residents as a result of the PIC. The results of the PIC are discussed in more detail in Section 5.3.2. One of the concerns raised by some local residents was to further review the consideration of alternative routes (Alternative 4) such as Speakman Drive or North Sheridan Way.

Following the PIC, the widening of Speakman Drive was investigated further as an alternative route. Based on the traffic analysis (see **Appendix A**), widening Speakman Drive to four lanes does not provide alternate routing for Sheridan Homelands neighbourhood or remove cut-through traffic along Homelands Drive. Even with widening Speakman Drive, the traffic analysis indicates that there will be an increase of 17% in the morning rush hours on Homelands Drive without the extension in place. As a result, widening Speakman Drive will serve the Sheridan Park Corporate Centre only.

Similarly, it is not expected that the widening of North Sheridan Way would not provide alternate routing for Sheridan Homelands neighbourhood or remove cut through traffic along Homelands Drive, since this roadway is further south than Speakman Drive.

Additional input received from local residents on the preliminary road design concept presented at the PIC was also taken into consideration by the Study Team. These considerations are discussed further in Section 5.3.2.

4.2.4 Confirmation of Class EA Project Schedule

As noted in Section 1.2.2, the Class EA guidelines for a Schedule B undertaking apply to construction of new roads or other linear paved facilities (e.g., HOV lanes) if the construction value is less than $2.4 million.

At the time of conducting this Study, the preferred solution to extend the Sheridan Park Drive is anticipated to incur an overall construction cost that will not surpass the cost threshold of $2.4 million (not including land acquisition or engineering costs). As such, a Schedule B undertaking is confirmed as appropriate. As such, Phases 1 and 2 of the Class EA process must be completed before the recommended alternative can proceed to implementation.

4.3 Completion of Phase 2

Based on the results of the evaluation, the preliminary preferred solution was identified by the study team to be Alternative 3 and was presented as such at the PIC in order to obtain input from stakeholders. Therefore, the study team was able to confirm that Alternative 3 was the preferred solution to the problem / opportunity statement identified in Phase 1 of the Municipal Class EA process. This decision marks the completion of Phase 2 of the process.

Since the undertaking is classified as Schedule B Project, Sections 1 through 4 (as well as Section 8, which document the public consultation components of Phases 1 and 2) satisfies the documentation requirements for Schedule B Projects.

However, for the purpose of a more comprehensive consultation and to provide public and stakeholders with an improved understanding of the proposed Sheridan Park Drive extension, a preliminary design concept was prepared and presented at the PIC. The preliminary design concept is discussed in Section 6.2.

5.0 Study Consultation

5.1 Introduction

A key component of the study includes consultation with members of the public, review agencies, organizations, Indigenous communities, and key stakeholders. In order to ensure public, agency and stakeholder consultation, a consultation plan was initiated from the onset of the study and continued throughout. The objectives of the consultation plan were to:

- Identify potentially affected stakeholders;
- Inform stakeholders of project status and components;
- Obtain input from stakeholders during all phases of the study; and
- Integrate information received into the planning and decision-making processes.

A wide range of stakeholders were identified and contacted at the onset of the study and during the EA process including relevant review agencies and organizations, Indigenous communities and local residents who may be affected or have interest in the study. These stakeholders were contacted through direct distribution of notices as well as publications within local newspapers and on the City of Mississauga website. A number of consultation activities were undertaken to achieve the above objectives:

- Placement of Notice of Study Commencement within the Mississauga News;
- Provision of an Online Survey at the beginning of the Study;
- Scheduling of a PIC during Phase 2 of the study;
- Placement of Notice of PIC within the Mississauga News prior to the PIC;
- Advertisement of PIC by mobile sign within Study Area;
- Distribution of notices to all property owners or occupants within 300 m of the Study Area;
- Distribution of notices to review agencies, organizations and Indigenous communities;
- Receiving and responding to written comment submissions from members of the general public;
- Receiving and responding to written submissions from review agencies;
- Forming a Stakeholder Advisory Committee and hosting two meetings;
- Placement of the PIC Summary Report on the City website;
- Placement of Notice of Study Completion within the Mississauga News; and
- Placement of this ESR on the Public Record and provision of a Notice of Study Completion to all stakeholders on the study contact lists during Phase 2 of the study.

5.2 EA Phase 1 Consultation

5.2.1 Notice of Study Commencement

A Notice of Study Commencement (NOCm) was advertised in the Mississauga News on January 26, 2017 and February 2, 2017. The NOCm was delivered to approximately 860 property owners or occupants within the vicinity of the Study Area. A copy of the NOCm is provided in **Appendix M1**.

A total of 33 agencies, organizations and Indigenous communities who may have been interested in the project, received a NOCm along with an accompanying letter. With the inclusion of a Project Response Form, recipients were asked to comment on:

- Policies, positions or guidelines implemented or administered by their agency / organization that may affect implementation of improvements to the study area;
- Background information that is pertinent to the compilation of an environmental inventory of the general study area;
- Any preliminary comments or concerns that their agency / organization has on the proposed projects; and
- Other projects within or near the general area of study.

Copies of the letters sent to agencies, organizations and Indigenous communities are provided in **Appendix M1**. The Project Contact List which identifies all the agencies and Indigenous communities contacted during the course of the Study is provided in **Appendix M2**.

5.2.2 Public Involvement

A total of five comments were received from the public in response to the NOCm. A summary of the issues raised by the public at this stage of the Study including the Study Team responses is provided in Table 5.1. A copy of all correspondence with members of the public at this and all other stages of the Study is provided in **Appendix M5**.

Table 5.1: Summary of Public Involvement - Notice of Commencement

ID	Comment	Response
A	Email received January 26, 2017 indicated that the link to the survey was not active. A second email was received on January 31, 2017 that included a photo to illustrate the increased traffic on Homelands Drive.	Comment noted. A repaired link to the survey was sent on January 31, 2017.
B	Email received January 29, 2017 indicating concerns about the project,	Comment noted. An email in response was sent February 7, 2017

ID	Comment	Response
	including loss of green space, increased traffic, noise and pollution, and safety concerns with the introduction of the extended road.	explaining that several assessment studies must be completed before a design is chosen and that the environmental effects and community character are part of this consideration. The email also indicated the upcoming PIC as a chance for participation.
C	Email received February 2, 2017 indicating concerns that the extension will create increased traffic, noise and development.	Comment noted. An email in response was sent February 7, 2017 noting the different studies to be completed and indicating the upcoming PIC as a chance for participation.
D	Email received March 7, 2017 requesting further details to assist in completing the survey, specifically the first question.	An email in response was sent April 13, 2017 indicating the survey was to gather opinions about the potential extension and that the first question was to understand what the most common use of a road extension would be to local residents.
E	Phone call on June 27, 2017 requesting to look into the need for a protected left turn phase at Winston Churchill Boulevard / Sheridan Park Drive in the northbound to westbound direction. Supports project.	Comment noted.

5.2.3 Online Survey

A study commencement online survey was indicated in the NOCm and available for completion on the City of Mississauga website. The survey was designed to help gather input on the study and potential extension of Sheridan Park Drive. The online survey received 133 responses in total. The survey responses can be found in **Appendix M3**. In general, survey respondents noted the following things were important to them if the roadway is extended: 24% maintaining natural features; 19% landscaping; 18% speed management; 18% pedestrian facilities; 14% cycling; and, 7% other. 65% of the respondents indicated that they were comfortable with roundabouts. The key comments received from the online survey were that respondents were concerned about the impact to existing natural spaces and wildlife; felt that the extension would decrease traffic and

speeding through the Homelands neighbourhood; and, concerns about the potential increases safety risk to residents, cyclists and pedestrians.

5.2.4 Agency Involvement

A total of 16 comments were received from agencies (including utilities) in response to the NOCm. A summary of the agency comments at this stage of the Study including the Study Team responses is provided in Table 5.2. A copy of all correspondence with agencies at this and all other stages of the Study is provided in **Appendix M7**.

Table 5.2: Summary of Agency Involvement - Notice of Commencement

Agency / Organization	Comment	Response
City of Mississauga Accessibility Advisory Committee	Project response form dated January 26, 2017 requesting to be consulted if the project involves on-street parking, and that the City of Mississauga 2015 Facility Accessibility Design Standards need to be followed.	Comment noted. No on street parking is proposed for this project.
Infrastructure Ontario	Letter dated January 30, 2017 received indicating that if Ministry of Infrastructure lands are going to be impacted by the project, written notice should be given.	Comment noted.
Zayo	Email received February 6, 2017 indicating there are no objections as there are no facilities in the project area.	Comment noted.
Enbridge Pipelines Inc.	Email received February 6, 2017 indicating there are no facilities in the area.	Comment noted.
Trans Northern Pipeline Inc.	Project response form received February 8, 2017 requesting to be removed from the project contact list.	Comment noted.
Ministry of the Environment and Climate Change (MOECC)	Letter dated February 9, 2017 received providing details for appropriate consultation with Aboriginal communities.	Comment noted. The Indigenous communities noted by MOECC have been notified and

Agency / Organization	Comment	Response
		contacted during the course of this Study.
Credit Valley Conservation	Project response form dated February 10, 2017 indicating a potential protected watercourse adjacent to the study area, core woodland and significant wildlife habitat. Requested to be a member of Stakeholder Advisory Committee (SAC). Email received June 7, 2017 providing comments on the project regarding Fisheries and Oceans Canada (DFO), the natural heritage field studies, and permit requirements. Email received June 7, 2017 in response to background information request indicating a Data Sharing Agreement will be required once the data has been compiled. Email received June 19, 2017 containing the Data Sharing Agreement. Email received July 10, 2017 containing the data from the background information request and comments from ecology and water resources staff.	Comment noted. Email sent April 7, 2017 noting the natural heritage field studies commencing the following week. Email sent May 11, 2017 requesting background information on the study area. Email sent July 6, 2017 with the signed Data Sharing Agreement.
Mississauga Fire and Emergency Services	Project response form dated February 10, 2017 noting that the fire hydrants will need to be installed on the road and the road extension will offer additional access routes for emergency services.	Comment noted.
Region of Peel	Project response form dated February 15, 2017 indicating an	Comment noted.

Agency / Organization	Comment	Response
	interest in improvements to Winston Churchill Boulevard / Sheridan Park Drive intersection and in a provision of the right turn lane. Requested to be a member of SAC.	
Peel District School Board	Letter dated February 16, 2017 requesting to be kept informed on the project.	Comment noted.
Ministry of Tourism, Culture and Sport	Letter dated February 16, 2017 providing information surrounding protocol of protecting Ontario's cultural heritage.	Comment noted.
Sheridan Homelands Ratepayers' Association	Project response form dated February 16, 2017 indicating concern about noise levels, pedestrian safety, and the loss of recreational park space. Requested to be a member of SAC.	Comment noted.
Sheridan Park Association	Project response form dated February 16, 2017 indicating interest in the summary of the study once completed.	Comment noted.
MHBC Planning on behalf of TransCanada Pipelines Ltd.	Project response form dated March 23, 2017 indicating they would like to remain on the project contact list.	Comments noted.
Alectra Utilities	Project response form dated April 5, 2017 requesting to be a member of SAC.	Comment noted.
Ministry of Natural Resources and Forestry	Email received April 18, 2017 indicating the background request had been forwarded to the appropriate person. Email received May 29, 2017 providing background information on the area, primarily SAR.	Email sent April 17, 2017 requesting background information on the study area. Email sent December 7, 2017 providing the estimated area loss in candidate Bat Maternity

Agency / Organization	Comment	Response
		Habitat (BMH) and that eight BMH trees have been identified for removal. Recommended compensation for BMH tree removal.

5.2.5 Indigenous Engagement

No comments were received from Indigenous communities in response to the NOCm. Follow-up telephone calls were placed with the Indigenous communities to confirm receipt of the NOCm and inquire about their level of interest in the Study. A record of the telephone calls and correspondence with Indigenous communities is provided in **Appendix M7**.

5.3 EA Phase 2 Consultation

5.3.1 Notice of Public Information Centre

A Notice of PIC was advertised in the Mississauga News on June 15, 2017 and June 22, 2017. The Notice of PIC was delivered to approximately 860 property owners or occupants within the vicinity of the Study Area and 34 agencies, organizations and Indigenous communities on the Project Contact List. A copy of the Notice of PIC is provided in **Appendix M4**.

5.3.2 Public Information Centre

The PIC was held on June 27, 2017 from 6:00 PM to approximately 8:00 PM. The PIC was arranged primarily as an open house style session where participants were given the opportunity to review the display boards and representatives from the Study Team were available to answer questions and discuss the project with interested members of the public on a one-on-one basis or in small groups. A copy of the display boards is provided in the PIC Summary Report (see **Appendix M4**).

Participants were requested to provide input by completing the available comment sheets. For those who were not able to attend the meeting, comments sheets were provided on the City of Mississauga website. A total of 97 people signed in at the PIC excluding the Study Team members. A total of 56 written comment responses were received during the comment period following the PIC. Comments were provided through three methods including paper comment sheets supplied at the PIC, an online version of the comment sheet (available on the study website) or via email.

A detailed table of the study team responses to these concerns can be found in the PIC Summary Report (see **Appendix M4**).

5.3.3 Post-PIC Public Involvement

A total of nine comments were received from members of the public after the PIC comment period had closed. A summary of the issues raised by the public at this stage of the Study including the Study Team responses is provided in Table 5.3. A copy of all correspondence with members of the public at this and all other stages of the Study is provided in **Appendix M5**.

Table 5.3: Summary of Public Involvement - Post PIC

ID	Comment	Response
F	Email received August 11, 2017 requesting any studies related to traffic and noise impacts.	An email in response was sent August 28, 2017 indicating that once the documentation for all of the technical studies is completed the Project File will be available for public review.
G	Email received August 23, 2017 requesting information about the next public meeting and clarification on how the preferred alternative was chosen.	An email in response was sent August 24, 2017 advising that the PIC Summary Report will be available in the fall and that the Project File will be available once all of the technical studies are completed, which will discuss the rationale for choosing the preferred alternative.
H	Email received September 1, 2017 requesting an update on a date for a second public meeting mentioned during the PIC in June, and asking if the study has been expanded to include Speakman Drive and North Service Road. A second email was received September 4, 2017 requesting further clarification on the second public meeting.	An email in response was sent September 1, 2017 advising that a PIC Summary Report will be provided this fall, and that the Project File will be available for public review once the technical studies are completed, allowing for discussion of the rationale for the preferred alternative. A second email was sent September 6, 2017 noting that a public meeting will be held in the fall or winter as part of the Thorn Lodge / Homelands Neighbourhood Traffic

ID	Comment	Response
		Calming Review. The PIC boards of the study timeline were attached.
I	Email received September 6, 2017 inquiring about the timing of the Sheridan Park Drive Extension.	An email in response was sent September 6, 2017 indicating the timing would be considered once the technical studies were completed and a preferred alternative is selected.
J	Email received October 19, 2017 with concerns regarding: • Mitigation measures / traffic on Homelands; • Whether the extension needs to be built now or in the future; • The lack of community benefits addressed in the PIC Summary Report; and • The increased potential for flooding with the removal of trees.	An email in response was sent November 10, 2017 addressing the concerns: • The traffic analysis shows that the extension would provide additional access for the Sheridan Homelands residential community and would reduce vehicles along Homelands Drive; • Pending EA approval and selection of the preferred design, the extension is included in the City's 10 Year Capital Roads Program; • Suggestions for community improvements will be brought to the attention of the City. The EA process identifies mitigation measures for any social / cultural / natural environmental impacts. There was focus placed on minimizing impacts to natural features. • A stormwater management system is being designed. The City will investigate the potential flooding issue further. All trees removed would be replaced at 2:1 ratio.
K	Email received October 19, 2017 expressing support for the extension to help with growing levels of traffic along Homelands Drive and its	An email in response was sent November 10, 2017 expressing thanks for the support and indicating all comments will be reviewed by the

ID	Comment	Response
	intersections, as well as the safety benefits for children at Homelands Drive Public School.	Study Team before confirming the preferred solution and issuing the 30 day Public Review Period.
L	Email received November 21, 2017 requesting a copy of the Noise Impact Assessment Report, as well as details about the sound level measuring equipment (model, age, calibration date, placement, etc.).	An email in response was sent November 27, 2017 indicating that the Noise Impact Assessment Report would be available in early 2018 as part of the Project File Report. Details were provided about the sound level meter and calibrator.
M	Email received October 27, 2017 requesting a "sound review study" be undertaken to justify the recommendation of not building a wall. A second email was received November 27, 2017 providing clarification that the sound review be completed once the road is construction to measure the real time sound levels and see if a noise wall is required.	An email in response was sent November 27, 2017 asking for clarification of the request for a "sound review study" and indicating that a Noise Impact Assessment had been completed and would be available in early 2018 as part of the Project File Report. A second email was sent December 7, 2017 noting that the City will commit to completing an noise assessment after construction of the road extension to reassess the Study Team's recommendation that a noise barrier is not required.
N	Email received December 7, 2017 with specific concerns relating to impacts to: existing trees and vegetation communities; wildlife; hazard lands; surface water quality and drainage (storm water management); and ground water quality.	An email response was sent December 13, 2017 providing responses related to the specific concerns raised. Information was provided relating to: proposed tree removal and the compensation plan for trees; existing wildlife observations in Study Area and proposed mitigation measures; clarification of areas designated as hazard lands within Study Area (two watercourses and two headwater drainage features); how stormwater will be managed for proposed road extension and information about the

ID	Comment	Response
		City's salt management program; and commitment to reviewing need for hydrogeological study (to assess groundwater quality) during the detailed design phase of the project.
O	Email received December 17, 2017 with specific concerns about student safety; disruptions to nature and residents due to traffic; noise impacts; tree loss; reduced accessibility to MUT with roundabout and no parking; removal of mature trees and forest.	An email response was sent on December 21, 2017 providing responses related to the specific concerns. Clarification was provided to note that the proposed road extension will have no impacts on the existing MUT and that the City will explore opportunities for planting additional vegetation within the utility corridor to further enhance natural features of the area. The Study Team clarified that students will continued to be accommodated on the existing MUT and that the MUT is set back from the proposed road extension by 14 m which is greater than the standard separation to a public road include arterial roads. Information was provided with respect to the safe use of roundabouts and about the City's initiative to provide awareness and education about roundabouts in 2018. Information was provided about the proposed tree removal and the compensation plan for trees. Information was provided about findings of the noise impact assessment including the conclusion that the predicted future noise levels at sensitive receptors (residential backyards) are below Provincial and City of Mississauga standards and that no noise mitigation measures (sound barriers) are required. The Study Team noted that the traffic analysis indicated a reduction of

ID	Comment	Response
		vehicles along Homelands Drive after the road extension.

5.3.4 Post-PIC Agency Involvement

Following the PIC the Study Team received comments from the Sheridan Park Association (SPA) on July 10, 2017 indicating general support for the proposed road extension amongst the businesses in the association's membership. An email was received from TransCanada Pipelines on October 16, 2017 indicating the presence of an abandoned pipeline crossing in the area and detailing the requirements for activity / crossings within 30 m of a TransCanada pipeline. The Study Team followed up with TransCanada Pipelines on November 22, 2017 and it was confirmed that the abandoned pipeline is located beyond 30 m of the proposed road extension area and would not be impacted by the project.

A copy of all correspondence with agencies at this and all other stages of the Study is provided in **Appendix M6**.

5.3.5 Indigenous Engagement

Following receipt of the Notice of PIC, an inquiry was made on the status of the EA by Mississaugas of the New Credit First Nation (MNCFN). No other comments were received from the other Indigenous communities in response to the Notice of PIC. Follow-up telephone calls were placed with the Indigenous communities to confirm receipt of the Notice of PIC and inquire again about their level of interest in the Study. Additional correspondence was made with MNCFN on October 24, 2017 providing an update on the status of the archaeological studies for the project. MNCFN requested to receive a copy of the complete Stage 2 Archaeological Assessment Report and it was provided on December 11, 2017. A record of the telephone calls and correspondence with Indigenous communities is provided in **Appendix M7**.

5.4 Stakeholder Advisory Committee

5.4.1 Purpose

As part of the consultation process, the City formed a Stakeholder Advisory Committee (SAC). The purpose of the SAC was to provide comments and advice pertaining to decisions to be made by the City with regard to the Sheridan Park Drive Extension. The SAC mandate was to be a forum for more in-depth discussion of the key study issues, concerns or solutions, and to provide advice to the Study Team. The role of the SAC was advisory in nature, with no voting undertaken.

5.4.2 Members

The invitations for the SAC were distributed as part of the NOCm to various agencies, utilities and interest groups with a presence in the Study Area. The following representatives agreed to be members of the SAC and represent their organizations by participating in two meetings throughout the Study.

Brandon Weidemann	Sheridan Homelands Ratepayers Association
Ken Thajer	Credit Valley Conservation
Jimmy Truong	Alectra Utilities
Angela Stockman	Region of Peel, Water & Wastewater Program Planning
Serguei Kabanov	Region of Peel, Transportation Division

5.4.3 Meetings 1 and 2

Meeting No. 1 of the SAC took place on May 9, 2017. The format of SAC Meeting No.1 was as follows:

1. Introductions and Discussion of the SAC Meeting Purpose / Mandate;
2. Presentation by Study Team; and
3. Q&A Period / Group Discussion.

Through the Presentation and the Q&A Period, the following topics were covered:

- An overview of the EA Study and Study Area;
- A summary of the existing conditions within the Study Area;
- Presentation of the Opportunity Statement;
- A summary of studies/assessments being undertaken to support the EA Study;
- A discussion of the potential alternative solutions;
- A summary of the criteria being considered by the Study Team to evaluation the alternative solutions; and
- A discussion surrounding any initial concerns or interests that the SAC members may have regarding the EA Study.

Meeting No. 2 of the SAC took place on June 12, 2017. The Meeting covered the following topics:

- The results of the various studies / assessments (that have been completed to date);
- The results of the evaluation of alternative solutions;
- An overview of the Draft PIC boards to date;
- A discussion about the preliminary preferred solution;
- A presentation of the preliminary design concepts being considered; and
- A group discussion to obtain feedback / input from the SAC members on the EA study findings so the Study Team can take this feedback into consideration for the information presented at the PIC.

A copy of the presentations made at the SAC Meeting and meeting minutes can be found in **Appendix M8**.

5.5 Utility Consultation

Following the PIC, the two main utility companies with services or land holdings in the Study Area (Hydro One and Enbridge Gas) were contacted to discuss the project and obtain input on any potential impacts of the proposed road extension on these services.

A meeting was held with Enbridge Gas on August 23, 2017 to discuss the project. A copy of the meeting minutes from this meeting are provided in **Appendix M9**. Hydro One indicated that it was too early to meet about the project, but provided information about the next steps once design plans were available for review. Copies of correspondence with these two utilities are provided in **Appendix M9**.

5.6 Notice of Study Completion

A Notice of Study Completion of this Municipal Class EA will be prepared and published in the Mississauga News. The Notice will also be mailed to all agencies and stakeholders that had expressed an interest in the project.

If concerns arise regarding this project which cannot be resolved in discussion with the Region, a person or party may request that the Minister of Environment and Climate Change make an Order for the project to comply with Part II of the *Environmental Assessment Act, 1990* (referred to as a Part II Order), which addresses individual Environments Assessments. Requests must be received by the Minister within 30 calendar days of the issuance of the Notice of Study Completion.

If the Minister does not receive Part II Orders regarding this request, the project will continue forward through detailed design / approvals and ultimately construction.

6.0 Road Extension Design Concepts

6.1 Guiding Principles for Design Concept Development

In developing the preliminary preferred design concept, the following key constraints and design elements were considered:

- Compatibility with Adjacent Communities;
- Compatibility with Natural Areas;
- Access to Sheridan Park Corporate Centre;
- Speed Management Features;
- Opportunities for Streetscaping;
- Provisions for Pedestrians and Cyclists;
- Compatibility with Major Utilities in Study Area;
- Geometric Design Requirements; and
- Compatibility with Existing and Future Traffic Operations.

6.2 Preliminary Preferred Design Concept

A preliminary preferred design concept was presented to members of the public at the PIC on June 27, 2017. A copy of the preliminary preferred design concept is provided with the PIC Summary Report in **Appendix M4**. This concept included the following key features:

- Two lane roadway;
- Two vegetated horizontal deflection islands (for speed management and stormwater management);
- Roundabout at intersection of Sheridan Park Drive and Speakman Drive (approximately 130 m east of Winston Churchill Boulevard) with optional alternative four-way stop;
- Roundabout at intersection of Sheridan Park Drive and Homelands Drive / Speakman Drive with optional alternative four-way stop;
- Narrowed roadway in areas to reduce impacts to existing woodlots; and
- Opportunity for low impact development (stormwater treatment), landscaping and/or public art within centre of roundabouts.

Renderings of the potential roundabout (west end) and horizontal median are illustrated on Figure 6.1 and Figure 6.2.

Figure 6.1: Rendering of Potential Roundabout

View Looking East along Sheridan Park Drive from near Winston Churchill Boulevard

Figure 6.2: Rendering of Potential Median

View Looking East along Sheridan Park Drive extension corridor showing potential median (horizontal deflection)

6.3 Preliminary Streetscape Plan

Based on feedback received from the PIC and input from City staff a Preliminary Streetscape Plan has been prepared based on the preliminary design concept plan for the road extension. This plan will be further refined during the detailed design phase of the project. A copy of the Preliminary Streetscape Plan is provided in **Appendix N**.

6.4 Utilities and Illumination

Formal definition of impacts on utilities is to be determined during detailed design. All utility information should be updated prior to construction to ensure that the data is accurate and to finalize relocation requirements as necessary. The need for and type of illumination within the various sections of the study corridor is to be confirmed at the detailed design stage.

6.5 Stormwater Management

A Stormwater Management Report has been prepared as part of the EA Study and is provided in **Appendix O**.

A preliminary hydrologic and hydraulic analysis was completed to ensure that upstream lands are adequately conveyed through the ROW following the construction of the extension. Based on the application of the criteria of '100 Year Post to 100 Year Predevelopment Control', the proposed roadway extension does not alter the runoff potential for the catchment studied and thus no mitigation measures would be required for peak flows.

According to Section 3.0, Table 3-1 of the Credit Valley Conservation Stormwater Management Criteria (August 2012), the Flood Control criteria for new development in the Sheridan Creek Watershed is '100 Year Post to 2 Year Predevelopment Control'. Therefore, additional analysis was undertaken applying the '100 Year Post to 2 Year Predevelopment Control' criteria. When the stricter controls are applied, there is a storage volume requirement of 590 m^3. Storage containment options within a road right-of-way are somewhat limited. Storage volume may be provided in the form of over-sized stormsewer (i.e., superpipe) or possibly underground storage chambers. These stormwater calculations are preliminary and will be finalized, together with the approach to storing / managing stormwater attributed to the road extension during the detailed design phase of the Project. If development has occurred within the tributary catchment between the EA Phase and detailed design phase of the project, the relevant hydrologic parameters will need to be updated. If there are opportunities to combine the flood storage requirement for the Sheridan Park Drive Extension with an adjacent (hydrologically-connected) development where space is less restricted, and the timing is favourable, this is strongly encouraged.

A 'best efforts' approach is proposed to address impacts to water quality which are, again, anticipated to be minimal. Nonetheless, a relatively large portion of the new road will be directed to a bioretention area, located within one of the proposed horizontal deflection medians. Runoff which cannot be treated and infiltrated at this location will be intercepted by an overflow system and directed to an existing drainage feature.

6.6 Geotechnical and Pavement Investigation

Peto MacCallum Ltd. (PML) was retained to complete a geotechnical and pavement investigation for the proposed road extension. A copy of the Geotechnical Investigation Report is provided in **Appendix P**. The assessment included review of background documentation as well as advancing a total of eighteen boreholes and submitting soil samples for quality analysis. The Study Area is underlain by varying thicknesses of fill and a combination of native silt and clay. The depth to bedrock along the eastern segment of Sheridan Park Drive, especially near the intersection of Homelands Drive / Speakman Drive is anticipated to be shallow.

Soil samples were retrieved from the boreholes and sent to an accredited laboratory for chemical analysis. Nine soil samples were analyzed for sodium adsorption parameter and five samples were analyzed for F2 through F4 petroleum hydrocarbons (PHCs) parameters. Soil samples analyzed from boreholes BH1, BH3 and BH16 exceeded the sodium adsorption value for residential / parkland and industrial / commercial standards while soil from BH14 and BH18 exceeded sodium adsorption values for residential / parkland standards only. The elevated levels of SAR are most likely related to the winter de-icing activites. Soil sample analyzed from BH5 exceeded F3 PHCs values for residential / parkland standards but complied with industrial / commercial standards.

The report recommended that impacted soils should be disposed of off-Site to industrial / commercial construction site. Salt impacted soil should not be disposed of to any environmentally sensitive site and the disposed materials should not be in contact with the surface runoff and/or groundwater table. It is also recommended that the Site earthwork operations and disposal of the impacted soils be monitored and documented under full time inspection and review of a field staff under supervision of a Qualified Person (QP, as defined under Ontario Regulation 511/09) to ensure that the removed soils are consistent with the geo-environmental soil characterization program that was carried out during the sampling and testing programs.

Based on visual inspection, the existing pavement surface on the travelled portions of Sheridan Park Drive shows signs of distress including pavement cracking, distortion and coarse aggregate loss. Boreholes drilled in the existing pavement also revealed an existing granular base and subbase with materials containing a higher level of fines, which renders the pavement structure susceptible to damaging effects of frost action. For these reasons, PML recommends that the existing pavement be rehabilitated by full depth reconstruction.

For the road extension segment of Sheridan Park Drive, PML recommends use of the City's pavement thickness standard over the American Association of State Highway and Transportation Officials (AASHTO) as it is more conservative (thicker) which will address location conditions such as frost susceptibility of the road subgrade. Details of

the proposal pavement structure for both existing and new segments of Sheridan Park Drive are provided in the Geotechnical Investigation Report (see **Appendix P**).

6.7 Preliminary Cost Estimate

The estimated cost to construct the road extension has been prepared based on the preliminary design concept plans. This cost estimate will need to be revisited and revised accordingly during the detailed design phase of the Project once detailed design plans are established. The overall estimated cost of roadway construction at this preliminary stage of the Project is $2,328,000. A breakdown of estimated costs for the roadway construction is provided in **Appendix Q**.

7.0 Environmental Impacts, Mitigation Measures and Monitoring

The potential environmental impacts associated with construction, operation and maintenance of the proposed road extension within the Study Area have been identified and are summarized Table 7.1 below. Proposed measures to mitigate these impacts and monitoring activities to ensure that the mitigation measures are implemented effectively are also provided in the table. All mitigation measures and monitoring activities shall be reviewed during the detailed design phase of the project.

Table 7.1: Potential Impacts, Mitigation Measures and Monitoring Plan

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Transportation and Built Environments	Human Health and Safety	Potential safety hazard from construction activities, heavy equipment and increased construction traffic.	**Construction Mitigation** The contractor shall develop a Health and Safety Plan (HASP) and have it reviewed and approved by the City prior to implementing. The HASP shall follow the *Occupational Health and Safety Act, 1990* and regulatory requirements.	N/A	No net effects anticipated.
Transportation and Built Environments	Transportation Infrastructure	Potential safety hazard from construction activities, heavy equipment and increased construction traffic.	**General Mitigation** Operation of construction related vehicles will be done in accordance with all appropriate safety policies and procedures, and based on Canadian Standards (Transport Canada, etc.). **Construction Mitigation** All contractors will be required to complete and follow appropriate construction site training and adhere to appropriate road safety regulations during construction. Work shall be done in such a manner as to minimize disruption to the adjacent residential and commercial neighbourhood. Noise and dust emissions shall be controlled. Contract specifications shall ensure that all equipment and vehicles are compliant with noise and air emission standards for applicable equipment.	An environmental monitor shall regularly inspect construction work areas to ensure that noise control measures and dust suppression measures are being adequately applied. If noise control measures and dust suppression measures are not functioning properly, alternative measures shall be implemented immediately and prioritized above other construction activities.	No net effects anticipated.
		Temporary traffic flow / access disruptions.	**General Mitigation** Additional easement beyond road ROW to be determined during the detailed design phase of the project. Consult with public agency and/or adjacent land owners / tenants regarding temporary access routes. **Construction Mitigation** Contractor will be required to develop and implement a traffic management plan in coordination with region(s) /	N/A	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
			municipality(ies). Adequate signage to give advance notice of disruptions and detours is to be provided by the contractor.		
Physical Environment	Surface Water	Potential for erosion and sedimentation impacts.	**General Mitigation** The City is required to comply with the *Ontario Water Resources Act, 1990, c. O.40* with respect to the quality of water discharging into natural receivers. The footprint of disturbed areas shall be minimized to the extent possible. For example, vegetated buffers shall be left in place adjacent to natural vegetation features (forested areas) to the maximum extent possible. A Soil Management Plan (SMP) will be prepared by a Qualified Professional (QP) as defined in Ontario Regulation 160/06 for managing soil materials on-Site (includes excavation, location of stockpiles, reuse and off-Site disposal). An Erosion and Sediment Control (ESC) Plan will be developed during detailed design in consultation with CVC and will conform to industry best management practices and recognized standard specifications such as Ontario Provincial Standards Specification (OPSS). Any construction works within CVC regulated areas will require a permit under Ontario Regulation 160/06. **Construction Mitigation** Any in-water work will be conducted in isolation of flowing water. All work zones will be clearly marked on detailed design drawings and the ESC Plan to indicate that no work should occur outside the work zone. ESC measures shall be installed and maintained during the construction phase and until all areas of the construction Site have been stabilized. ESC measures shall be inspected daily to confirm they are functioning and maintained as required. If ESC measures are not functioning properly, no further work in	A qualified Environmental Inspector shall regularly monitor construction activities to confirm the requirements outlined in the SMP and ESC are being followed. A qualified Environmental Inspector shall inspect, suggest and confirm the repair of ESC measures as needed.	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
			the affected areas will occur until the sediment and/or erosion problem is resolved. All disturbed areas of the construction Site will be stabilized and re-vegetated as soon as conditions allow. Wet weather restrictions shall be applied during Site preparation and excavation.		
Physical Environment	Surface and Ground Water	Potential for localized surface water or groundwater impacts as a result of spills, discharge or dumping of materials, fluids and other wastes during construction of proposed road extension and associated surface water facilities (e.g., swales).	**Construction Mitigation** Refueling and maintenance of construction equipment should occur within designated areas only. Any hazardous materials used for construction will be handled in accordance to appropriate regulations. A Construction Emergency Response and Communications Plan shall be developed and followed throughout the construction phase (including spill response plans). The Contractor shall develop spill prevention and contingency plans for the construction of new landfill cells and general Site preparation for proposed road extension. Personnel shall be trained in how to apply the plans and the plans shall be reviewed to strengthen their effectiveness and continuous improvement. Spills or depositions into watercourses shall be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. A hydrocarbon spill response kit will be on-Site at all times during the work. Spills will be reported to the Ontario Spills Action Centre at 1-800-268-6060.	A qualified Environmental Inspector shall regularly monitor construction activities to confirm the requirements outlined in the SMP and ESC are followed. Workers shall report any instances of spills to their supervisors.	No net effects anticipated.
Physical Environment	Surface and Groundwater (Headwater feature)	Change in water balance to seasonally flooded or wet habitat within natural vegetation communities affecting groundwater recharge functions.	**General Mitigation** Incorporation of Low Impact Development (LID) to direct surface water flow to grassed swales, bioretention gardens and infiltration galleries in close proximity to the natural heritage features (refer to CVC Grey to Green Road Retrofits). LID elements should be designed to preserve local	Monitoring of vegetation communities for changes in plant species composition and soil moisture regime.	No net effects anticipated

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
			predevelopment water balance as they reduce runoff volume through the processes of infiltration and evapotranspiration and improve stormwater quality through a variety of physical and biological treatment processes.		
Natural Environment	Vegetation	Direct effects of construction activities will include the limited clearing and loss of both herbaceous and woody vegetation. Indirect effects include the increase to edge habitats, which includes a number of potential effects, such as wind throw and sunscald, introduction of invasive plant and wildlife species which may outcompete or predate native species, change in soil moisture regime and water availability to plants and plant communities, increases in light penetration (pollution) and noise, soil compaction, equipment and pedestrian "traffic", equipment laydown and spills.	**General Mitigation** Plant species loss should be minimized, where possible, and compensatory planting plans established in areas of the Study Area when no clearing activities are proposed, referencing CVC's Plant Selection Guidelines for the existing soil and vegetation communities. Potential for establishing pollinator species of plants should also be included when establishing a formal planting plan. The inclusion of bio swales, infiltration galleries or other features to promote localized surface water infiltration to maintain the existing water balance should be included as part of the detailed design and landscape plan for the road extension. **Construction Mitigation** Construction hoarding should be installed prior to commencement of construction activities to prevent pedestrian access, prevent the unnecessary encroachment / disturbance by humans and machinery into vegetation communities and to prevent wildlife from entering the construction areas. Hoarding should be installed and inspected prior to any land disturbance. Hoarding should be installed at the dripline of any trees to be preserved. Construction activity should be outside of the dripline of any trees that are to remain.	Fencing shall be inspected regularly to ensure damage is repaired in a timely manner and that additional risk to wildlife is minimized. Hoarding Site visit required.	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Natural Environment	Trees	Potential impacts to trees adjacent to road extension construction area.	**Construction Mitigation** Clearly delineate the extent of vegetation removal for the vegetation clearing and grubbing contractor. All vegetation must be cut in a way that it stays within the work zone. Install all tree protection and erosion and sediment control (ESC) measures prior to Site disturbance. Install tree protection hoarding based on City standard (provided in Appendix D of Tree Inventory and Preservation Report and in locations shown on Plan C: Tree Preservation Plan of the Tree Inventory and Preservation Report). The work zone adjacent to the woodlots at the east and west limits of the unopened right-of-way are recommended to receive this enhanced treatment.	Inspection of tree protection measures by the site supervisor or environmental inspector to be coordinated with review of ESC measures throughout the construction period. All damaged, sagging or deficient measures must be fixed immediately. An arborist shall review all trees adjacent to the work zone and prior to opening the road for use by the general public. Branches and trunks damaged during the construction period that may cause damage or injury must be mitigated.	
Natural Environment	Wildlife and Wildlife Habitat (General) – Breeding Birds	Potential for disturbance or destruction of migratory breeding birds and their habitat by the landfill expansion (prohibitions under the *Migratory Bird Convention Act*, *1994*).	**General Mitigation** To reduce the risk of contravening the *Migratory Bird Convention Act, 1994*, timing constraints shall be applied to avoid any limited vegetation clearing (including grubbing) and/or structure works (construction, maintenance) during the breeding bird period – broadly from April 1st to August 31st for most species (regardless of the calendar year). Active nests (nests with eggs or young birds) of protected migratory birds, including SAR protected under the *Endangered Species Act (ESA), 2007*, cannot be destroyed at any time of the year. The destruction of inactive nests for some species may also be prohibited. **Construction Mitigation** If a nesting migratory bird (or SAR protected under *ESA, 2007*) is identified within or adjacent to the construction Site (or during operations and maintenance activities) and the activities are such that continuing works in that area would result in a	An Avian Biologist may be required on-Site as needed should a nesting migratory bird (or SAR protected under *ESA, 2007*) be identified within or adjacent to the construction Site. The Avian Biologist may be required to confirm the presence and identification of an active nest and/or breeding bird prior to contacting MNRF for further advice.	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
			contravention of the *Migratory Birds Convention Act, 1994* or *ESA, 2007*, all activities will stop and the Contract Administrator (with assistance from an Avian Biologist) shall discuss mitigation measures with the City. Should SAR be identified, all activities will stop and MNRF will be contacted immediately to ensure compliance with the ESA. The Contract Administrator shall instruct the Contractor on how to proceed based on the mitigation measures established through discussions with the City, the MNRF and/or Environment Canada.		
Natural Environment	Wildlife and Wildlife Habitat (General)	Temporary displacement of, and disturbance to, wildlife and wildlife habitat during the construction phase (i.e., vegetation removals, noise, light trespass), including SAR. Development in these habitats may limit wildlife movement and reduce useable habitat. Wildlife habitat may be removed as a result of the proposed activities. • Removal of SWH including; – Candidate Waterfowl Stopover and Staging Areas (Terrestrial); – Candidate Raptor Wintering Areas; – Candidate Bat Maternity Colonies (Non-SAR); – Candidate Reptile Hibernacula; – Candidate Foraging Areas with Abundant Mass (Peel-Caledon); – Candidate Old Growth Forest; – Confirmed Special Concern and Rare Wildlife Species; ▪ Eastern Wood-pewee (Special Concern); and ▪ Monarch (Special Concern).	**Construction Mitigation** In the event that an animal is encountered during construction and does not move from the construction zone, the Contract Administrator will be notified. If the construction activities are such that continuing construction in the area would result in harm to wildlife, construction activities in that location will temporarily stop and the MNRF shall be contacted for direction. If temporary construction hoarding is used at a location, it shall be installed to allow wildlife to leave the fenced area during vegetation clearing. Once the work area has been cleared, it can be securely fenced to prevent wildlife from returning. The excluded area should be searched immediately following fencing installation for any wildlife (including SAR) that may have become trapped. Any wildlife should be safely relocated, or permitted to escape, to a suitable habitat. All works should stop immediately and MNRF contacted should a SAR be encountered within a construction or operational area to ensure compliance with the ESA. Avoid vegetation clearing during sensitive times of the year for local wildlife, such as spring and early summer (when many animals bear their young or migrate between wintering and summer habitats).	Fencing shall be inspected regularly to ensure damage is repaired in a timely manner and that additional risk to wildlife is minimized.	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Natural Environment	Woodlands	Removal of snag trees suitable as BMH on the edge of forests directly adjacent to proposed road extension. a) Potential for direct environmental effects to woodland habitat (FOD9-1 / FOD9-4) during clearing and construction activities for the proposed road extension. b) Potential for indirect environmental effects to adjacent woodland features. Potential indirect effects may include noise disturbance as a result of construction and/or operations and maintenance activities. Noise disturbance may impact breeding success of avian species, including SCC (Wood Thrush, Eastern Wood-pewee), whose habitat is considered SWH.	**General Mitigation** a) A permit under the ESA may be required before any work can occur in Regulated habitat at any time during the year – as such, mitigation measures outlined below will be refined during the permitting process, including details of construction hoarding, timing of works, etc. a) Removal of candidate BMH trees will require appropriate compensation during the appropriate timing windows, including the installation of bat house(s) to compensate for loss of habitat. The recommended approach from MNRF includes proactive establishment of alternate bat habitat features within the Study Area to avoid the requirement for permitting under the ESA. a) A mitigation plan will be designed and implemented to compensate for the temporary removal of vegetation and provide enhancement of the existing features. b) To reduce the risk of disturbing breeding birds (and contravening the *Migratory Bird Convention Act, 1994*), timing constraints shall be applied to avoid vegetation clearing (including grubbing) and/or structure works (construction, maintenance) during the breeding bird period – broadly from end of March to end of August for most species (regardless of the calendar year) (see Breeding Birds for more detail). **Construction Mitigation** a) Prior to construction works commencing, installation of construction hoarding is recommended along the perimeter to prevent pedestrian access around the limit of construction, which includes all areas required for excavation and spoil stockpile, vehicle and worker access and material laydown in order to prevent any wildlife from attempting to access the construction zone during construction works – specifically, fencing shall be installed at the beginning of April or earlier.	a) A Biologist shall be on-Site during construction works in the event that wildlife is trapped within the construction zone and requires removal and relocation to land outside of the construction zone. They may also be required on-Site as needed should a species that is protected under the *ESA, 2007* be identified within or adjacent to the construction Site. The Biologist may be required to confirm the presence and identification of a particular species prior to contacting the MNRF for further advice. a) Fencing should be monitored on a regular basis to ensure there is no damage that may result in a decrease in function or opportunities for injury or death to wildlife species. b) An Avian Biologist may be required on-Site as needed should a nesting migratory bird (or SAR protected under *ESA, 2007*) be identified within or adjacent to the construction Site. b) The Avian Biologist may be required to confirm the presence and identification of an active nest and/or breeding bird prior to contacting MNRF for further advice.	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
			a) If designated areas are created during construction for the stockpiling of materials, especially fill, soil and gravel, the Contractor shall install temporary construction hoarding around the perimeter of these areas to prevent any reptile species from entering the area and attempting to nest (reptiles are attracted to these materials for nesting). a) Any wildlife should be safely relocated, or permitted to escape, to a suitable habitat no more than 200 m away from the work zone. Wildlife shall be released no more than 200 m away from the work zone in a similar ecosystem type. a) In the event that SAR are found within the construction zone all activities will stop and mitigation options shall be discussed with the City, whereby an MNRF SAR Biologist may be contacted for advice as these animals are protected under *ESA, 2007*. a) Educational material shall be provided by a Biologist to construction personnel prior to commencement of construction works to assist personnel in identifying SAR species, should they be encountered. These materials shall also include protocols to be followed to prevent contravention of the *ESA, 2007*, should any SAR be encountered. a) SAR identification training shall be provided by a Biologist to construction personnel prior to commencement of construction works to assist personnel in identifying SAR species, should they be encountered. Educational materials shall also include protocols to be followed to prevent contravention of the *ESA, 2007*, should any SAR be encountered. All construction personnel will be trained on how to identify and deal with SAR encountered during work.		
Natural Environment	Cultural Thicket-Cultural Meadow	Potential for direct environmental effects (i.e., habitat removal) to cultural thicket and cultural meadow which composes most of	**General Mitigation** a) Prior to construction, surveys should be conducted by an Avian Biologist in winter to determine if the Site is	N/A	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
		the proposed road extension footprint area. This feature is candidate SWH for raptor wintering area and shrub / early successional bird breeding habitat, and is confirmed habitat for breeding birds generally. a) Candidate raptor wintering area: Modification to, or removal of, vegetation structure or drainage patterns in fields or forests supporting a winter roost may make it unattractive. b) Shrub / early successional bird breeding habitat: permanent removal of candidate habitat reduces overall size of available habitat for bird species that depend on this type of vegetation structure for food, cover and nesting. A reduction in overall size will also reduce the ecological function in the remaining habitat due to fragmentation. c) Potential for indirect environmental effects may include noise disturbance as a result of construction and/or operations and maintenance activities. Noise disturbance may impact nesting success of bird species nesting in this habitat.	significant habitat for raptors. If this is not possible due to project time constraints, habitat shall be considered "candidate" habitat. Consultation with MNRF is required prior to construction to determine what mitigation measures are appropriate to avoid potential negative effects. d) To reduce the risk of disturbing breeding birds (and contravening the *Migratory Bird Convention Act, 1994*), timing constraints shall be applied to avoid vegetation clearing (including grubbing) and/or structure works (construction, maintenance) during the breeding bird period – broadly from end of March to end of August for most species (regardless of the calendar year) (see Breeding Birds for more detail).		
Natural Environment	Fish Habitat	Potential indirect impacts to downstream fish habitat from water quality and quantity impairments (sediment loading; fuels and lubricants from machinery) as a result of construction works (earthworks-based activities).	**General Mitigation** Compliance with the *Ontario Water Resources Act, 1990* shall be maintained with respect to the quality of water discharging into natural receivers. SMP and ESC Plans shall be developed. ESC plans and a spill response plan shall be developed and shall include, but not be limited to, the details described below.	An Environmental Inspector shall regularly monitor construction activities to confirm the requirements outlined in the SMP and ESC plans are followed. Workers shall report any instances of spills or impacts to surface water features.	No net effects anticipated

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
			CVC shall be consulted during detailed design with regard to potential works within or in close proximity flood regulated areas, as appropriate. **Construction Mitigation** Wet weather restrictions shall be applied during Site preparation and excavation. Work will be avoided near watercourses and headwater drainage features during periods of excessive precipitation and/or excessive snow melt. Sediment and erosion control measures (such as silt fence barriers, etc.) shall be installed and maintained during the work phase and until the Site has been stabilized. Control measures shall be inspected daily to ensure they are functioning and are maintained as required. If control measures are not functioning properly, no further work shall occur until the problem is resolved. All temporary ESC measures shall be installed in accordance with recognized provincial standards. Extra silt fence / turbidity curtain shall be stored on-Site, should additional sediment control be required. Any stockpiled material shall be stored and stabilized away from the surface water features. All materials and equipment used for the purpose of Site preparation and road construction shall be operated and stored in a manner that prevents any deleterious substance (e.g., petroleum products, silt, etc.) from entering the water.		
Cultural Environment	Archaeology	Based on the results of the Stage 2 Archaeological Assessment, the Study Area does not retain archaeological potential; however, no archaeological assessment, no matter how thorough or carefully completed, can necessarily predict, account for, or identify every form of isolated or deep buried archaeological deposit. Therefore, it is	In the event that archeological remains are found by the Contractor during subsequent construction activities, the consultant archaeologist, approval authority and the Cultural Program Unit of the Ministry of Tourism Culture and Sport the shall immediately notified by the Contractor.	N/A	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
		possible that archaeological remains may be found during construction.			
Noise and Air Quality	Noise	Potential for noise through the use of large equipment for construction of the proposed road extension.	**General Mitigation** A complaint response protocol for nuisance impacts including construction noise shall be prepared during the detailed design phase of the project and implemented prior to construction. **Construction Mitigation** Noise control measures shall be implemented where required during the construction phase, such as restricted hours of operation and the use of appropriate machinery and mufflers. The noise produced by the equipment can be limited through proper equipment maintenance. All construction activities shall conform to the criteria set out in NPC-115 of 83 dB. The construction contractor will be required to develop a Construction Management Plan (CMP) that specifically addresses noise controls, mitigation to be implemented and frequency of equipment inspection. **Post-Construction Mitigation** Conduct post-construction sound level measurements in the Noise Sensitive Area to confirm the requirement for noise barriers.	An environmental monitor shall regularly monitor construction noise to ensure that noise control measures are being adequately applied and confirm the requirements outlined in the CMP are being followed. If noise control measures are not functioning properly, alternative measures shall be implemented immediately and prioritized above other construction activities.	No net effects anticipated.
	Air Quality	Potential air quality impacts during construction.	**General Mitigation** A complaint response protocol for nuisance impacts including dust emissions will be prepared during the detailed design phase of the project and implemented prior to construction. **Construction Mitigation** During construction, the following mitigation measures shall be used: • The road shall be graded as required to remove potholes, ruts and ripples in the road surface. Efforts to prevent	An environmental monitor shall regularly inspect construction work areas to ensure that dust suppression measures are being adequately applied and confirm the requirements outlined in the CMP are being followed. If dust suppression measures are not functioning properly, alternative measures shall be implemented	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
			contamination of the road surface, such as spilling sands, silts and clays, will also help to minimize dust. • If appropriate equipment is available, the roadway should be sprayed with water as required to minimize dust generation prior to paving. • The construction contractor will be required to develop a Construction Management Plan (CMP) that specifically addresses dust controls, and contingency plans to mitigate dust when it occurs. • Vehicles / machinery and equipment shall be in good repair, equipped with emission controls, as applicable, and operated within regulatory requirements. The contractor shall also be required to implement dust suppression measures to reduce the potential for airborne particulate matter resulting from construction activities. This should be in the form of water applications on exposed soils.	immediately and prioritized above other construction activities.	

8.0 Project Implementation

Phase 5 of the Municipal Class EA process involves the completion of detailed design drawings, specifications and tender documents to be provided to a successful contractor for the construction of the proposed project. During the implementation phase, the City will need to adhere to several mitigation measures and monitoring plans as documented in this Project File Report, some of which will be need to be in place prior to and during construction. Permits will need to be applied for from various regulatory agencies.

8.1 Follow-up Commitments

The following list provides a preliminary set of commitments to be undertaken during the detailed design phase or construction phase of the Project to ensure that work is being completed in accordance with the Project File Report. These commitments shall be revisited during the detailed design phase of the Project at which time any additional commitments shall be identified.

8.1.1 Detailed Design Commitments

Natural Heritage

- A compensation plan for removal of bat maternity habitat trees shall be confirmed through consultation with MNRF.
- The total number of replacement trees will be confirmed by a certified Arborist.
- An Erosion and Sediment Control (ESC) Plan will be developed during detailed design in consultation with CVC and will conform to industry best management practices and recognized standard specifications such as Ontario Provincial Standards Specification (OPSS).
- Although no Butternut trees were identified in the areas predicted to be impacted by the road extension, trees to be removed shall be confirmed to the species level during the detailed design phase of the project to avoid the incidental removal of Butternut.
- The inclusion of bio swales, infiltration galleries or other features to promote localized surface water infiltration to maintain the existing water balance shall be included as part of the detailed design and landscape plans for the road extension.
- CVC shall be consulted during detailed design with regard to potential works within or in close proximity flood regulated areas, as appropriate.
- Prior to construction, surveys shall be conducted by an Avian Biologist in winter to determine if the Site is significant habitat for raptors. If this is not possible due to project time constraints, habitat shall be considered “candidate” habitat.

Consultation with MNRF is required prior to construction to determine what mitigation measures are appropriate to avoid potential negative effects.

Groundwater

- The City will review the need for hydrogeological study (to assess groundwater quality) in the Study Area during the detailed design phase of the Project.

Noise and Air Quality

- A complaint response protocol for nuisance impacts including construction noise and dust emissions shall be prepared during the detailed design phase of the project and implemented prior to construction.

Streetscaping

- The Preliminary Streetscape Plan provided in the Project File Report will be refined based on the detailed design plans for the road extension by a licensed Landscape Architect.

Stormwater Management

- Calculations for stormwater quantity control will be finalized, together with the approach to storing / managing stormwater attributed to the road extension during the detailed design phase of the Project. If development has occurred within the tributary catchment between the EA Phase and detailed design phase of the project, the relevant hydrologic parameters will be updated. Where possible, the City will explore opportunities to combine the flood storage requirement for the Sheridan Park Drive Extension with an adjacent (hydrologically-connected) development.

8.1.2 Construction Commitments

Natural Heritage

- Any in-water work will be conducted in isolation of flowing water. All work zones will be clearly marked on drawings and the ESC Plan to indicate that no work should occur outside the work zone.
- ESC measures shall be installed and maintained during the construction phase and until all areas of the construction Site have been stabilized. ESC measures shall be inspected daily to confirm they are functioning and maintained as required. If ESC measures are not functioning properly, no further work in the affected areas will occur until the sediment and/or erosion problem is resolved.
- Any stockpiled material shall be stored and stabilized away from the surface water features. All materials and equipment used for the purpose of Site preparation and road construction shall be operated and stored in a manner that prevents any deleterious substance (e.g., petroleum products, silt, etc.) from entering the water.

- Construction hoarding should be installed prior to commencement of construction activities to prevent pedestrian access, prevent the unnecessary encroachment / disturbance by humans and machinery into vegetation communities and to prevent wildlife from entering the construction areas. In the event that an animal is encountered during construction and does not move from the construction zone, the Contract Administrator will be notified. If the construction activities are such that continuing construction in the area would result in harm to wildlife, construction activities in that location will temporarily stop and the MNRF shall be contacted for direction.
- Vegetation clearing during sensitive times of the year for local wildlife, such as spring and early summer (when many animals bear their young or migrate between wintering and summer habitats) shall be avoided.
- Trees that have been assigned a good condition rating are recommended for transplant, if their current location will be impacted by the proposed improvements.
- If trees cannot be transplanted immediately, they should be staged by planting them in a soft landscaped area (e.g., park) and maintained (e.g., watered) as needed.
- If a nesting migratory bird (or SAR protected under *ESA, 2007*) is identified within or adjacent to the construction Site and the activities are such that continuing works in that area would result in a contravention of the *Migratory Birds Convention Act, 1994* or *ESA, 2007*, all activities will stop and the Contract Administrator (with assistance from an Avian Biologist) shall discuss mitigation measures with the City. Should SAR be identified, all activities will stop and MNRF will be contacted immediately to ensure compliance with the ESA. The Contract Administrator shall instruct the Contractor on how to proceed based on the mitigation measures established through discussions with the City, the MNRF and/or Environment Canada.

Archaeology

- In the event that archeological remains are found by the Contractor during subsequent construction activities, the consultant archaeologist, approval authority and the Cultural Program Unit of the Ministry of Tourism Culture and Sport the shall immediately notified by the Contractor.

Noise

- Post-construction sound level measurements in the Noise Sensitive Area shall be conducted by a quality professional to confirm the requirement for noise barriers.

Construction Plans

The following plans will need to be prepared by the contractor and implemented prior to construction:

- Erosion and Sediment Control Plan;
- Emergency Response and Communications Plan;
- Stormwater Management Plan;
- Complaint Response Protocol;
- Construction Management Plan;
- Health and Safety Plans; and
- Traffic Management Plan.

8.2 Permit Requirements

The following list provides a preliminary set of permit requirements that will need to be undertaken by the contractor. A final list of permits shall be determined during the detailed design phase of the Project.

8.2.1 General Permitting Requirements

- Contractor will need to obtain an Occupancy Permit from the City.
- A Permit to Take Water (PTTW) may be required should dewatering be necessary. Requirements for dewatering will be determined during the detailed design phase of the Project.
- The City is required to comply with the *Ontario Water Resources Act, 1990* with respect to the quality of water discharging into natural receivers. The footprint of disturbed area will be minimized as much as possible. For example, minimizing distribution of excavated soil to minimize sedimentation to storm sewers.
- An erosion and sediment control plan will be developed in consultation with CVC. Implementation of the erosion and sediment control measures will conform to recognized standard specifications such as Ontario Provincial Standards Specification (OPSS) and the requirements of the CVC. The erosion and sediment control plan will also take into account the Greater Golden Horseshoe Area Conservation Authorities (GGHACA) Erosion and Sediment Control Guidelines for Urban Construction.
- A permit approval will be required from CVC in accordance with *O.Reg 160/06 Credit Valley Conservation Authority: Regulation of Development, Interference with Wetlands and Alteration to Shorelines and Watercourses* for construction works in CVC regulated areas.

8.2.2 Utility Permits and Approvals

Enbridge Pipelines Ltd.

- Consult with utility during the detailed design phase of the Project to ascertain conflicts with gas main and proposed roundabout at the intersection of Sheridan Park Drive and Speakman Drive (approximately 150 m east of Winston Churchill Boulevard) and determine requirements and cost for relocation of the gas main.

Hydro One Networks Inc.

- Consult with utility during the detailed design phase of the Project to confirm and complete requirements for operational land sale for the daylight triangles at the location of the roundabout at the intersection of Sheridan Park Drive / Homelands Drive / Speakman Drive and modifications to the existing easement license for the multi-use trail to add provision for additional trail connections through the utility corridor.

Infrastructure Ontario

- Consult with Infrastructure Ontario (IO) during the detailed design phase of the Project to confirm IO requirements related to the operational land sale of Hydro One lands.

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