# KEN WHILLANS DRIVE EXTENSION MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

Final Project File Report

November 2022

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# EXECUTIVE SUMMARY

The City of Brampton has initiated a Municipal Class Environmental Assessment (Class EA) for Ken Whillans Drive Extension, south of Church Street (see Figure ES-1). This road extension was identified in the City of Brampton Transportation Master Plan Update, 2015. This study is being conducted in accordance with the planning and design process for 'Schedule B' projects as outlined in the Municipal Engineers Association "Municipal Class Environmental Assessment," (October 2000, as amended in 2007, 2011 and 2015).

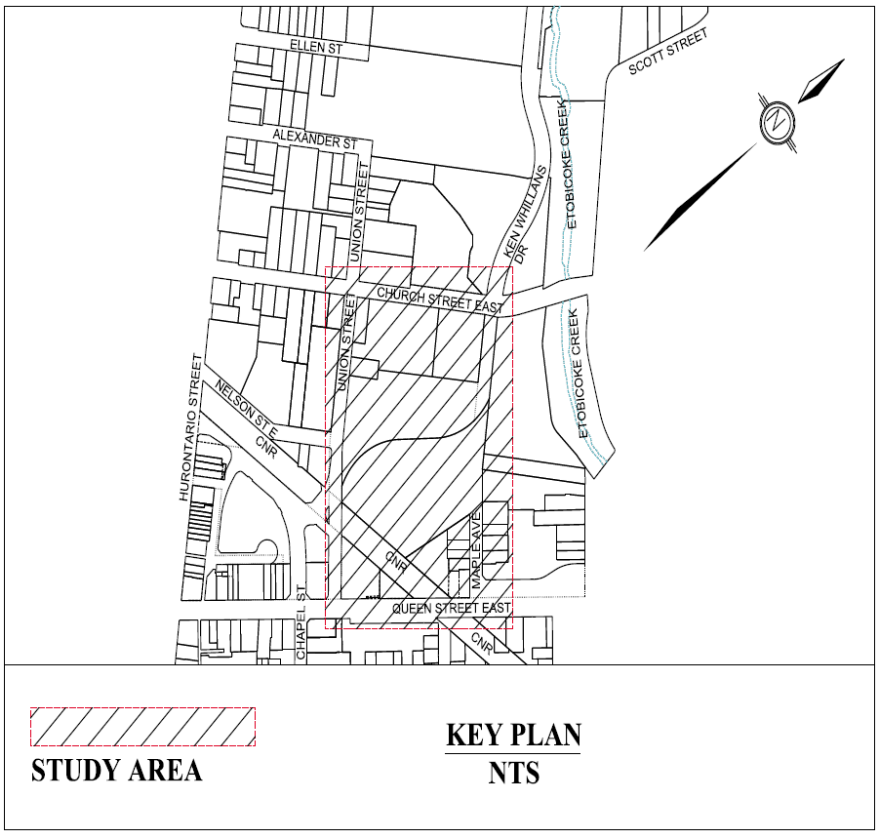



FIGURE ES-1: STUDY AREA

A number of background studies were undertaken for the study area to determine existing conditions and impacts and include the following:

- Transportation and Safety Assessment Report
- Stormwater Management and Drainage Analysis Memo
- Natural Environment Assessment Report
- Cultural Heritage Report
- Phase I Environmental Site Assessment
- Socio-Economic Review
- Geotechnical Report

## PUBLIC CONSULTATION

Public consultation is an important part of the Municipal Class EA process. The following are the key points of contact during the EA study:

| Key Point of Contact | Date | Means of Notification |
|---|---|---|
| Notice of Study Commencement | February 18 and 25, 2021 | Newspaper, Mail, Email, City Website |
| Online Public Information Centre | April 28 to May 27, 2022 | Newspaper, Mail, Email, City Website |
| Notice of Study Completion | November 10 and 17, 2022 | Newspaper, Mail, Email, City Website |

In addition to the key points of contacts above, the project team also consulted with key technical agencies and stakeholders throughout the EA. Key stakeholders and consultation activites include:

- Stakeholder Group (SG) Meeting, with local residents and interest groups
- Technical Agency Committee (TAC) Meeting, with City, Region, TRCA staff

## PROBLEM AND OPPORTUNITY STATEMENT

Based on the review of existing provincial, regional and local plans and policies, the following Problem/Opportunity Statement was developed for the EA study:

> *The City has established a planning vision to revitalize the Downtown Brampton and Etobicoke Creek area that includes growth and redevelopment, improved facilities and amenities, and a strong sense of place and character. As one of the landmark locations of the Riverwalk Area Urban Design Master Plan, Rosalea Park and adjacent lands are proposed to be developed as a multi-use vibrant urban attraction for the City as well as a revitalization stimulus for the Downtown core. Rosalea Park will form a key component of the Downtown's Public Realm and Open Space System by providing a dedicated space for downtown activities, creating an attractive interface with the natural environment and establishing Downtown Brampton's character and identity.*
>
> *The existing transportation network does not sufficiently support the City's vision. There is a lack of direct connectivity to Rosalea Park as well as to other adjacent uses and the existing auto-oriented facilities are a barrier to walking and cycling. Therefore, given significant public and private investments envisioned for the area, an opportunity exists to improve the transportation network in order to complement and support the outcomes outlined in Brampton Vision 2040, the Downtown Brampton Secondary Plan, and the Riverwalk Area Urban Design Master Plan studies. This study is an opportunity to improve on and provide a connected, accessible, safe, and vibrant public realm and open space system.*

## ALTERNATIVE SOLUTIONS

Alternative Solutions are high-level, planning options to address the Problem / Opportunity Statement and include a "Do Nothing" scenario. The following Alternative Solutions were evaluated against the environmental factors relevant to the study, such as the natural, social, cultural and economic environments.

1. Do Nothing
2. Limit Development
3. Improve Existing Routes / Intersections
4. Extend Ken Whillans Drive and connect to the east at Scott Street
5. Extend Ken Whillans Drive and connect to Queen Street
6. Extend Ken Whillans Drive and connect to the west at Nelson Street

Based on the evaluation, Alternative 6 is recommended as it best meets and aligns with the future use of Rosalea Park, is the most constructable of the extension options, and has minimal to moderate impacts on the cultural and natural environment.

## STREET DESIGN CONCEPTS

Several street design options were developed to determine what the right-of-way (ROW) would be comprised of and these are described below.

1. Shared Street
2. Bike Boulevard
3. Active Transportation Only Street
4. Conventional Mixed-Use Collector Street

Based on the evaluation, Street Design Concept #1 – Shared Street (see Figure ES-2) is recommended as it provides the best pedestrian priority while still providing cycling and vehicular access. The curb-less and paver design helps to most seamlessly tie into Rosalea Park. All options have comparable impacts to street trees but this option would be best from a stormwater management perspective as it uses permeable surfaces. This street design best supports the future use of Rosalea Park with strong potential for streetscaping and layby and flexible spaces for events.

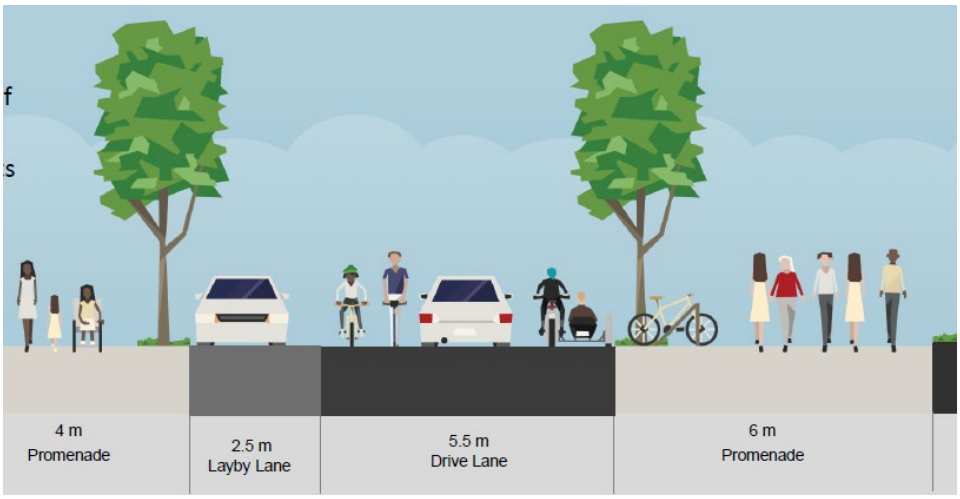



FIGURE ES-2: STREET DESIGN CONCEPT #1 – SHARED STREET

## STREET ALIGNMENT OPTIONS

Several high-level and conceptual street alignment options were also developed for how the Ken Whillans Drive extension would connect to Nelson Street (see Figure ES-3). When assessing and evaluating the different alignment options, the following were considered:

- Can tie into existing intersections (i.e. no skews for safer intersections)
- Balances available park and event space to the east and west of the street
- Minimizes impacts to the YMCA
- Minimizes tree impacts

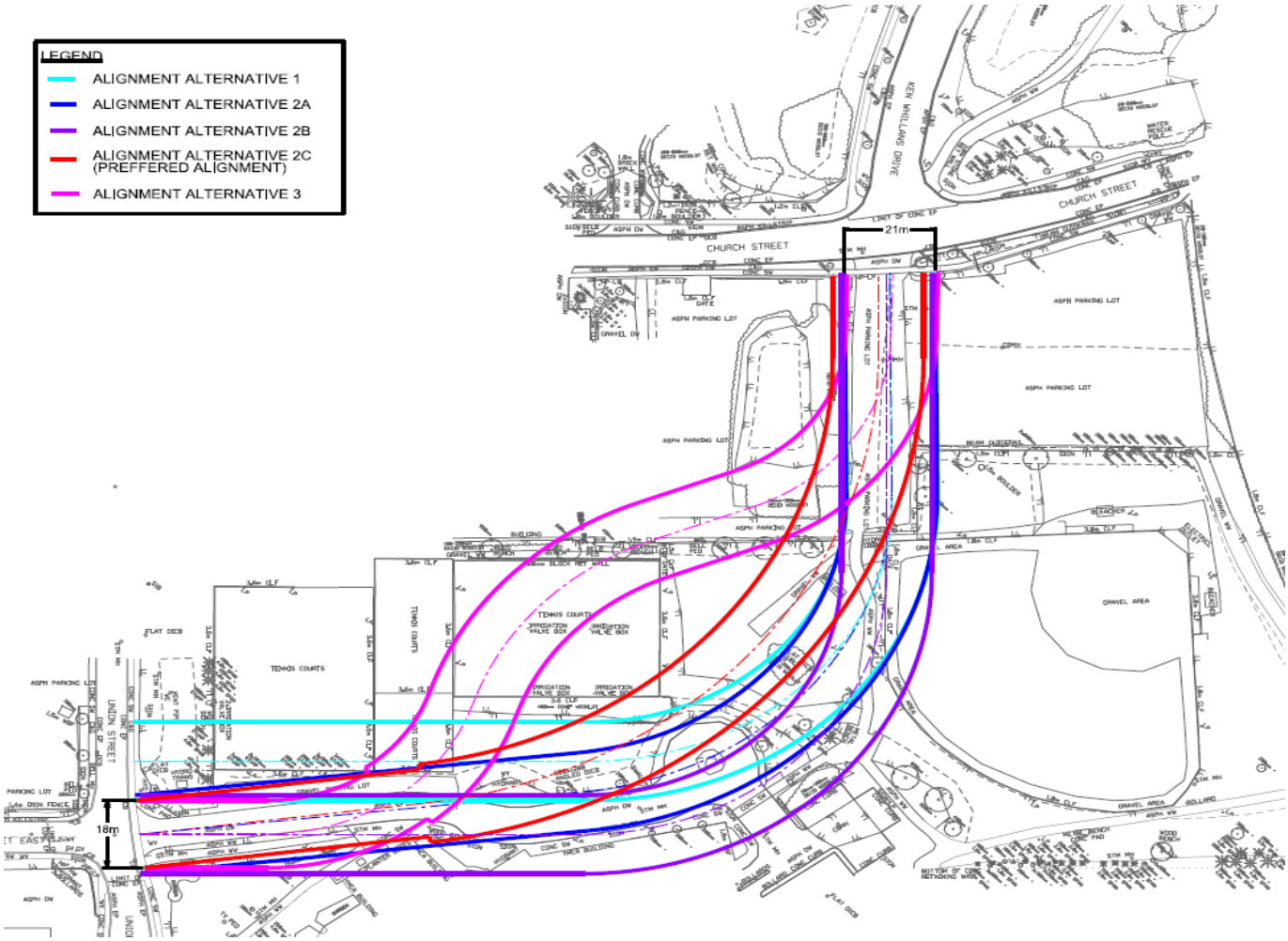



FIGURE ES-3: CONCEPTUAL ALIGNMENT OPTIONS FOR THE KEN WHILLANS DRIVE EXTENSION

The preferred alignment is Alignment 2C as it best met the considerations listed above. This alignment was further refined in the preliminary design.

## PREFERRED DESIGN

### Road Design

The preferred design includes extension of Ken Whillans Drive south of Church Street to the west to Union Street with a Shared Street right-of-way that prioritizes pedestrian space as shown in Figure ES-4.

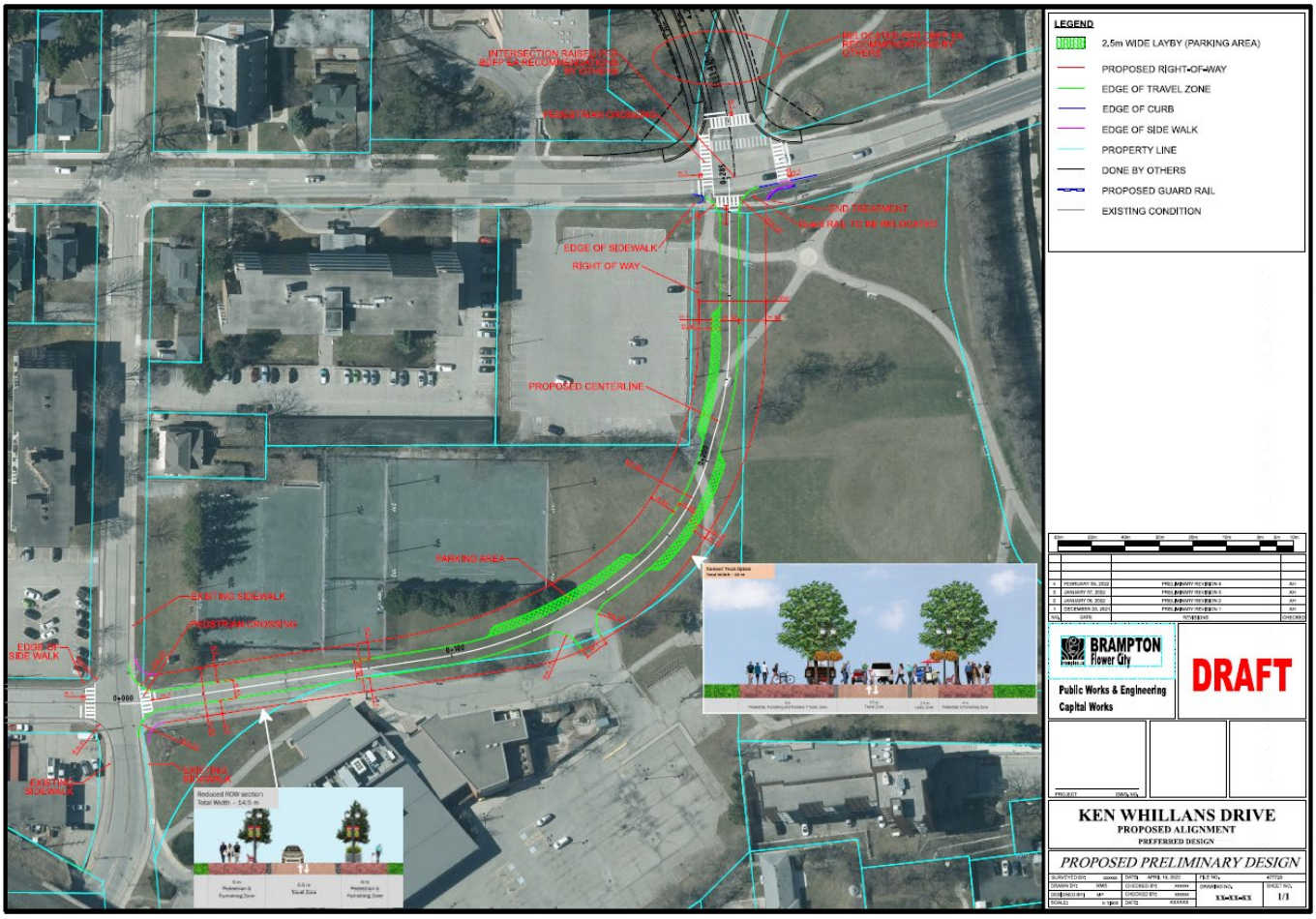



FIGURE ES-4: PRELIMINARY DESIGN PLAN FOR THE KEN WHILLANS DRIVE EXTENSION

The typical cross section of the Shared Street option includes:

- 5.5m travel zone
- 2.5m layby zone (only at certain parts of the extension)
- 4m - 8m pedestrian and furnishing zones on both sides of the road

Two typical cross sections have been developed for the extension due to constraints on the west end where the road will be in close proximity to the YMCA building.

The full right-of-way (ROW) is 20m wide and it includes the travel zone, layby zones, and pedestrian and furnishing zones on both sides of the road. A typical cross section of the 20m ROW is shown in Figure ES-5.

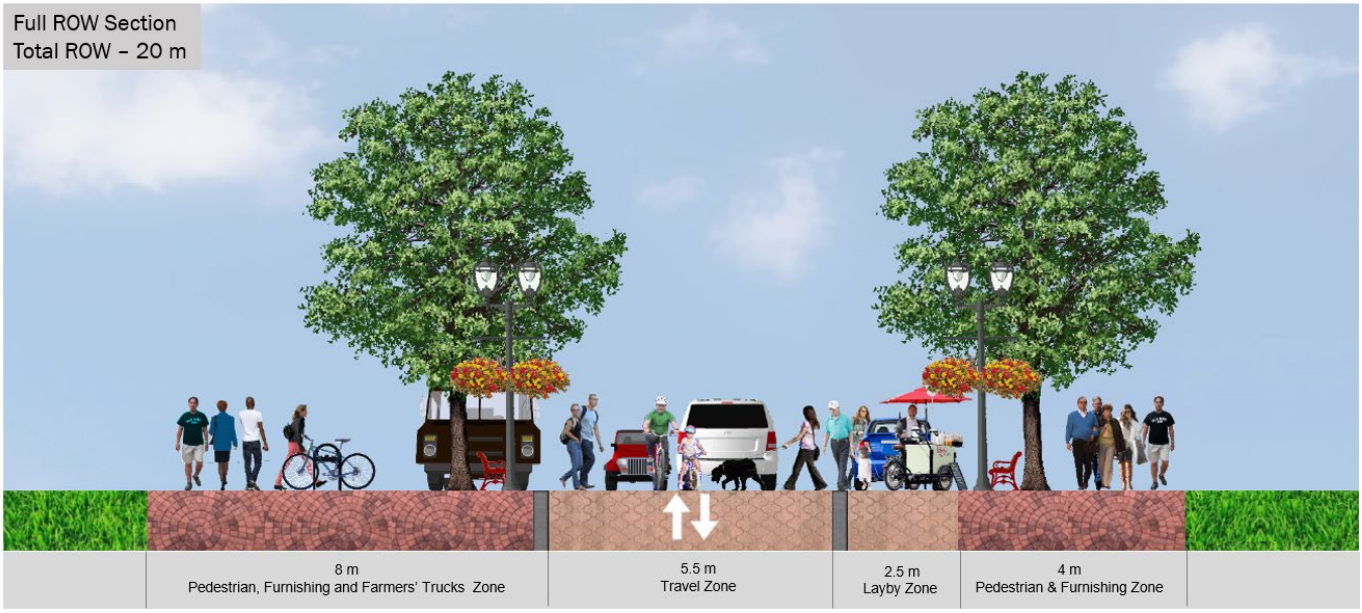



FIGURE ES-5: TYPICAL CROSS SECTION OF THE FULL RIGHT-OF-WAY SECTION

A reduced right-of-way is 14.5m and it includes the travel zone and pedestrian and furnishing zones on both sides of the road. A reduced right-of-way is used in the vicinity of YMCA to reduce impacts on the building. A typical cross section is shown in Figure ES-6.

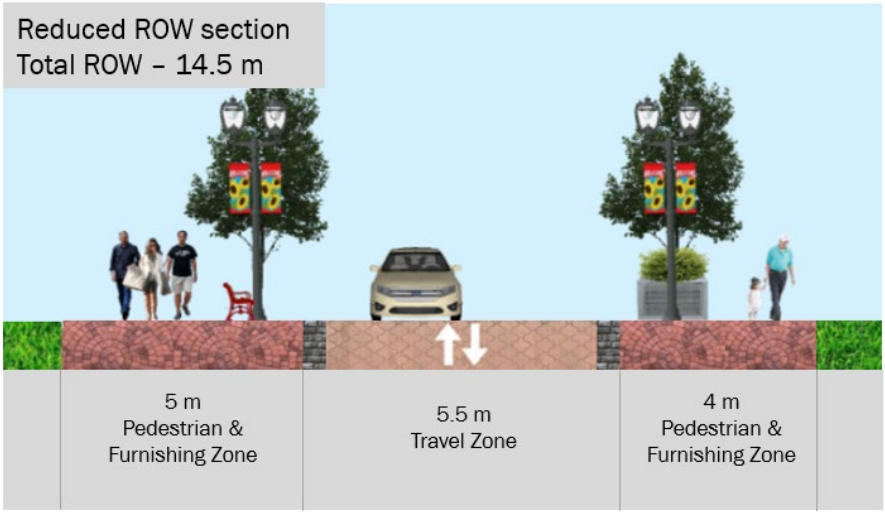



FIGURE ES-6: TYPICAL CROSS SECTION OF THE REDUCED RIGHT-OF-WAY SECTION

The proposed horizontal alignment of the preferred alternative was developed to balance impacts to both sides of Rosalea Park and minimize private property impacts. As such, a sharper radius was utilized mid-corridor to reduce speeds and to further minimize property impacts.

The vertical alignment between Union Street and the YMCA entrance is largely maintained at existing to avoid impacting adjacent properties. As part of the Downtown Brampton Flood Protection (DBFP) project, there are plans to raise Church Street approximately 1.25m as part of the reconstruction/raising of the Church Street bridge to the east of the Ken Whillans Drive intersection.

As such, the proposed vertical alignment for the Ken Whillans Drive Extension at Church Street climbs to match the proposed Church Street grade. This grade match will need to be confirmed once detailed design for the DBFP project is finalized.

### Intersections and Access

The road extension will connect into the existing intersections at Church Street and Ken Whillans Drive and at Union Street and Nelson Street. This will avoid any offset intersections, promote improved intersection operations, and reduce impacts to surrounding uses.

The Church Street and Ken Whillans Drive intersection will become a four-legged all-way stop controlled intersection. This intersection will match up into the realignment of the Ken Whillans Drive north of Church Street as part of the DBFP project.

The Union Street and Nelson Street intersection will become a four-legged all-way stop controlled intersection.

The section of Ken Whillans Drive between Union Street and the YMCA entrance is intended to maintain the same access function for the YMCA as the current driveway.

### Drainage and Stormwater Management

As the proposed design of the extension will utilize permeable concrete/brick pavers, and will replace the existing asphalt driveway with a more permeable surface, the proposed conditions will result in minimal impacts to drainage and stormwater management. Some drainage inlet structures will be impacted by the proposed street alignment and will be removed/abandoned. Two new catch basins are proposed at low points and conveyed to the existing storm sewer system. General integration of sustainable design principles and features, Low Impact Development (LID) and the infiltration system in the right-of-way will be further assessed in detailed design. The use of soil cell technology as a stormwater management strategy and to promote trees in an urban environment, in this case within the pedestrian furnishing zone, shall also be explored in detailed design.

The site of this study falls below the 0.5 ha threshold for triggering full TRCA stormwater management requirements. As such, the goal for stormwater management criteria is to achieve a best-efforts approach and to attempt to provide quantity and quality control as is practical and feasible.

For stormwater quantity control, the goal is to restrict the peak stormwater run-off post-construction conditions to less than or equal to the peak flow runoff in the existing conditions. The proposed extension will result in less than 1% increase of flow run-off rates. Therefore, no quantity control measures are required or warranted on this project.

For stormwater quality control, the site is limited by the small area of the study. The permeable pavement with subdrain has a reduction of 50% total suspended solids (TSS), and the adjacent grass will provide the remaining TSS removals. Therefore, the proposed shared street will meet the Enhanced Level of TSS removal (i.e. 80%).

The TRCA SWM criteria targets 5mm retention of run-off onsite, through storage, infiltration, evapotranspiration, or water reuse. Due to the small size of the study area, permeability of the pavement along with the subdrains underneath, this extension provides adequate potential to allow the 5mm rainfall retention. It is worth mentioning that the boulevard embankment areas beyond the

paved pedestrian zones will be treated with extra depth topsoil (300mm) to promote increased retention from the typical 5mm, up to 8-10mm.

### Utilities and Municipal Servicing

The preliminary design was circulated to the Brampton PUCC for mark up of utility infrastructure. Based on responses from the PUCC, it was determined that Rogers and Alectra have poles, aerial and underground cables, and ground level box/transformer that would need to be relocated to construct the road extension. The utility relocation design should be further explored with the respective utilities and in coordination with the adjacent park development in detailed design and the detailed design drawings should be re-circulated to the Brampton PUCC for review and comment. Alectra should be consulted to bring in power to the road right-of-way for future farmer markets and events in Rosalea Park.

During detailed design, Peel Region and Riverwalk City staff should be consulted to determine whether municipal services, such as watermains or sanitary sewers, are required to be extended into the Rosalea Park area via the Ken Whillans Drive Extension right-of-way.

### Streetscaping

Streetscaping and furnishings have not been detailed in the preliminary design beyond identifying "Pedestrian and Furnishing Zones" as part of the street design option. A Streetscape Manual is being prepared by the City of Brampton for the Downtown Brampton area. During detailed design, streetscaping elements should be added to the design plans and should be designed in accordance with the Downtown Brampton Streetscape Manual to complement the City's Integrated Downtown Plan. The use of soil cell technology as a stormwater management strategy and to promote trees in an urban environment, in this case within the pedestrian furnishing zone, shall also be explored in detailed design.

## IMPACTS AND MITIGATION

The impacts associated with implementing the recommended design along with the **key** mitigation measures to address the impacts are summarized at a high level below.

| Category | Potential Impact | Proposed Mitigation Measure |
|---|---|---|
| Transportation | | |
| Traffic | Construction of the recommended design could have potential impacts on the transportation environment, particularly impacts to traffic flow and patterns along Church Street, Ken Whillans Drive, and Union Street. | A traffic management plan / construction staging plan will be developed during detailed design to minimize impacts to traffic and access, where possible. |
| Socio-Economic | | |
| Permanent Property | Most of the extension is located on property owned by the City of Brampton. Some permanent property is required from the YMCA to construct the new right-of-way. | Where possible, minimize the amount of property required. Where property is required, compensation will be provided to the property owner based on appraisals completed by the City. |

| Category | Potential Impact | Proposed Mitigation Measure |
|---|---|---|
| Temporary Property | Some property will be required as a temporary easement for construction and grading works from the YMCA. | Temporary access for construction will be obtained through an agreement with YMCA to be discussed as part of the property acquisition. |
| Access | Reduction of access particularly to the YMCA during construction. | Access to YMCA should be incorporated into the traffic management plan and YMCA should be consulted during detailed design and construction with regards to access. |
| Air Quality | During construction, air quality can be temporarily degraded due do dust and/or emissions from construction activities and equipment. Activites include vehicular traffic in open construction areas, dust from storage piles, unloading materials, particularly during strong winds, and the operation of construction equipment. | General construction best management practices should be conducted to minimize air quality impacts. These include minimizing idling, use of dust suppressants, regular cleaning, and management of stockpiles. |
| Noise | There will be temporary noise impacts as a result of construction work, however the magnitude of the impacts will vary greatly throughout the construction period. | General construction best management practices should be conducted to minimize noise impacts. These include limiting noisy works to regular work hours, properly maintaining equipment, and responding to complaints.. |
| Contamination | The findings of the Phase I ESA determine that additional investigations are required. | Complete additional soil quality and groundwater investigations and potentially complete a Phase II ESA if required. |
| Natural Environment | | |
| Vegetation | Vegetation removals will be required for the new road alignment. A total of 45 trees/shrubs will be removed or injured. | Mitigation measures include avoiding encroachment through design and construction, delineating the boundaries of the work area using tree fencing, proper use of ESC measures, and restoration and compensation. |
| Terrestrial Wildlife and Wildlife Habitat | All vegetated communities and some built areas provide generalized wildlife habitat primarily for common species typical of urban environments. The proposed works have the potential to result in temporary generalized wildlife habitat loss during construction, however permanent habitat loss is not anticipated. | Mitigation measures include timing vegetation removals outside of the active season for birds and bats, directing artificial light away from natural areas, proper use of ESC measures, conducting pre-construction surveys for wildlife in the work zone, and following protocols for wildlife encounters. |
| Cultural Environment | | |

| Category | Potential Impact | Proposed Mitigation Measure |
|---|---|---|
| Cultural Heritage | There are potential for indirect impacts to BHR2 and CHL2 due to construction related vibration. | Undertake a baseline vibration assessment during detail design to determine potential vibration impacts. Complete an Heritage Impact Assessment (HIA) for BHR2 and CHL2 during detailed design. |
| Archaeology | Some of the lands impacted by the works retain archaeological potential. | A Stage 2 AA should be carried out on all lands that will be impacted by construction. Should findings occur during Stage 2 AA, additional investigations, such as a Stage 3 and 4 AA, may be required.<br><br>Should previously undocumented archaeological resources be discovered, the contractor should cease all alteration of the site immediately and engage a licensed archaeologist to carry out archaeological fieldwork. |

## DETAILED DESIGN COMMITMENTS

Below is a summary of additional works that are required to be completed during the detailed design phase of the project, prior to construction:

Transportation/Technical Requirements

- All detailed design work should be completed in close coordination with the City's Riverwalk and Downtown Brampton initiatives. There is potential for certain design elements to expand or be located beyond the road right-of-way, particularly those that tie into the use of Rosalea Park.
- Complete detailed design of the roadway extension including civil design, drainage (including consideration of LID), and illumination.
- Detailed design of the roadway should meet accessibility design standards and consider widths that could accommodate mobility devices. Design should also consider ways to deter through traffic and speeding.
- Develop a Traffic Management Plan / Construction Staging Plan to minimize impacts to the traveling public and maintain road safety and vehicular access during construction.
- Coordinate with YMCA for impacts to their access road.
- Contact EMS prior to construction to advise them of the project.
- Coordinate with utilities requiring utility relocation. The detailed design drawings should be recirculated to the Brampton PUCC for review and comment.
- Peel Region and Riverwalk City staff should be consulted to determine what municipal services and electrical power are required in the Ken Whillans Drive right-of-way to service future use of Rosalea Park.

- Streetscaping elements should be added to the design plans and should be designed in accordance with the Downtown Brampton Streetscape Manual to complement the City's Integrated Downtown Plan. Assess the use of soil cell technology as a stormwater management strategy and to promote trees in an urban environment as part of the streetscaping strategy.

Socio-Economic Requirements

- Complete property requirement plans and negotiate with YMCA to purchase property required.
- Complete soil and groundwater testing as per recommendations of the Phase I ESA. Confirm whether a Phase II ESA is required for property acquisition.

Natural Environment Requirements

- Confirm environmental impacts of the detailed design and obtain environmental permits, as required.
- Complete an Arborist Report to document the impacts to trees and the compensation required, based on the impacts of the detailed design.
- Incorporate ESC measures into the drawings.

Cultural Environment Requirements

- Complete a Heritage Impact Assessment (HIA) for BHR 2 and CHL 2. Due to potential indirect impacts at these two cultural heritage resources, a baseline vibration assessment should be completed during detailed design to determine potential vibration impacts.
- Complete a Stage 2 AA for areas impacted and determined to retain archaeological potential. If required, complete further assessments, namely Stage 3 and 4 AA.

# 1.0 Introduction

## 1.1 Study Area

The City of Brampton has initiated a Municipal Class Environmental Assessment (Class EA) for Ken Whillans Drive Extension, south of Church Street (see Figure 1). This road extension was identified in the City of Brampton Transportation Master Plan Update, 2015. This study is being conducted in accordance with the planning and design process for 'Schedule B' projects as outlined in the Municipal Engineers Association "Municipal Class Environmental Assessment," (October 2000, as amended in 2007, 2011 and 2015).

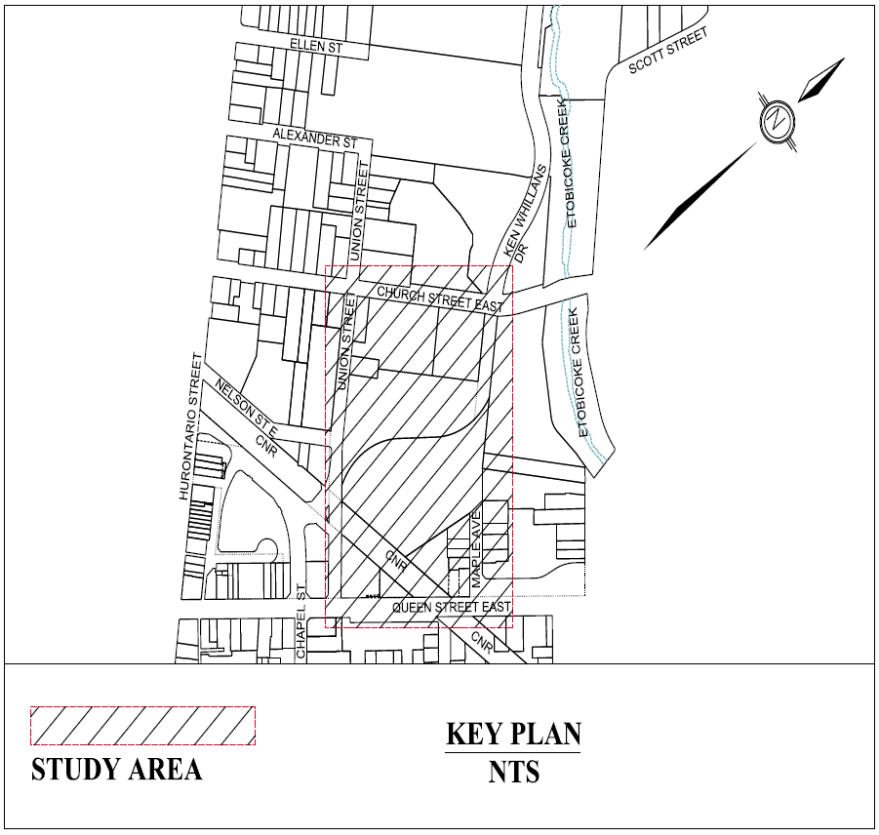



FIGURE 1. STUDY AREA

## 1.2 Municipal Class Environmental Assessment Process

The Ontario *Environmental Assessment Act* (EAA; 1990) forms the basis and foundation for environmental assessments (EA) undertaken within the province. The EAA identifies two planning and approval processes: Individual EAs and Class EAs.

Class EAs, once approved by the Ministry of Environment, Conservation and Parks (MECP), provide for specific classes of undertakings to follow an alternative planning and decision-making process that is different and less burdensome than that of an individual EA (which is laid out in Part II of the EAA).

Providing that the approved process is followed, undertakings conducted under Class EAs have obtained approval under the EAA and can proceed with implementation, given that all other approvals have been obtained. Class EAs provide a more streamline process since the effects on the environment of the undertakings within that class are generally common or well understood.

Under the Municipal Class EA process, municipal road projects are categorized according to their environmental significance and potential effects they may impose on the environment. These categories, described by specific Class EA "schedules", prescribe planning methodologies for each category. At present, there are four schedule classification types including Schedule A, A+, B and C. Generally, the main difference between each of the schedule types is the degree to which each project may adversely affect the existing environment.

The Ken Whillans Drive Extension Municipal Class EA study has been identified as a Schedule 'B' project undertaking. A Project File Report (PFR) is required for Schedule 'B' projects and documents the EA process carried out. In order to complete the Schedule 'B' process, a Notice of Completion will be submitted to review agencies, stakeholders and the public indicating the public review period of at least 30 days for comment and input.

The Municipal Class EA process includes five (5) phases. The combination of the five phases that are required to be completed will depend on the Schedule of the project. Schedule 'B' projects require that Phases 1 and 2 are completed prior to implementation (Phase 5). The five phases are summarized as follows:

| | |
|---|---|
| **Phase 1: Problem or Opportunity** | • Identification and description of the problem or opportunity. |
| **Phase 2: Alternative Solutions** | • Identification of alternative solutions to the problem.<br>• Preparation of a physical description of the study area as well as a general inventory of the natural, social and economic environments.<br>• Evaluation of all reasonable alternatives, including the "do nothing" scenario.<br>• Consultation with the public and review agencies.<br>• Selection of the preferred solution. |
| **Phase 3: Alternative Design Concepts for the Preferred Solution** | • Identification of alternative designs for the preferred solution.<br>• Preparation of a detailed inventory of the natural, social and economic environments.<br>• Identification of the potential impacts of the alternative designs.<br>• Evaluation of all alternative designs, including the "do nothing" scenario.<br>• Consultation with the public and review agencies.<br>• Selection of the preferred design.<br>• Preliminary finalization of preferred design. |

| | |
|---|---|
| **Phase 4: Environmental Study Report** | • Completion of the Environmental Study Report (ESR).<br>• Filing of the ESR on the public record for 30 days to allow for review by the public and review agencies.<br>• Respond to part II order requests during 30-day review period, if received. |
| **Phase 5: Implementation** | • Implementation of preferred design (i.e., detailed design, construction, etc.). |

## 1.3 Project File Report

This Project File Report (PFR) has been prepared to document the EA process followed for the Ken Whillans Drive Extension EA study as per a Schedule 'B' process. The PFR summarizes the inventory of existing conditions, the alternatives considered, the recommended design, the impacts and mitigation measures, and the consultation undertaken.

# 2.0 Project Need and Justification

## 2.1 Provincial Planning Policies

### 2.1.1 PROVINCIAL POLICY STATEMENT, 2020

The 2020 Provincial Policy Statement (PPS) sets the policy foundation for regulating the development and use of land, and provides direction on land use planning within the province to promote strong communities, a strong economy and a clean and healthy environment. All decisions related to land use planning matters are required to be consistent with the PPS. Other provincial plans build upon the PPS' policy foundation.

Policies that are relevant to the study are provided in Policy 1.6.7 Transportation Systems. Specifically:

- Policy 1.6.7.1 states: "Transportation systems should be provided which are safe, energy-efficient, facilitate the movement of people and goods, and are appropriate to address projected needs."
- Policy 1.6.7.3 states: "As part of a multimodal transportation system, connectivity within and among transportation systems and modes should be maintained and, where possible, improved including connections which cross jurisdictional boundaries."
- Policy 1.6.7.4 states: "A land use pattern, density and mix of uses should be promoted that minimize the length and number of vehicle trips and support current and future use of transit and active transportation."

### 2.1.2 A PLACE TO GROW: GROWTH PLAN FOR THE GREATER GOLDEN HORSESHOE, 2019, AMENDED 2020

The Growth Plan for the Greater Golder Horseshoe (the "Growth Plan") outlines the Province's objectives to plan growth and development in the Greater Golder Horseshoe which includes the City of Brampton. A key objective of the plan is to support economic prosperity, protect the environment and help communities achieve a high quality of life. A key vision for the Greater Golden Horseshoe is that an "integrated transportation network will allow people choices for easy travel both within and between urban centres throughout the region".

The City of Brampton is part of the Built-Up Area and Downtown Brampton has been identified as an Urban Growth Centre, which are regional focal points for accommodating population and employment growth. The Growth Plan states, "the continued revitalization of urban growth centres as meeting places, locations for cultural facilities, public institutions, and major services and transit hubs with the potential to become more vibrant, mixed-use, transit-supportive communities is particularly important."

Under Section 3.2.2 which speaks to policies for transportation systems to support growth, key goals include: connectivity, a balance of choices, particularly promoting transit and active transportation, sustainability, multi-modal access, accommodating agricultural vehicles (if appropriate), and safety.

### 2.1.3 GREENBELT PLAN, 2017

The Greenbelt Plan, together with the Oak Ridges Moraine Conservation Plan and the Niagara Escarpment Plan identifies where urbanization should not occur to protect agricultural and ecological areas and functions. While the study area does not fall within the main Greenbelt surrounding the Greater Toronto Area, Etobicoke Creek has been designated as an Urban River Valley under the Greenbelt Plan. Urban River Valleys are the lands within the main corridors of river valleys that connect the Greenbelt to the Great Lakes and inland lakes. The lands are generally characterized as having natural and hydrologic features, and are typically designated in official plans for recreational, open space, and environmental protection uses.

## 2.2 Regional Planning Policies

### 2.2.1 REGION OF PEEL OFFICIAL PLAN, 2018

The Peel Regional Official Plan (ROP) provides a long-term policy and planning framework for Peel Region to direct growth, manage resources, and protect the environment. The study area is located in the Region's Urban System, specifically the Downtown Brampton Urban Growth Centre. The south end of the study area is bounded by Queen Street, which is a Rapid Transit Corridor. The Kitchener GO Rail Line – Express Rail passes through the study area to Brampton GO Station.

### 2.2.2 REGION OF PEEL LONG RANGE TRANSPORTATION PLAN, 2019

The Region of Peel's Long Range Transportation Plan (PLRTP) is a transportation planning and infrastructure document that will guide decision making to accommodate growth in the Region to 2041. There are no regional roads located in or within 800m of the study area. Main Street North and Queen Street East, two major arterial roads in close proximity to the study area, are both City roads.

Queen Street and Main Street are also existing ZUM corridors, with service being provided by Route 501 and 502, respectively. Both corridors are also identified as having proposed "LRT/BRT" service, with the intersection of Queen Street/Main Street being the northern terminus for proposed service along Main Street, and the western terminus for proposed service along Queen Street. Main Street north of Queen Street is also identified for "Priority Bus" service extending north toward the urban boundary of Brampton. Both the existing and proposed transit service will enhance access to the study area.

The intersection of Queen Street at Main Street is identified as a "Mobility Hub" in the PLRTP, with these locations intended to accommodate "existing or planned frequent rapid transit service with an elevated development potential."

## 2.3 Brampton Planning Policies

### 2.3.1 CITY OF BRAMPTON OFFICIAL PLAN, 2006, CONSOLIDATED 2020

The City of Brampton's Official Plan (OP) provides guidance for land use, development and infrastructure decision-making based on the long-term vision and goals of the City. Specifically, the OP seeks to accommodate and direct growth while managing and enhancing the environmental, cultural, social and economic amenities. The City has identified six pillars, which are the main components of the OP, including Modern Transportation Systems; Managing Growth; Protecting our Environment,

Enhancing Our Neighbourhoods; A Dynamic and Prosperous Economy; Community Lifestyle and, Excellence in Local Government.

Generally, the OP has designated the study area as a Central Area with a Residential land use (see Figure 2). The City's Central Area comprises the historic core of Downtown Brampton and the area adjacent to the Queen Street corridor. The City's vision for the Central Area is to continue to reinforce "its role as a focal area for investment in institutional and region-wide public services, as well as commercial, recreation, cultural and entertainment uses."

Based on the road hierarchy identified in Schedule B of the Official Plan, the study area is bounded on the south end by Queen Street East, a major arterial road owned by the City, and bounded on the north end by Church Street, a local collector road. Ken Whillans Drive is also a local collector road and is shown to be extended south of Church Street in the OP. The study area is bounded on the east and west by Rosalea Park/Scott Street and Union Street, respectively, which are local roads.

An Open Space area associated with Etobicoke Creek is located within the vicinity of the study area, which is a key natural environmental feature but also has recreational and cultural significance, as discussed in later sections. The OP identifies the Etobicoke Creek Trail, an existing major pathway network located adjacent to Etobicoke Creek as travelling through the site. The Etobicoke Creek Trail extends north to the City boundary with the Town of Caledon and south to the boundary with the City of Mississauga and connects to the vast network of major pathways and on-road cycling facilities across the City.

In the OP, Queen Street is identified as a primary intensification corridor. The study area is within an Anchor Mobility Hub focused on the Queen Street / Main Street intersection, with both roads identified as Bus Rapid Transit (BRT) corridors. Anchor Mobility Hubs are aptly named for their strategic location and ability to be an anchor for regional, interregional, and local transit connections.

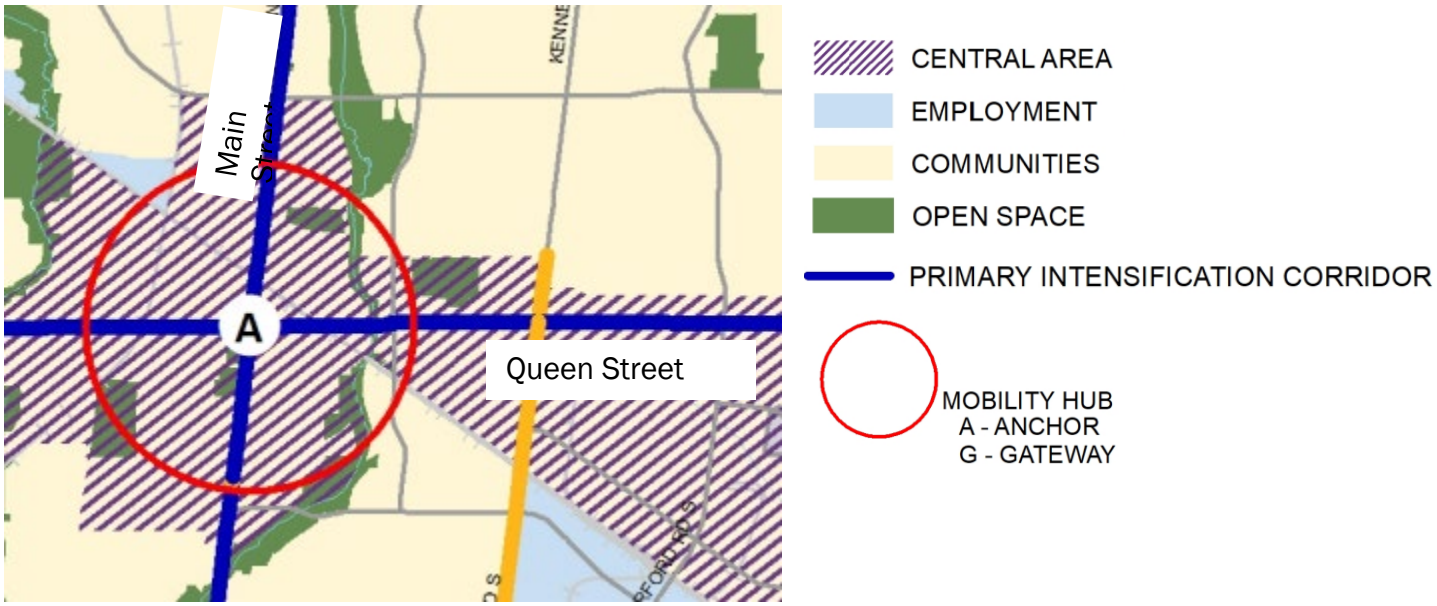



FIGURE 2: GENERAL LAND USE AND CITY STRUCTURE

### 2.3.2 CITY OF BRAMPTON TRANSPORTATION MASTER PLAN (2015)

The City of Brampton Transportation Master Plan (TMP) was most recently updated in 2015 and looks at existing and forecasted traffic volumes and patterns across the entire City and considers future development and other transportation improvements. Based on these results, the TMP provides a recommended City road network for 2041. Section 11.1 of the TMP speaks to the phasing and implementation plan, which identifies a 2-lane extension of Ken Whillans Drive south from Church Street to Nelson Street as a project to be undertaken in the short-term horizon.

The 'Recommended City Road Network Needs to 2041' map (Figure 18 in the TMP) identifies a 'City Road Extension by Two Lanes' of Ken Whillans Drive from its current terminus at Church Street East to Union Street. The 'Existing, Proposed and Candidate Cycling Network' map (Figure 27 in the TMP) identifies an 'off-road trail' extending through the study area along the proposed alignment of the Ken Whillans Drive extension from Church Street East to Union Street.

### 2.3.3 CITY OF BRAMPTON ACTIVE TRANSPORTATION MASTER PLAN (2019)

The City of Brampton Active Transportation Master Plan (ATMP) was developed in 2019 and builds upon the 'Vision 2040: "Living the Mosaic" (2018)' document that set out a long-term vision for the City. The ATMP provides active transportation-focused plans, policies, and programs intended to implement elements of the Vision 2040 plan.

The ATMP identifies the Etobicoke Creek Trail as an existing 'Recreational Trail (Paved)' and Church Street East and Union Street as having 'Signed Route' facilities. Additionally, the trail network internal to Rosalea Park is identified as 'Park Path (Paved)'. The "Proposed Network & Facility Type" map (Exhibit 4.16 in the ATMP) identifies the Etobicoke Creek Trail as an 'Existing Network Link' but proposes that the current signed route on Church Street East be upgraded to a 'Bike Lane or Buffered Bike Lane (Designated)'. The existing signed route along Union Street would see that facility type maintained. The proposed network also identifies the extension of Ken Whillans Drive as a 'Multi-Use Path / Boulevard Path', maintaining the extension alignment identified in the City of Brampton TMP.

Church Street East (between Union Street and the Etobicoke Creek Trail) and Union Street (between Church Street East and Theatre Lane) form part of the province-wide cycling network, a network of cycling facilities that extends across the province and promotes recreational cycling and cycling tourism. The province-wide cycling network enhances cycling connectivity to the study area from across the broader region.

### 2.3.4 DOWNTOWN BRAMPTON SECONDARY PLAN

Also known as Secondary Plan Area 7, the Downtown Brampton Secondary Plan provides specific and prescriptive land use principles and infrastructure goals for the Downtown Brampton area. The key objectives of the secondary plan include, but are not limited to, promoting intensification of the Central Area; being the major focus of commercial and community activity; creating a distinct downtown characteristic and specialty districts; being sympathetic to the historic character and heritage resources of Downtown Brampton; identifying and protecting watercourses and valley systems, including floodplain; improving transportation and transit; and provide greenspace linkages.

The Secondary Plan Schedule SP7(A) designates land uses in the study area. The surrounding lands include 'Commercial - Central Area Mixed Use' to the west of Union Street, some 'Residential - Medium High/High Density' to the north/south of Rosalea Park, and Rosalea Park itself is designated as a

'Public Open Space – Neighbourhood Park'. Schedule SP7(B) identifies an extension of Ken Whillans Drive, from Church Street to Nelson Street, as a possible improvement to the road network.

### 2.3.5 DOWNTOWN BRAMPTON SPECIAL POLICY AREA NO. 3

The Provincial Policy Statement presents new development within a floodplain unless it is within a Special Policy Area (SPA) approved by the Province. The Province approves SPAs to address significant social and economic hardship that the City would experience if strict adherence to the natural hazard policies were required. As the Downtown Brampton area is part of the floodplain associated with flooding risks of the Etobicoke Creek by-pass channel, the Downtown Brampton SPA No. 3 was prepared and approved by the Province in 1986 and amended in 2014. The SPA offers clarity on development permission in the downtown core, allows City Council to approve development applications as long as they conform with the Secondary Plan and zoning by-law with provincial review and approval, and provides flood risk mitigation through special planning polices. This SPA is the driver for the further Downtown Etobicoke Creek Revitalization Studies (discussed in Section 2.4).

### 2.3.6 BRAMPTON 2040 VISION: LIVING THE MOSAIC (2018)

The City has compiled the ideas and perspectives offered by its citizens through extensive consultation with the community to develop its vision for the next 25 years. Goals that relate to the study include:

- Resetting Downtown by revitalizing the downtown core and building on the historic aspect
- Revitalizing existing districts and neighbourhoods
- Connectivity and transportation network improvements
- Streets for people, including trees and building facades that make the pedestrian realm more attractive
- Sustainability and focus on nature

## 2.4 Additional Studies

The City of Brampton has undertaken additional studies that shape both the study area and surrounding community. These studies will influence this EA study in determining the use and appropriateness of a proposed extension through the study area.

### 2.4.1 DOWNTOWN ETOBICOKE CREEK REVITALIZATION STUDY

The City, in partnership with Toronto Region Conservation Authority (TRCA) initiated studies in 2012 to address flooding of Downtown Brampton as per the Downtown Brampton SPA (see Section 2.3.5) as the downtown area is situation in the Etobicoke Creek floodplain resulting in risks to life, property, and critical infrastructure. The two main initiatives included a Flood Mitigation Feasibility Study and an Urban Design and Land Use Study. While flooding was the key problem to be addressed, the City recognized the potential to also create an attractive downtown and unlock the potential of the downtown area for development, economics, culture and recreation, creating a strong sense of place and community. The recommendations of these feasibility studies led to the completion of an EA study and the Riverwalk initiative discussed in the next sections.

### 2.4.2 DOWNTOWN BRAMPTON FLOOD PROTECTION (DBFP) EA

The purpose of the DBFP EA is to reduce the flood risk to the Downtown Brampton core, while also considering opportunities to enhance the natural environment through revitalization. The EA study was

completed in August 2020 and has proceeded to detailed design. The EA preferred design included widening and deepening the by-pass channel, naturalization of a portion of the channel north of Church Street, realigning a portion of Ken Whillans Drive north of Church Street to the west, raising the grade of Church Street to accommodate the Church Street bridge, including the intersection with Ken Whillans Drive, and several bridge replacements. The Ken Whillans Drive Extension EA study is located south/west of the DBFP EA and the recommendations of the DBFP EA will need to be considered when developing design alternatives.

### 2.4.3 RIVERWALK AND URBAN DESIGN MASTER PLAN

Riverwalk is the City's initiative to transform the riverfront along Etobicoke Creek into a usable and vibrant open space that can be enjoyed by residents and visitors of the City. The first step is to address flooding risks, which the City has undertaken several studies to review and develop solutions. Once flooding risks are minimized or mitigated, the Downtown Brampton area will be able to reach its potential for urban growth and development. As part of this initiative, the Riverwalk Area Urban Design Master Plan (UDMP) commenced in 2019, the purpose of which is to establish urban design concepts and guidelines for the Downtown Brampton Riverwalk area. This includes incorporating flood protection measures into the design of public spaces, development of parks and recreational spaces, and promoting an attractive and aesthetic meant to foster the culture and sense of place of downtown Brampton. The Riverwalk UDMP covers lands adjacent to Etobicoke Creek from Vodden Street to Clarence Street.

The Riverwalk UDMP has identified Rosalea Park as the heart of Riverwalk given its central location and importance to Downtown Brampton. The UDMP recognizes that Rosalea Park is a valuable and beloved green space in the city centre. The park is proposed to remain as a soft landscape, with a gently sloped and curving lawn that can be used for informal, unprogrammed recreation, and also serve as a gathering space that faces Rosalea Plaza, across Ken Whillans Drive.

Part of the vision for the area includes creating connections and access to Etobicoke Creek, improving and restoring ecological functions to the creek and the park, designing with nature and sustainability in mind, and creating meaningful public open spaces, such as a playground and/or splash pad for children. The UDMP also envisions the area west of the proposed extension to be an urban plaza with flexible spaces that can accommodate outdoor activities such as gatherings and events. The vision of the UDMP for the extension itself recommends a flexible, shared use, pedestrian priority street that can be closed to the vehicular traffic during events. The Ken Whillans Drive Extension EA should consider the ongoing Riverwalk UDMP when determining design alternatives to meet the future needs of this space.

## 2.5 Problem / Opportunity Statement

Based on the review of findings as documented in Section 2.0, the following Problem / Opportunity Statement was developed for the EA study:

The City has established a planning vision to revitalize the Downtown Brampton and Etobicoke Creek area that includes growth and redevelopment, improved facilities and amenities, and a strong sense of place and character. As one of the landmark locations of the Riverwalk Area Urban Design Master Plan, Rosalea Park and adjacent lands are proposed to be developed as a multi-use vibrant urban attraction for the City as well as a revitalization stimulus for the Downtown core. Rosalea Park will form a key component of the Downtown's Public Realm and Open Space System by providing a dedicated

space for downtown activities, creating an attractive interface with the natural environment and establishing Downtown Brampton's character and identity.

The existing transportation network does not sufficiently support the City's vision. There is a lack of direct connectivity to Rosalea Park as well as to other adjacent uses and the existing auto-oriented facilities are a barrier to walking and cycling. Therefore, given significant public and private investments envisioned for the area, an opportunity exists to improve the transportation network in order to complement and support the outcomes outlined in Brampton Vision 2040, the Downtown Brampton Secondary Plan, and the Riverwalk Area Urban Design Master Plan studies. This study is an opportunity to improve on and provide a connected, accessible, safe, and vibrant public realm and open space system.

# 3.0 Existing Conditions

## 3.1 Transportation

### 3.1.1 ROAD NETWORK

The study area is comprised mostly of roads with an urban cross section and one lane per direction. The exception is Queen Street East which is a Major Arterial with two lanes per direction. All roads are under the jurisdiction of the City of Brampton; there are no regional roads in the study area. **Table 1** below provides a summary of all the roads within the study area.

TABLE 1: SUMMARY OF EXISTING ROADS IN THE STUDY AREA

| Road Name | Regional/City | Road Type | Number of Lanes |
|---|---|---|---|
| Ken Whillans Drive | City | Collector | 2 |
| Church Street | City | Collector | 2 |
| Union Street | City | Local | 2 |
| Nelson Street | City | Local | 2 |
| Scott Street | City | Local | 2 |
| Maple Avenue | City | Local | 2 |
| Theatre Lane | City | Local | 2 |
| Queen Street East | City | Major Arterial | 4 |

### 3.1.2 INTERSECTIONS

There are several main intersections in the study area. There are also private access driveways throughout the study area that form ingress/egress points.

| Intersection | Type | Controls |
|---|---|---|
| Church Street / Union Street | Four-legged Intersection | All-Way Stop Control |
| Church Street / Ken Whillans Drive | T-intersection | All-Way Stop Control |
| Church Street / Scott Street | Four-legged Intersection | Stop Control on Scott Street only, Church Street is a through road |
| Union Street / Nelson Street / YMCA Access Road | Four-legged Intersection | Stop Control on Nelson Street / YMCA only, Union Street is a through road |

### 3.1.3 EXISTING TRAFFIC CONDITIONS

A review of the existing transportation conditions and an analysis of the existing traffic conditions was undertaken and is documented in the Transportation and Safety Assessment Report in Appendix A.

Under existing conditions, the three following signalized intersections perform well within capacity and acceptable levels of service:

- Church Street/Main Street
- Nelson Street W/Main Street
- Union Street / Theatre Lane

Some shared northbound left turn lanes experience low levels of service (LOS) but all other queues are contained within the available storage space.

Under the existing conditions, all unsignalized intersections are operating acceptably with sufficient residual capacity. As such, no operational concern is noted except the westbound approach at Main Street and Nelson Street East intersection in the PM peak hour.

Bicycle LOS, which does not depend on traffic or bicycle volumes, but rather on the cycling facility, geometrics, and operation speed, was also reviewed. As no dedicated cycling facilities exist on local roads, there is a low LOS for bicycles except on Ken Whillans Drive where there is a separated multi-use path.

Pedestrian LOS was also reviewed and the LOS depends on exposure to traffic and pedestrian volumes on sidewalks. Findings determined that there is low LOS for pedestrians throughout the study area.

### 3.1.4 TRANSIT

The study area is situated in close proximity to two of Brampton Transit's busiest routes: ZUM route 501 (Queen Street); and ZUM route 502 (Main Street). The study area is served by the ZUM stop at Main Street North/Nelson Street West and at the Downtown Terminal, providing access across Brampton, and into neighbouring Vaughan and Mississauga. The Brampton GO station is located approximately 240m west of the study area boundary, with GO rail and bus service provided along the Kitchener corridor. VIA Rail also operates a station at this location, providing access to municipalities situated along VIA Rail's Toronto-London-Sarnia route.

### 3.1.5 ACTIVE TRANSPORTATION

The active transportation network is comprised of pedestrian sidewalk facilities on both sides of every street within the study area. Neighbourhoods immediately outside of the study area boundaries also provide sidewalks on both sides of the street. Cycling facilities are provided along Church Street East in the form of a signed bike route.

The Etobicoke Creek Trail is located adjacent to the Etobicoke Creek and provides multi-use access to pedestrians and cyclists through the study area and extends into surrounding neighbourhoods to the north and south. The Etobicoke Creek Trail is also identified as being part of the City's 'Major Pathway Network' per Schedule C1 of the City's Official Plan. Existing off-road trails located in Rosalea Park

provide connections to Etobicoke Creek, the existing Ken Whillans Drive, Church Street, Nelson Street, and Scott Street.

## 3.2 Drainage and Stormwater Management

The current drainage in the study area is primarily park (open space, grassed areas) and some asphalt roadways. The area includes several catch basins that eventually discharge to the existing storm sewers in both Union and Church Streets. See the Stormwater Management and Drainage Analysis Memo in Appendix B for a full description.

## 3.3 Utilities and Servicing

The following utilities have utility infrastructure within the study area:

- Enbridge Gas
- Bell Canada
- Rogers
- Alectra
- Peel Region Water and Wastewater

## 3.4 Socio-Economic Environment

### 3.4.1 PROVINCIAL, REGIONAL AND LOCAL PLANNING POLICIES

An overview of the applicable planning policies are discussed in Section 2.1, 2.2 and 2.3 above.

### 3.4.2 EXISTING LAND USE AND ZONING

The study area is located within lands designated "Central Area" in 'Schedule 1 City Concept' of the Brampton Official Plan and referenced in Figure 2. The study area is comprised of parcels zoned as 'Open Space', 'Residential – Single/Semi', 'Residential – High Density', and 'Institutional'. Adjacent land uses are comprised of parcels zoned for residential, commercial, institutional, and open space uses.

Rosalea Park contributes to the significant amount of Open Space in the study area, with the Brampton Tennis Club and Brampton YMCA also zoned as Open Space. Residential land use on the south end of the study area near Maple Avenue are a mix of single detached houses, an apartment complex, and a senior's residence. Residential uses to the northwest are similarly a mix of single detached houses and apartment buildings. The south/southwest portions of the study area, including along Queen Street are characterized by commercial and institutional uses. Surface parking lots also occupy a large portion of the study area, including the parking lot at the Brampton YMCA and adjacent to Rosalea Park. Medium and higher density developments are situated immediately outside of the study area in Downtown Brampton.

### 3.4.3 WASTE AND CONTAMINATION

A Phase I Environmental Site Assessment (ESA) was completed for the study area. The history of the site was likely for agricultural purposes before being used as open space/park land.The Phase I ESA identified two (2) on-site and 28 off-site Potentially Contaminating Activities (PCAs). The on-site PCAs consist of pesticides from historic agricultural uses and antifreeze and de-icing manufacturing and

bulk storage from adjacent roadways and parking lot. Considering the PCAs and their locations relative to the study area, two Areas of Potential Environmental Concern (APEC) were identified. This includes APEC 1 (northern portion of site) and APEC 2 (southern portion of site). Based on these findings, soil quality investigations should be conducted for the purposes of soil management for the road extension project. Groundwater investigations should be conducted for the purposes of groundwater management during construction activities. In addition, if property acquisitions are required, the Region of Peel or City of Brampton may require Phase II ESAs as part of the property acquisition process. For the full Phase I ESA, refer to **Appendix H**.

## 3.5 Natural Environment

A Natural Environment Assessment Report was prepared to document existing environmental conditions. A summary is provided in this section, however, for the full report and details, refer to **Appendix C**.

### 3.5.1 DESIGNATED AREAS AND FEATURES

The following designated areas and features fall within the study area:

- **Urban River Valley**: A portion of the study area associated with Etobicoke Creek is within the Greenbelt System and is designated as Urban River Valley.
- **TRCA Regulated Area:** The TRCA Regulated Area associated with the Etobicoke Creek floodplain overlaps the study area. This area is also part of the City's Downtown Brampton Special Policy Area No. 3 that addresses development within the floodplain.
- **TRCA Target Natural Heritage System (NHS):** Part of TRCA's Target NHS falls within the northern and eastern portions of the study area.
- **Valleylands and Watercourse Corridors:** Schedule "D" Natural Heritage Features and Areas of the City's Official Plan shows the northeastern portion of the study area within a Valleylands and Watercourse Corridor associated with Etobicoke Creek.
- **Municipal Parks:** Rosalea Park and the parklands associated with the Etobicoke Creek recreational trail occur within the study area.

See **Figure 3** for where these features are located in relation to the study area.

### 3.5.2 VEGETATION AND VEGETATION COMMUNITIES

Vegetation communities that were previously documented within the study area as part of the DBFP EA and communities not previously identified were assessed through interpretation of satellite imagery and were verified during field investigations. Ecological Land Classification (ELC) for all vegetation communities within the study area and adjacent lands are summarized in **Table 2** and shown on **Figure 4**.

TABLE 2: ELC VEGETATION COMMUNITIES IN THE STUDY AREA

| ELC Code | Community Type | Description / Comments |
|---|---|---|
| Constructed Communities | | |
| CGL | Constructed Greenlands | Constructed greenlands are associated with human development and landscaping. This community includes lands such as manicured lawns and planted boulevards. |

| ELC Code | Community Type | Description / Comments |
|---|---|---|
| CGL_2 | Constructed Greenlands - Parkland | Constructed greenlands are associated with human development and landscaping. This community includes parklands. |
| CVC | Commercial and Institutional | This community includes commercial and institutional properties and buildings. |
| CVI_1 | Trail, Road | This community includes roads and trails. |
| CVR | Residential | This community includes residential developments. |
| Treed Hedgerow Communities | | |
| CUH | Cultural Hedgerow | These communities are a cultural deciduous hedgerow based on a review of satellite imagery. |
| Woodland Communities | | |
| CUP1-3 | Black Walnut Plantation | This community is a Black Walnut (*Juglans nigra*) plantation mapped by AECOM (2020) for the DBFP EA and is associated with the narrow woodland between Scott St and Etobicoke Creek |
| CUW1 | Cultural Woodland | This community was mapped by AECOM (2020) for the DBFP EA and is associated with the riparian habitat along Etobicoke Creek and is described as an exotic successional woodland. |
| FOD | Deciduous Forest | This community is a deciduous woodland based on a review of satellite imagery. |
| FOD7-1 | Fresh-Moise White Elm Lowland Deciduous Forest | This community was mapped by AECOM (2020) for the DBFP EA as a FOD7 and is associated with the riparian habitat along Etobicoke Creek. 2021 Parsons field investigations observed that this community was dominated by American Elm (*Ulmus americana*) with Black Walnut, Crack Willow (*Salix x fragilis*), Weeping Willow (*Salix x sepulcralis*), Manitoba Maple and Norway Maple present. |
| FOD7-3 | Frest-Moist Willow Lowland Deciduous Forest | These communities are deciduous woodlands mapped by AECOM (2020) for the DBFP EA, verified by Parsons in 2021, and are associated with the riparian habitat along Etobicoke Creek. These communities are dominated by Crack Willow and Weeping Willow with Black Walnut. |
| FOD7-4 | Fresh-Moist Black Walnut Deciduous Forest | These communities are deciduous woodlands mapped by AECOM (2020) for the DBFP EA, verified by Parsons in 2021, and are associated with the wooded area west of Ken Whillans Drive and north of Church Street East. These communities are dominated by Black Walnut with American Elm, Red Oak (*Quercus rubra*) and Manitoba Maple. |
| FODM7-7 | Fresh-Moise Manitoba Maple Lowland Deciduous Forest | This community was mapped by AECOM (2020) for the DBFP EA as a FOD7 and is associated with the small, wooded area west of Ken Whillans Drive and north of Church Street East. 2021 Parsons field investigations observed that this community was dominated by Manitoba Maple with Common Buckthorn. |
| Open Aquatic Communities | | |
| OAO1 | Open Aquatic | This community is mapped by AECOM (2020) for the DBFP EA and is associated with Etobicoke Creek. |

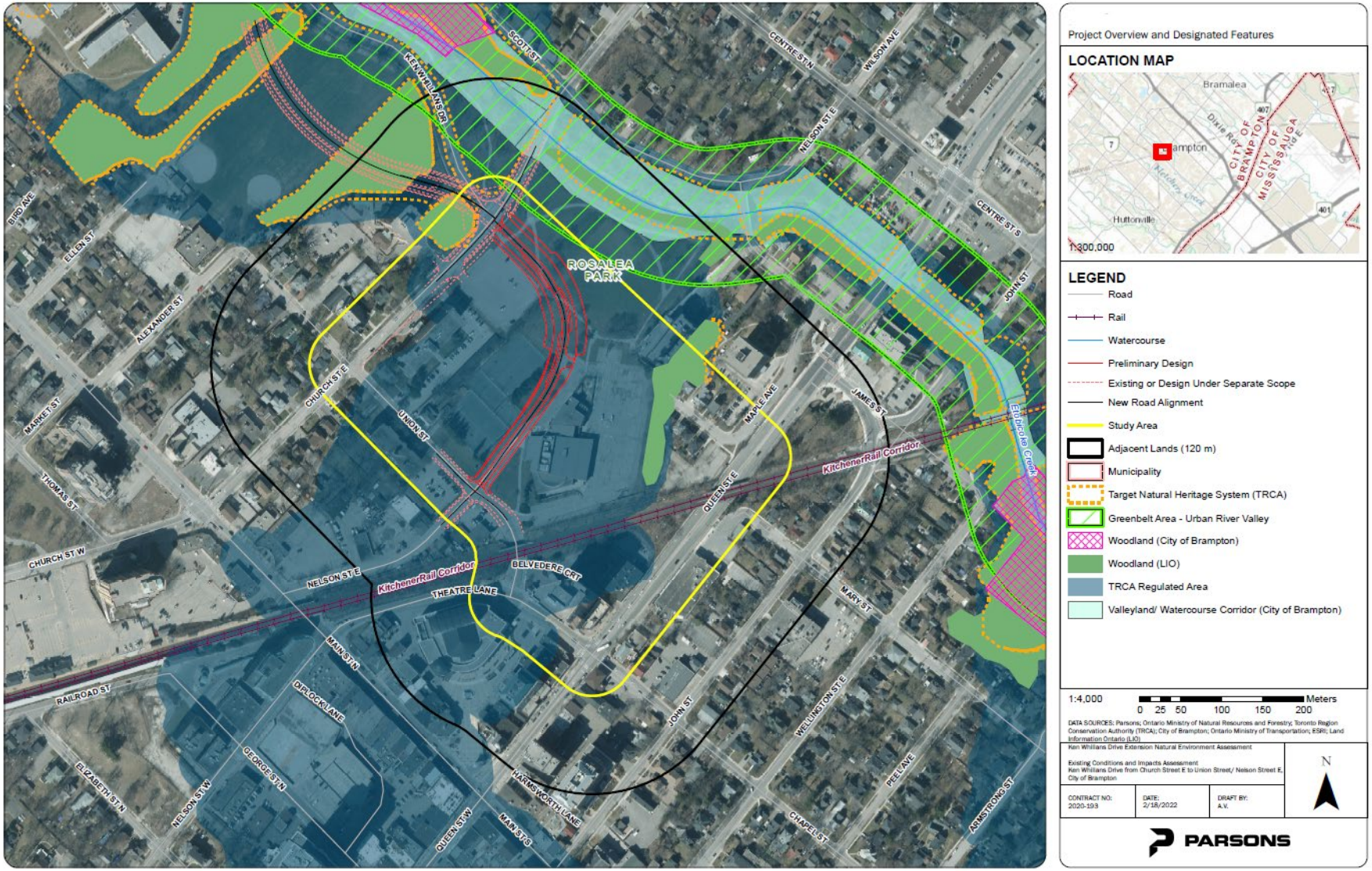



FIGURE 3: OVERVIEW OF NATURAL ENVIRONMENT AND DESIGNATED FEATURES

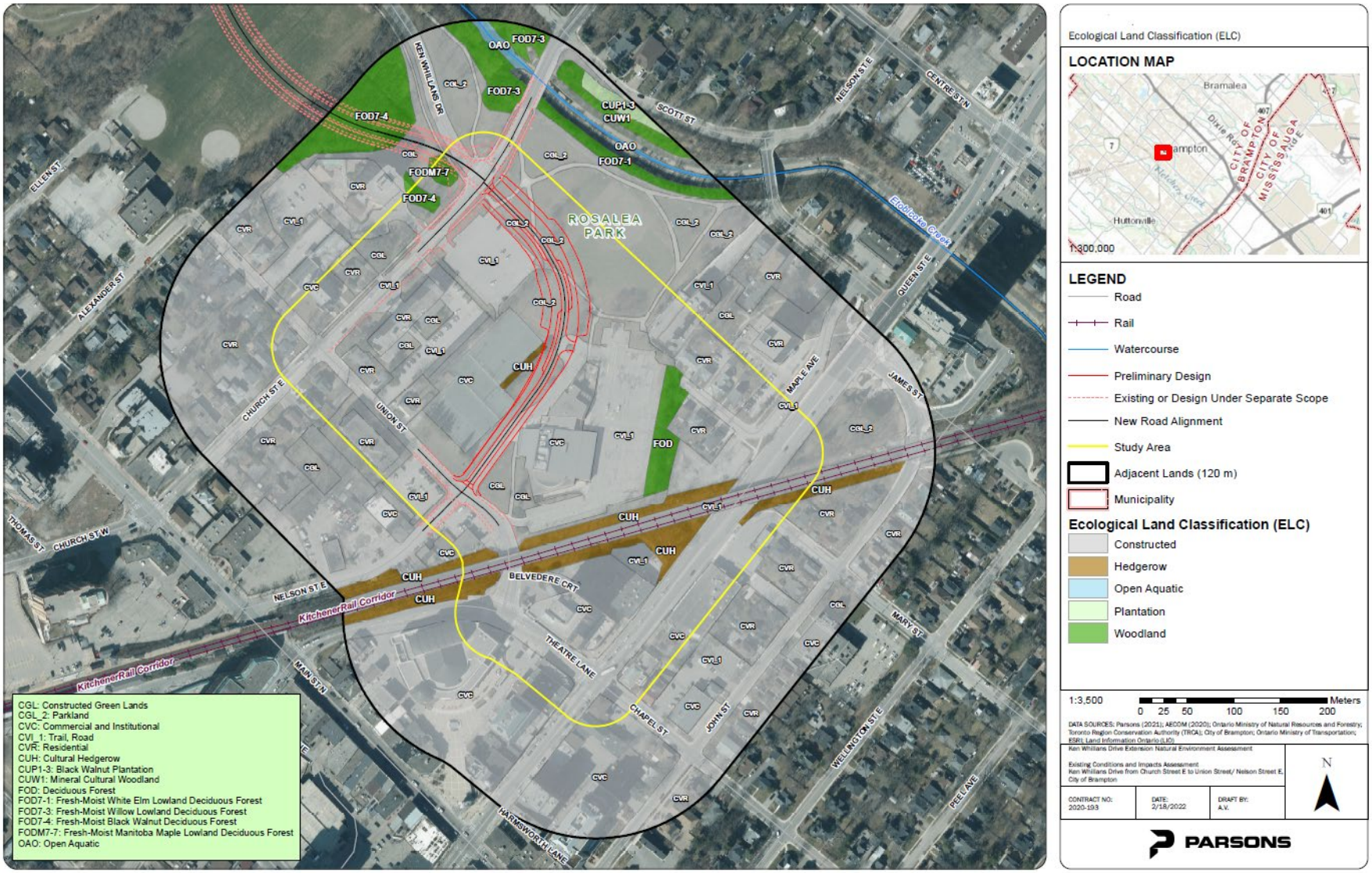



FIGURE 4: ELC FEATURES IN THE STUDY AREA

### 3.5.3 SIGNIFICANT WOODLANDS

None of the woodlands identified within Schedule "D" of the City's Official Plan are located within the study area. There are other woodlands present within the study area not shown on Schedule "D". Two of these woodlands are located within the Project footprint to the northwest and the southeast as shown in Figure 3.

### 3.5.4 SIGNIFICANT WETLANDS

The desktop and field study did not identify any provincially significant wetlands or other wetlands (i.e., evaluated or unevaluated) within the study area or adjacent lands. Email correspondence from the Ministry of Northern Development, Mines, Natural Resources, and Forestry (NDMNRF) also confirmed that there are no mapped wetlands in the study area, although there is potential within the bottomlands along the Etobicoke Creek valley. The ELC from the DBPF EA included Etobicoke Creek and did not identify the presence of wetlands within the study area.

### 3.5.5 SIGNIFICANT WILDLIFE HABITAT (SWH)

No candidate SWH types associated with specialized habitat for wildlife or rare vegetation communities were identified within the study area and adjacent lands. Seasonal concentration areas of animals (Bat maternity colonies), habitat for Species of Conservation Concern (SoCC) and animal movement corridors may be present and are primarily associated with the adjacent lands, specifically Etobicoke Creek. The woodlands that extend into the study area may provide habitat for bat maternity colonies and potentially SoCC. Reptile hibernaculum for snakes has the potential to occur throughout the study area and adjacent lands and is difficult to rule out as hibernaculum can be anywhere that provide subterranean access below the frost line. Due to the challenges in confirming this habitat type, mitigation measures will be provided should hibernaculum be discovered during construction.

No SWH were confirmed, however candidate SWH exist for:

- Bat Maternity Colonies
- Repitle Hibernaculum
- Special Concern and Rare Species
- Amphibian Movement Corridors

### 3.5.6 FISHERIES AND AQUATIC HABITAT

The only drainage feature identified in proximity to the study area which supports fish and provides fish habitat is Etobicoke Creek, which is located approximately 65 m northwest of the study area.

The study area and adjacent lands are located within the West Branch of the Etobicoke Creek watershed basin. The DBFP EA indicated that adjacent to the study area, Etobicoke Creek flows from a natural stream bed surrounded by forested communities to a concrete by-pass channel starting underneath the Church Street East bridge and terminating south of the GO rail outside of the study area, where it returns to a natural channel. The Etobicoke Creek/valley used to flow through the study area prior to 1952, however the alignment of the watercourse was changed when the current by-pass channel was built to divert flows.

Etobicoke Creek flows in a general southeast direction and is surrounded by multiple stressors from agricultural land use in the upstream and urbanized areas throughout and further downstream until it

discharges into Lake Ontario. Surface water quality of the Etobicoke Creek is typical of urbanized areas due to the various factors contributing to the surface water, including fertilizer use by agriculture, wastewater from industrial and sewage treatment plants, urban run-off and road salting in the winter.

As no in-water work is proposed and Etobicoke Creek more than 30 meters from the project area, no fish community sampling was undertaken as part of this study. Information obtained from NDMNRF, MECP, LIO database and the DBFP EA indicated that Etobicoke Creek supports a diverse warmwater fish community and also supports coolwater species.

### 3.5.7 SPECIES AT RISK (SAR)

A SAR screening was completed to determine habitat potential for SAR to occur within the study area and/or adjacent lands based on findings from the background review and field investigations. The results of the screening are summarized in **Table 3**. Based on the results of the screening, 10 SAR have the potential to occur within the study area and/or the adjacent lands. Of these species, five have potential to be impacted, albeit low, including Eastern Small-footed Myotis (*Myotis leibii*), Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), Tricolored Bat (*Perimyotis subflavus*) and Red-headed Woodpecker (*Melanerpes erythrocephalus*). The trees within Rosalea Park, as well as in woodlands in the adjacent lands may provide habitat for these species.

Only one aquatic SAR was identified during the background review to potentially occur in the area. Redside Dace is a freshwater fish species listed as 'Endangered' and protected provincially under the ESA and listed as 'Endangered' federally and protected on Schedule 1 of the SARA. Redside Dace was historically present within the Etobicoke Creek watershed however the recent 2018 COSEWIC Status Report indicates that the species was last captured in Etobicoke Creek in 1940 and there is strong evidence that the species is likely extirpated from the watershed.

TABLE 3: SUMMARY OF POTENTIAL SPECIES AT RISK WITHIN THE STUDY AREA

| Species | SARA | ESA | Legal Protection | Assessment |
|---|---|---|---|---|
| Mammals | | | | |
| Eastern Small-footed Myotis (*Myotis leibii*) | END | END | ESA | **Potential** – All woodlands within the study area and adjacent lands have the potential to provide habitat for bats. Several potential snag trees were observed within the woodland communities along Etobicoke Creek. Maple and Oak trees were also observed within several woodlands as well as in the tree inventory area. However, no leaf clusters were observed within the Maples and Oaks documented within the Tree Inventory Area. |
| Little Brown Myotis (*Myotis lucifugus*) | END | END | ESA | |
| Northern Myotis (*Myotis septentrionalis*) | END | END | ESA | |
| Tricolored Bat (*Perimyotis subflavus*) | END | END | ESA | |
| Birds | | | | |
| Barn Swallow (*Hirundo rustica*) | THR | THR | ESA, SARA, MBCA | **Potential** - All bridge, concrete culvert structures and buildings with suitable overhangs may provide suitable nesting habitat. There are buildings that provide |

| Species | SARA | ESA | Legal Protection | Assessment |
|---|---|---|---|---|
| | | | | nesting habitat potential within the study area and adjacent lands, however no nests were observed during 2021 field investigations. Foraging habitat may also be present within the study area although would not trigger any permitting requirements. |
| Chimney Swift (*Cheatura pelagica*) | THR | THR | ESA, SARA, MBCA | **Potential** - All chimneys and bridges may provide habitat for this species. There are chimneys and bridges present within the study area and adjacent lands that provide nesting habitat potential. Foraging habitat may also be present within the study area although would not trigger any permitting requirements. |
| Common Nighthawk (*Chordeiles minor*) | THR | SC | SARA, MBCA | **Potential** - Flat top rooftops with pea gravels may provide habitat for this species. There are flat rooftops within the study area and adjacent lands. |
| Red-headed Woodpecker (*Melanerpes erythrocephalus*) | THR | END | ESA, SARA, MBCA | **Potential** - There are woodlands and parklands within the study area and adjacent lands that may provide suitable habitat for this species. This species was not observed during 2021 field investigations. |
| Wood Thrush (*Hylocichla mustelina*) | THR | SC | SARA, MBCA | **Potential** - There are woodlands within the study area and adjacent lands that may provide suitable habitat for this species. |
| Plants | | | | |
| Butternut (*Juglans cinerea*) | END | END | ESA | **Potential** - The woodlands associated with Etobicoke Creek may provide suitable habitat for this species. Butternut was not observed present within the tree inventory area or study area during 2021 field investigations. |

### 3.5.8 SOURCE WATER PROTECTION

The study area is located in the Toronto Source Protection Area. A Highly Vulnerable Aquifer (vulnerability score of 6) is identified in the study area as shown in **Figure 5**, primarily associated with Rosalea Park. The application of road salt for winter maintenance is a prescribed drinking water threat associated with the operations of the project. However, per the CTC Source Protection Plan which applies to the Toronto and Region Source Protection Area, road salt application is not a significant threat given the the type and vulnerability of the source water protection feature. Mitigation measures to address the impacts of road salt are undertaken by separate City initiatives outside this study to reduce salt usage and its impacts on the environment.

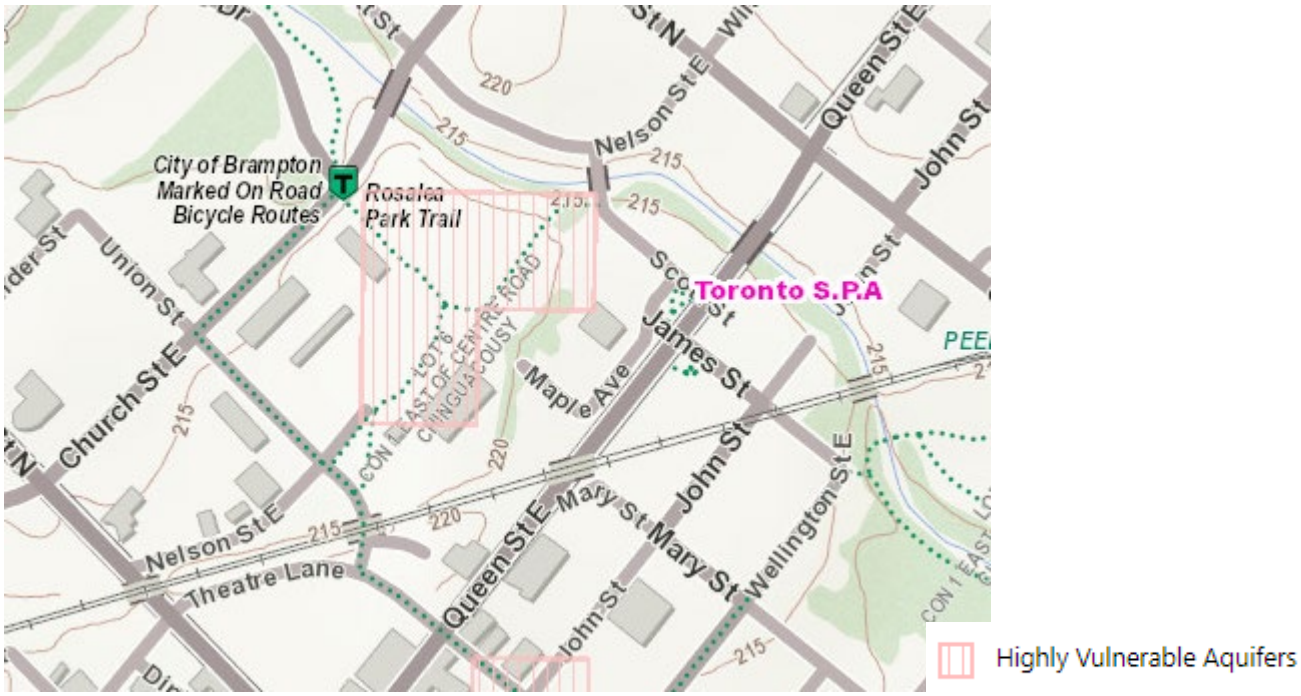



FIGURE 5: SOURCE WATER PROTECTION FEATURES IN THE STUDY AREA

## 3.6 Cultural Environment

### 3.6.1 CULTURAL HERITAGE

A Cultural Heritage Report (CHR) was completed to describe the existing cultural heritage resources in the study area and present an inventory of known and potential built heritage resources (BHRs) and cultural heritage landscapes (CHLs). The results of background historical research and a review of secondary source material, including historical mapping, indicate a study area with an urban land use history dating back to the early nineteenth century. A review of federal, provincial, and municipal registers, inventories, and databases revealed that there are 30 previously identified features of cultural heritage value within the Ken Whillans Drive Extension study area. An additional 19 BHRs and CHLs were identified during background research, field review, and municipal consultation. Based on the type of resources, their physical location, architectural style and/or function, some of these individual resources were combined into larger CHLs, resulting in two BHRs and six CHLs identified within the study area. These are displayed in **Figure 6** and summarized in **Table 4**. For the full description, refer to the CHR in **Appendix D**.

TABLE 4. SUMMARY OF CULTURAL HERITAGE RESOURCES

| Feature ID | Type of Property | Location/ Name | Description |
|---|---|---|---|
| BHR 1 | Residential | 3 Maple Avenue | Potential BHR – Identified by municipal staff<br><br>This residence was identified by the Heritage Planner as a Property of Interest. The property features a two storey red brick house in the |

| Feature ID | Type of Property | Location/ Name | Description |
|---|---|---|---|
| | | | Edwardian Classicism style, which was popular in the early twentieth century. The house features symmetrical fenestration, a red brick enclosed porch, and a box gable roof. A mature maple tree stands in the front yard. |
| BHR 2 | Former Waterway | 58 Church Street East | Known BHR - Listed on Municipal Register of Cultural HeritageResources<br><br>This property features the above ground remnants of a concrete retaining wall, constructed in either the late nineteenth or early twentieth century to control the flow of the Etobicoke Creek. The Creek once meandered through the area, prior to being diverted and channelized in the early 1950s and this retaining wall remnant is tangible evidence that documents the location of the creek prior to its diversion in the mid-twentieth century. |
| CHL 1 | Historical Neighbourhood | Central School Neighbourhood | Known CHL – Proposed HCD<br><br>There are 22 properties within this CHL that are protected under the OHA and identified by the municipality. The Heritage Conservation District Feasibility Study conducted for downtown Brampton identifies this area as the Central School Neighbourhood and is comprised of a collection of single-detached houses and three institutional landmarks. |
| CHL 2 | Waterway Channel | Etobicoke Creek Flood Diversion Channel | Known CHL –<br>Listed on Municipal Register of Cultural Heritage Resources<br><br>This concrete diversion channel was built between 1950 and 1952 to divert the Etobicoke Creek around the downtown core to help prevent flooding that occurred annually during the spring melt and after major storms. The project required demolition of houses and rerouting of streets. Only two years later, this channel would help to lessen the impact of Hurricane Hazel on downtown Brampton. |
| CHL 3 | Historical Streetscape | Queen Street East Streetscape | Potential CHL - Identified during field review/desktop research<br><br>Mid-nineteenth century mapping indicates that this stretch of Queen Street East was already bustling with commercial properties by 1859 (Figure 2). There is variety in the scale and type of architecture |

| Feature ID | Type of Property | Location/ Name | Description |
|---|---|---|---|
| | | | seen but cohesion in this streetscape as a mostly intact nineteenth century urban commercial corridor. There are 9 properties within this CHL that are protected under the OHA and identified by the municipality. |
| CHL 4 | Civic, Religious, And Commercial | Civic, Religious And Commercial Heart of Old Brampton | Known CHL – Proposed HCD<br><br>This potential Heritage Conservation District encapsulates a number of civic, religious, and commercial streetscapes located in the historical centre of Brampton. There are 10 properties within this CHL that are protected under the OHA and identified by the municipality. |
| CHL 5 | Historical Streetscapes | John Street and Mary Street Streetscape | Potential CHL – Identified during field review/desktop research<br><br>The properties around the intersection of John Street and Mary Street included residential homes with architectural styles that were popular in the late nineteenth and early twentieth centuries. Gothic Revival and Edwardian Classicism style architecture dominates this section of Scott Street with mature trees evident on several properties. Several properties are recognized already for their architectural details and character. John Street is illustrated as early as 1859 and Mary Street appears on mapping by 1877. There are 4 properties within this CHL that are protected under the OHA and identified by the municipality. |
| CHL 6 | Historical Streetscapes | Scott Street Streetscape | Potential CHL – Identified during field review/desktop research<br><br>The Scott Street properties display a range of architectural styles which were popular in the late nineteenth and early twentieth centuries. Gothic Revival and Edwardian Classicism style architecture dominates this section of Soctt Street with mature trees evident on several properties. This section of Scott Street is illustrated as early as 1877, labelled as Hemlock Street on the Illustrated Historical Atlas mapping. One (1) property within this CHL is protected under the OHA and identified by the municipality. |

### 3.6.2 ARCHAEOLOGY

A Stage 1 Archaeology Assessment (AA) was completed as part of the Downtown Brampton Flood Protection (DBFP) Municipal Class EA and covers the full study area of this Ken Whillans Drive Extension EA study. The Stage 1 AA concludes that portions of the Study Area exhibit archaeological potential. The exact locations that retain potential are documented in the Stage 1 AA. Generally, these locations are areas that have not been disturbed through Rosalea Park, and these areas require either a pedestrian survey or a test pit survey through a Stage 2 AA. The remainder, and majority of the study area does not retain potential due to the urban and disturbed context of the study area.

For more details and information about archaeological resources, please refer to the Stage 1 AA provided in **Appendix E**.

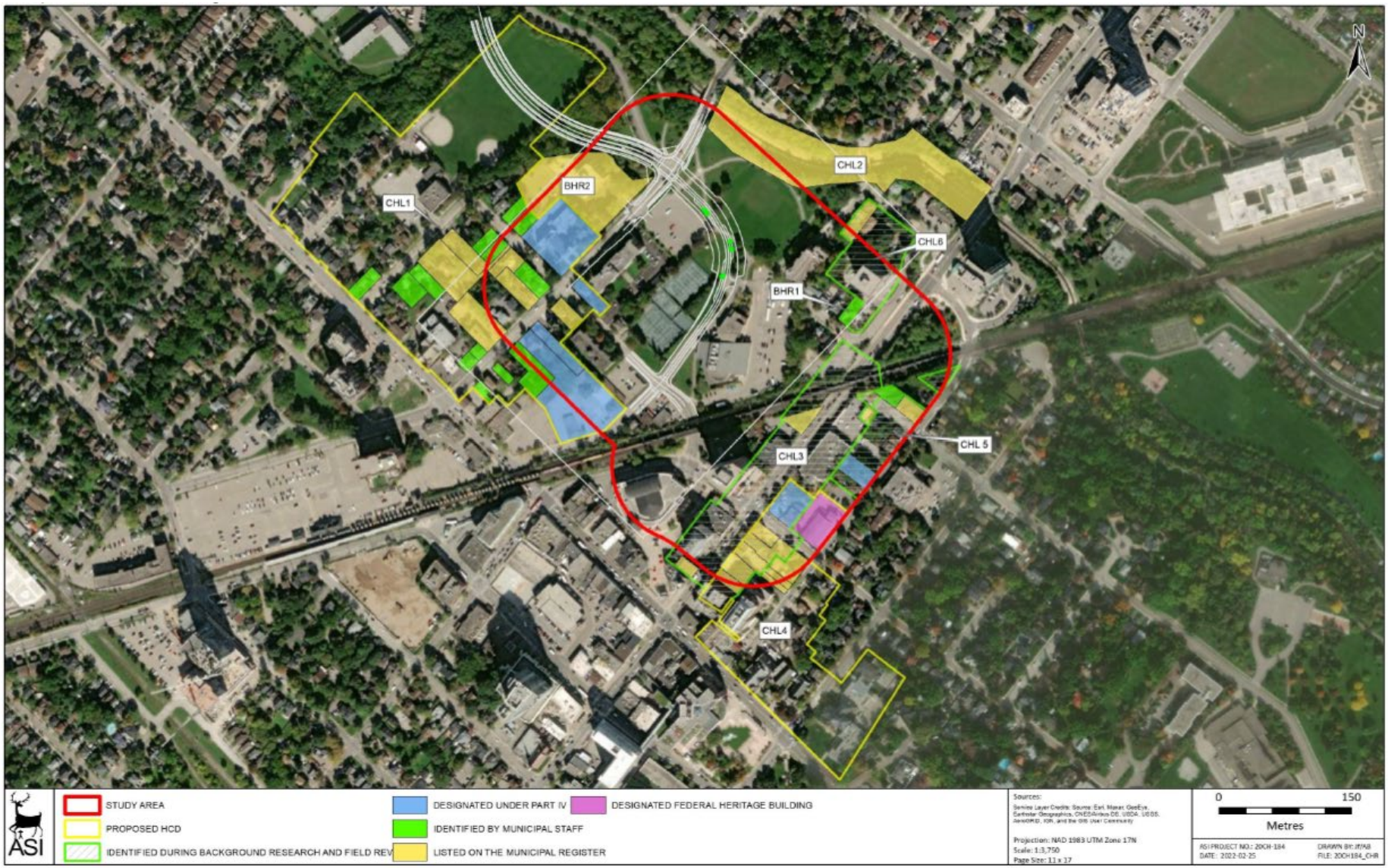



FIGURE 6: LOCATION OF IDENTIFIED BUILT HERITAGE RESOURCES AND CULTURAL HERITAGE LANDSCAPES IN THE STUDY AREA

# 4.0 Public Consultation

## 4.1 Notice of Study Commencement

The Notice of Study Commencement was published in the *Brampton Guardian* on Thursday, February 18 and 25, 2021. The Notice was also posted on the City's project website, distributed to technical agencies and stakeholders via email, and also mailed to nearby properties within the study area.

The list of technical agencies, interest groups, emergency services, utilities and other stakeholders contacted are summarized in **Table 5**. For consultation with Indigenous communities, refer to Section 4.6. The notification materials can be found in **Appendix F**.

TABLE 5: SUMMARY OF THE PROJECT CONTACT LIST

| | |
|---|---|
| Provincial Agencies | |
| Conservation Ontario | Metrolinx |
| Ministry of Heritage, Sport, Tourism, and Culture Industries (MHSTCI) | Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF) |
| Ministry of Environment, Conservation, and Parks (MECP) | |
| Municipal/Local Agencies | |
| Region of Peel | Toronto and Region Conservation Authority (TRCA) |
| Local Interest Groups and Other Stakeholders | |
| Student Transportation of Peel Region | Mississauga Cycling Advisory Committee |
| Peel District School Board | Dufferin-Peel Catholic District School Board |
| CN Rail | |
| Emergency Services | |
| Brampton Fire and Emergency Services | Ontario Provincial Police |
| Peel Regional Paramedic Services | Peel Regional Police |
| Utilities | |
| Alectra Utilities | Enbridge Consumer Gas |
| Rogers | Bell Canada |
| Hydro One Telecom Inc. | Telus |
| Zayo | Region of Peel, Records Group |
| Other Stakeholders | |
| Residents | Local Businesses |
| Property Owners | Developers |

## 4.2 Technical Agency Committee (TAC)

A Technical Agency Committee (TAC) meeting was held virtually on March 1, 2022 with staff from various City of Brampton departments, Peel Region Water and Wastewater department, and TRCA. A presentation was given that covered the study background, existing conditions, alternatives considered, evaluation of the alternatives and the recommended design.

There was a question and discussion period. Key discussion topics included future use of the area as an events space, future utilities (water, power) required in Rosalea Park, landscaping, and project timelines and next steps.

## 4.3 Stakeholder Group (SG)

A Stakeholder Group (SG) meeting was held virtually on April 7, 2022. Attendees were comprised of local residents and representatives from various institutions and businesses in and adjacent to the study area. These SG members indicated their interest to be a part of the SG through an initial comment form that was circulated as part of the Notice of Study Commencement. A presentation was given that covered the study background, existing conditions, alternatives considered, evaluation of the alternatives and the recommended design.

There was a question and discussion period after the presentation and comments were received through email from stakeholders after the meeting as well. The key comments we heard from the Stakeholder Group include:

- The new road extension should consider accessibility particularly for seniors who may have mobility devices, such as walkers, as there is a seniors residence nearby. The project team noted that will be considered further during detailed design, and accessibility standards will be followed.
- Concern with access fort he seniors residence to the park and YMCA. Project team noted that the access will not be impacted by the road extension.
- Concerns with an increase in traffic especially as more development occurs around downtown Brampton. The project team noted that the extension will not be a conventional road that supports through traffic and will be designed such that it is not a preferred route for vehicles.
- Consideration for a traffic signal at Church Street and Ken Whillans Drive rather than stop control. Project team noted that a signal is not warranted at this intersection.
- Priority to maintain Rosalea Park and greenspace rather than adding more roads. Project team noted that as part of Riverwalk, greenspace would be maintained and enhanced. The road extension does not encroach on the greenspace area.
- Some concerns with noise and the amphitheatre proposed as part of Riverwalk. The project team noted that the recommendations of Riverwalk are very preliminary and conceptual at this stage, however, through public consultation the amphitheatre was removed as part of the recommendations for Rosalea Park.
- Questions related to other City initiatives such as the Scott Street Bridge and Riverwalk.

## 4.4 Public Information Centre (PIC)

An Online Public Information Centre (PIC) was held from April 28, 2022 to May 27, 2022. The Notice of PIC was published on Thursday, April 28, 2022 and May 5, 2022 in the *Brampton Guardian.* The

Notice was also posted on the City's project website, distributed to technical agencies, stakeholders, and Indigenous Communities via email, and also mailed to nearby properties within the study area.

The format of the online PIC included posting of materials on the project website (https://www.brampton.ca/EN/residents/Roads-and-Traffic/Planning-and-Projects/Pages/Ken-Whillans-Dr.aspx) and opening the PIC comment period for a month from April 28 to May 27.

The PIC materials available included:

- Notice of PIC
- PIC Display Boards
- PIC Voiceover Video
- Comment Form
- Preliminary Design Plans

The purpose of this PIC was to provide an overview of the study background, the Problem / Opportunity Statement, existing conditions of the study area, alternatives identified and evaluated, the preliminary recommended design, and the impacts and mitigation measures.

Attendees were encouraged to participate in the PIC by providing feedback and comments on the study and the display boards using the PIC comment form that was available on the Project website.

The comments received are similar to those from the Stakeholder Group meeting and are documented in **Table 6** below and in the PIC Summary Report in **Appendix F**.

TABLE 6: SUMMARY OF PIC COMMENTS AND RESPONSES

| Topic | Comment Summary | Response |
|---|---|---|
| Greenspace / Park space | The green space associated with Rosalea Park should be preserved and should not be impacted. This recreational space is valued and used by the community. | Rosalea Park is a very important component of the Downtown open space system. The Riverwalk plans include revitalizing and improving on the existing green space and open space in Rosalea Park, including enhancing Etobicoke Creek north of Church Street and providing more park amenities to improve the public's access to enjoy Etobicoke Creek. Rosalea Park and its associated greenspace will be maintained. The alignment of the extension will not cut through the centre of the park. The alignment follows primarily the existing paved entrance at YMCA and the existing pathways on the west side of Rosalea Park. |
| | Green space is important to maintaining ecological areas and functions. | |
| | Questions about the number of large trees that will be impacted by the project. | A Tree Inventory has been completed for the EA. 45 trees and shrubs have the potential to be impacted, though will be preserved if possible. Trees will be replanted to compensate for the removals. |

| Topic | Comment Summary | Response |
|---|---|---|
| Riverwalk Project / Revitalization of Rosalea Park | Inquired where people will park to utilize the proposed bandshell. | The bandshell has been removed from the conceptual plans for Rosalea Park. As this is located in downtown Brampton, visitors to the area are encouraged to use active transportation or transit to travel downtown. |
| | Support for the Ken Whillans Drive extension to support downtown revitalization and access to Riverwalk. | Noted. |
| Construction Impacts | Concerned with dust and dirt impacts to their building during construction. Inquired what the City will do to mitigate and clean up these impacts. | There will be temporary impacts during the construction of the extension. Standard construction best management practices will be implemented during construction to minimize and mitigate impacts onto adjacent properties, including dust, noise, and vibrations. Concerns and complaints can be made during construction to the City if residents feel that they are being negatively impacted and the City can investigate the matter at that time. |
| | Concerned with vibration impacts to their building during construction. | |
| | Can residents recoup costs associated with construction impacts? | |
| | Concerned with the duration and noise resulting from construction. | |
| Property | Concerned with direct physical impacts to the property driveway associated with the works on Church Street. | Impacts along Church Street are associated with the Downtown Brampton Flood Protection (DBFP) project not the Ken Whillans Drive Extension project, which begins south of the Church Street / Ken Whillans Drive intersection. As part of the DBFP project, the grade of Church Street will be raised as the Church Street bridge over Etobicoke Creek needs to be raised to address the flooding risk of the bridge. |
| Traffic and Road Safety | New roads will add traffic to the Union/Nelson area which will increase congestion. No new roads are needed. | Ken Whillans Drive Extension will not be a traditional road used to move cars, but instead a pedestrian streetscape with the ability to host public events. |
| | The existing intersection at Church Street and Ken Whillans Drive is dangerous as vehicles often run the stop signs. Concerns for pedestrian use at this intersection. Concerns with the speed and amount of vehicles. Suggestions for speed mitigation measures, such as speed bumps, would be required to slow traffic down | The design of this road will not be a conventional road. The use of pavers and streetscaping will reduce the speed of both bicycles and cars using this extension. Other speed mitigation design methods, such as speed bumps, can be reviewed during detailed design. |
| | Concerns that the Ken Whillans Drive Extension will encourage more | Cyclists can use the existing pathways in Rosalea Park. The extension will improve on |

| Topic | Comment Summary | Response |
|---|---|---|
| | cyclists to speed around pedestrians making for an unsafe environment. | the current situation providing clear zones for cyclists and pedestrians and making it easier to determine where and when to check for cyclists when crossing. |
| | What are the time savings for traffic with the road extension and is it worth the cost? | As the purpose of the road extension is not to improve vehicular traffic, there is no improvement for time savings for traffic. |
| | If the purpose is to turn Rosalea Park into a public space, the road extension should be for cyclists and pedestrians only. Cars do not support the use of a public space and a naturalized park. If there needs to be vehicular access, the road should only be open for those moments and kept closed the rest of the time. | The road can be closed during large events. For times outside of large events, the road can be closed on an as needed basis. |
| | If the purpose of the extension is to improve vehicular connectivity, no improvements are offered. | The purpose is not to improve vehicular connectivity but connectivity for pedestrians and cyclists access to the park. |
| Adjacent Projects | Please consider any impacts or constraints to the design and implementation in relation to the Downtown Brampton Flood Protection EA outcomes. | Comment acknowledged. |
| Cost | What is the cost of the project? | The preliminary estimated cost of the extension is shared in the Project File Report. |

## 4.5 Consultation with Technical Agencies and Stakeholders

Consultation with technical agencies and local stakeholders (such as residents, businesses, developers, interest groups) is key to identifying area-specific interests and constraints so that they can be considered in the study. Correspondence with these technical agencies and stakeholders includes written emails, letters, comment forms, etc., meetings, and workshops. Project correspondence throughout the study is summarized in **Table 7**. A Record of Consultation, which includes all project correspondence, including meeting minutes, are provided in **Appendix F**.

TABLE 7: SUMMARY OF COMMENTS RECEIVED FROM TECHNICAL AGENCIES AND STAKEHOLDERS

| Agency / Stakeholder | Date | Comment | Project Team Response |
|---|---|---|---|
| Provincial | | | |
| Ministry of Environment, Conservation, | April 1, 2021 | Letter from MECP which included an "Areas of Interest" document, information | Project Team reached out to Indigenous communities as part of its consultation program and included those provided by MECP. Also noted MECP review timelines |

| Agency / Stakeholder | Date | Comment | Project Team Response |
|---|---|---|---|
| and Parks (MECP) | | about Indigenous consultation, including which Indigenous communities that must be consulted, and other EA and consultation requirements. | and Areas of Interest document for review. |
| | October 20, 2022 | The draft PFR was provided to the MECP for review prior to filing for the 30-day public review. Several suggestions were provided by MECP for inclusion in the PFR including source water, dust suppression and excess soils. | Project Team revised the PFR based on suggestions by MECP and proceeded to file the final PFR for public review. |
| Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) | March 26, 2021 | Letter from MHSTCI providing input with respect to cultural heritage resource identification and the engagement of Indigenous communities to idenfity cultural heritage resources. MHSTCI also provided input with respect to impacts to archaeological resources, built heritage resources and cultural heritage landscapes. | A Built Heritage and Cultural Landscape Report was completed and a Stage 1 Archaeological Assessment (AA) was completed as part of the Downtown Brampton Flood Protection EA, covering the full study area of the Ken Whillans Drive Extension EA. Heritage Impact Assessments and Stage 2 Archaeological Assessment will be completed in detailed design. |
| Local | | | |
| Dufferin-Peel Catholic District School Board (DPCDSB) | March 10, 2021 | DPCDSB did not have any comments, but wish to be kept updated on the study. | Dufferin-Peel Catholic District School Board was kept on the contact list and sent all public notices for this study. |
| Region of Peel | March 23, 2021 | Region of Peel is interested in the project as it relates to water and wastewater infrastructure impacts. The Region of Peel is | Region of Peel was kept on the contact list and sent all public notices for this study. The Region also participated in the TAC Meeting where water and wastewater were discussed. |

| Agency / Stakeholder | Date | Comment | Project Team Response |
|---|---|---|---|
| | | also interested in participating in the TAC. | |
| Toronto and Region Conservation Authority (TRCA) | November 30, 2021 | Letter from TRCA noting their interests as it relates to this study, their role, factors to be considered when assessing alternatives, and submission requirements. For this study, TRCA noted concerns with implementing the proposed project prior to the DBFP project due to flooding risk within the area and required the City to conduct a hydraulic assessment to ensure no impact on the existing flood hazard. | As TRCA is a key partner on the DBFP project, TRCA was involved throughout this project, including participation at the TAC Meeting. The City is planning to implement the road extension following the implementation of the Downtown Brampton flood mitigation project, therefore works will not be occurring within the flood hazard zone and a hydraulic assessment is not required. Stormwater management design was part of the study and provided to TRCA for review. |
| | September 2, 2022 | The draft PFR was provided for TRCA's review. TRCA requested that the impact of the road extension on the existing flood hazard be reviewed if this project occurs before the DBFP. The PFR indicated the extension would occur after implementation of the DBFP. TRCA also supports the proposed SWM measures and will complete further detail review once this project progresses into detailed design. | The project team confirmed that the road extension will occur after the DBFP as stated in this PFR. TRCA will continue to be involved in subsequent project phases, including detailed design and construction. |
| Utilities | | | |

| Agency / Stakeholder | Date | Comment | Project Team Response |
|---|---|---|---|
| Hydro One Telecom Inc. (Acronym Solutions Inc.) | March 2021 / January 2022 | Acronym Solutions Inc. has underground fiber in the study area but does not have current or planned infrastructure in the planned work area. | Noted and incorporated into design plans and the Project File Report. The underground fiber is not expected to be impacted by the proposed works. |
| Zayo | March 2021 / January 2022 | Zayo has existing plant along CN-owned conduit along rail line. No plants in the planned work area. | Noted and incorporated into design plans and the Project File Report. The CN conduit is not expected to be impacted by the proposed works. |
| Rogers | March 2021 / January 2022 | Rogers has aerial poles/cable, ground level boxes, and underground cables in the study area, primarily at the existing intersections. | Noted and incorporated into design plans and the Project File Report. Rogers' infrastructure may be impacted by the proposed works and may require utility relocation, which is to be determined in detailed design. |
| Telus | January 2022 | Telus confirmed no underground infrastructure in the area of your proposed work. | Noted and incorporated into design plans and the Project File Report. |
| Region of Peel (PUCC) | January 2022 | Region of Peel (PUCC) indicated water and sanitary sewers on adjacent local streets but not within the planned work area. | Noted and incorporated into design plans and the Project File Report. No existing sewers are expected to be impacted by the proposed works, however further discussion with Region of Peel on sewer extensions into Rosalea Park are to continue in detailed design. |
| Enbridge Gas | January 2022 | Enbridge has an active gasmain on Church Street. | Noted and incorporated into design plans and the Project File Report.The gasmain is not expected to be impacted by the proposed works. |
| Bell Canada | January 2022 | Bell has buried cable throughout the study area. | Noted and incorporated into design plans and the Project File Report.The buried cable is not expected to be impacted by the proposed works. |
| Alectra | March 2022 | Alectra has aerial poles/cables and a transformer box in the planned work area. | Noted and incorporated into design plans and the Project File Report. Rogers' infrastructure may be impacted by the proposed works and may require utility relocation, which is to be determined in detailed design. |
| Stakeholders | | | |

| Agency / Stakeholder | Date | Comment | Project Team Response |
|---|---|---|---|
| Local Resident | March 24, 2021 | Submitted a comment form expressing concerns relating to safety, the natural environment, and recreation. The stakeholder did not want a road to destroy Rosalea Park and reduce greenspace. | Noted that Riverwalk plans include green space revitalization and that the road extension will not reduce green space, and is not meant to break up the park, but to complement and support future use of Rosalea Park. |
| Local Resident | April/May 2022 | Email stressing the importance of a park with greenspace and that the existing Rosalea Park should not be impacted by a road extension. Also concerned with additional vehicular traffic. | |
| Local Resident | March 29, 2021 | Noted interest for how the park will be developed by private developers. | This study is to assess the extension of Ken Whillans Drive. The Riverwalk project will focus on redevelopment of these areas and those details are not known at this time. |
| Local Resident | March 27, 2021 | Noted interests in safety for drivers and active transportation users as well as noise in the area. | Noted by project team. |
| Representative of Grace Court, Seniors Residence | March 18, 2021 | Commented the Grace Court Seniors resident is opposed to the extension of Ken Whillans Drive as it will reduce green space at Rosalea Park, which is a key amenity for seniors as a publicly accessible place that supports mental and recreational wellbeing. | Project team advised that the City of Brampton's vision is to redevelop Rosalea Park into an improved open space/park for all community members as part of the Riverwalk project. Green space will be improved/enhanced and the road extension alignment has very limited impact on green space areas as it is aligned to the edge of the park. |
| | April 8, 2022 | Acknowledged that the road extension is a shared street prioritizing pedestrian | Project team confirmed that the road extension is not meant to be a high traffic road and that there will be no impacts to pedestrian access for Grace |

| Agency / Stakeholder | Date | Comment | Project Team Response |
|---|---|---|---|
| | | use rather than a conventional road. Still concerned with increased traffic and would prefer signals at Church Street and Ken Whillans Drive to allow for a safer crossing. Concerned regarding noise levels with respect to seniors living at Grace Court, especially with Rosalea Park as an events space. | Court. Future plans for Rosalea Park do not include an amphitheatre or permanent stage. Concepts for Rosalea park will be further developed at future stages. |
| Local Resident | March 5, 2021 | Provided contact information for other stakeholders to be added to the contact list. | Stakeholders were added to the project contact list. |
| Local Resident | March 2021 | Interested in impact on traffic patterns at Church Street and Ken Whillans and indicated an interest to participate in the Stakeholder Group. | Stakeholder was added to the Stakeholder Group (SG) list and participated in the SG Meeting. |
| Representative of Grace Court | April 2021 | Requested to be added to the contact list as a representative of Grace Court apartments. Main area of interest is the repair of the bridge on Scott Street. | Stakeholder was added to the Stakeholder Group (SG) list and participated in the SG Meeting. The Scott Street bridge is outside the scope of this study. |
| Local Resident | March 25, 2021 | Comment form indicated concerns with increased traffic, health concerns, and elimination of greenspace, particularly as it relates to impacts on seniors. | Project team advised that the City of Brampton's vision is to redevelop Rosalea Park into an improved open space/park for all community members as part of the Riverwalk project. Green space will be improved/enhanced and the road extension alignment has very limited impact on green space areas as it is aligned to the edge of the park. This is not a conventional traffic road and the design has/will consider ways to reduce use of this as a through road. |

| Agency / Stakeholder | Date | Comment | Project Team Response |
|---|---|---|---|
| Local Resident | March 12, 2021 | Requested to be kept informed of the project. | Stakeholder was added to the project contact list. |
| Local Resident | March 31, 2021 | Requested to be added to the Stakeholder Group. | Added to the Stakeholder Group. |
| Local Resident | March 10, 2021 | Concerned with removal of trees and safety in the area. | Some trees will need to be removed, however trees will be compensated according to the City's tree replacement ratio. |
| Local Resident | March 15, 2021 | As owner of a nearby residential apartment, concerned with the road extension impacting green space, noise, illumination and safety, wildlife and the floodplain. Also inquired about the purpose of this extension and the duration. | Noted that Riverwalk plans include green space revitalization and that the road extension will not reduce green space. The purpose of this extension is to improve connectivity to and support the use of Rosalea Park. The street will be illuminated and will be designed for road safety. As part of the EA, studies were done to assess impacts to wildlife and the floodplain. Given the urban area, minimal wildlife impacts are anticipated. This road extension will be constructed after the implementation of the Downtown Brampton Flood Protection (DBFP) project so will not be within the floodplain. The construction duration of the project is not known at this time. |
| | April 14, 2022 | Concerned about safety and security of their apartment. Concerned with increasingly busy streets, noise from a potential bandstand at Rosalea Park, and homelessness. | Project team responded that the City of Brampton's vision to redevelop Rosalea Park would enhance the use and enjoyment of the park for residents in the area. It was confirmed that plans for Rosalea Park do not include the amphitheatre or permanent stage. There are no specific plans to address homelessness at this park, however there are general City and Region policies on affordable housing and the park will be designed with 'crime prevention through environmental design' considerations. |
| YMCA | January 21, 2022 | A meeting was held with YMCA where the study background and information was presented to YMCA. | Project team noted that the YMCA building would not be impacted by the road work and that the road would actually be further away from the building than it currently is now. Project |

| Agency / Stakeholder | Date | Comment | Project Team Response |
|---|---|---|---|
| | | YMCA generally supported the concept but was concerned with impacts to the YMCA building and the proximity of the road to the building, access to YMCA during construction, and property needs for the project. | team noted that staging for construction has not been developed at this phase but a commitment is included in this EA that access to YMCA must be maintained. Project team clarified the property needs of the project and the City will reach out to YMCA as the project progresses with more details. |
| Downtown Brampton Business Improvement Association (DBBIA) | July 25, 2022 | The BIA expressed teir support for the Riverwalk project. The BIA supports the Ken Whillans Drive Extension, not as a vehicle thoroughfare, but rather a flexible access route for pedestrians, cyclists, and vehicles, offering connectivity to adjacent uses and as a public gateway to Rosalea Park. The BIA also indicated the street could be closed periodically as needed and could support public events and downtown placemaking. | Project team confirmed that the road is not intended as a car thoroughfare as the purpose of the road is not to support traffic. The road will have flexible uses and it can be closed as needed. The extension has been designed for active transportation and events and is in line with the Rivrewalk UDMP project and Downtown Brampton revitalization efforts. |

## 4.6 Indigenous Consultation

Consultation with Indigenous communities is an important component of the EA process. At the beginning of the EA study, the project team, with support from MECP, prepared a list of Indigenous communities (see **Table 8**) that may have an interest in the project.

TABLE 8. INDIGENOUS COMMUNITIES CONSULTED WITH

| Indigenous Communities | |
|---|---|
| Six Nations of the Grand River | Williams Treaties First Nations |
| Huron Wendat Nation | Haudenosaunee Confederacy Chiefs Council |
| Mississaugas of the Credit First Nation | Metis Nation of Ontario |

All study notices were sent to the Indigenous communities listed above (electronically and hard copy). Efforts were also made to follow up with groups that had not provided any response. A consultation log summarizing the project team's liaison with Indigenous communities during the study is included in Table 9.

TABLE 9: SUMMARY OF INDIGENOUS CONSULTATION

| Indigenous Community | Date | Comment / Purpose | Response |
|---|---|---|---|
| Huron Wendat Nation | April 2021 | Inquired about archaeological studies or fieldwork that will be undertaken as part of this study and if an Indigenous monitor can partake in those and if there was funding to do so. | Project Team noted that a Stage 1 Archaeological Assessment (AA) was completed as part of the DBFP EA which covers the study area for this EA study. A Stage 2 AA is recommended but will be completed during detailed design. As such, as part of this study, there is no archaeological fieldwork or study being undertaken. |
| Metis Nation of Ontario (MNO) | March 4, 2021 | Corrected proper contact for MNO. | Contact was updated. |
| Mississaugas of the Credit First Nation (MCFN) | April 2021 | Requested additional information on the project and discussed funding for project review and monitors on site for fieldwork for archaeology and natural environmental studies. | Project team provide details on the study including scope of work, project contacts, and project deliverables. Agreement for monitors was signed between MCFN and the City. |
| | June 10, 2021 | Indicated interest in sending a monitor for the natural heritage site visit. | Ultimately a monitor could not attend the site visit. A field report form was submitted to provide MCFN an overview of the site visit. |
| | April 28, 2022 | Received the PIC Notice and noted that they have no comments or concerns at this time. | Noted. |
| Six Nations of the Grand River | May 12, 2022 | Followed up with a phone call and resent the PIC Notice to the Six Nations of the Grand River contacts. | |
| Haudenosaunee Chiefs Confederacy Council / Haudenosaunee Development Institute | May 12, 2022 | Followed up with an email to an updated email address with the PIC Notice. | |

## 4.7 Notice of Study Completion

The Notice of Study Completion was published in the *Brampton Guardian* on November 10 and 17, 2022 to announce that the Project File Report (PFR) is available for the 30-day public comment period from November 10 to December 9, 2022. The Notice was also posted on the City's website, distributed to technical agencies and stakeholders via email, and also mailed to nearby properties within the study area.

# 5.0 Alternative Solutions

## 5.1 Alternative Solutions

Alternative Solutions are ways to address the Problem / Opportunity Statement and include a "Do Nothing" scenario. The Class EA process requires that all reasonable and feasible solutions be identified, described and evaluated against the environmental factors relevant to the study, such as the natural, social, cultural and economic environments. A number of potential solutions were developed for the Problem / Opportunity Statement (see Section 2.5) and are described in **Table 10**.

TABLE 10: ALTERNATIVE SOLUTIONS

| Alternative Solutions | | Description |
|---|---|---|
| 1 | Do Nothing | The existing condition is not changed (this alternative will form a baseline for comparison of alternative solutions). |
| 2 | Limit Development | Limit planned development and growth of the Downtown Brampton area. |
| 3 | Improve Existing Routes / Intersections | Undertake improvements to existing routes and intersections in Downtown Brampton, such as along Main Street, Union Street, Church Street, etc., to improve operation and safety |
| 4 | Extend Ken Whillans Drive south of Church Street and connect to the east at Scott Street | Extend Ken Whillans Drive south of Church Street to provide connectivity to the east via Scott Street. |
| 5 | Extend Ken Whillans Drive south of Church Street to Queen Street | Extend Ken Whillans Drive south of Church Street to provide connectivity to the south to Queen Street, via Maple Avenue. |
| 6 | Extend Ken Whillans Drive south of Church Street and connect to the west at Nelson Street / Union Street | Extend Ken Whillans Drive south of Church Street to provide connectivity to the west via the YMCA access road to Nelson Street. |

## 5.2 Evaluation Criteria

Evaluation criteria are developed to represent the broad definition of the environment as applicable to the study. Generally, the environment is broken down into various factors as outline in **Table 11**.

TABLE 11: EVALUATION CRITERIA

| Environmental Factors | Evaluation Criteria | Description |
|---|---|---|
| **Technical / Transportation** | Traffic Demand | How does the Alternative Solution impact traffic demand and patterns in this area? |
| | Connectivity | Does the Alternative Solution support improved connectivity to Rosalea Park and adjacent amenities? |
| | Safety | Does the Alternative Solution improve safety or provide a safe transportation environment for all users? |
| | Active Transportation | Does the Alternative Solution accommodate active transportation users along the corridor? |
| | Constructability | How feasible or complex will it be to construct the alternative? |
| **Natural Environment** | Terrestrial | What impacts will the Alternative Solution have on the terrestrial environment? |
| | Aquatic | What impacts will the Alternative Solution have on the fish and fish habitat? |
| **Cultural Environment** | Archaeology | What impacts will the Alternative Solution have on archaeological resources? |
| | Cultural Heritage | What impacts will the Alternative Solution have on cultural heritage resources? |
| **Socio-Economic Environment** | Shaping the City | Does the Alternative Solution align with and support the vision of local planning documents (e.g. Official Plan, Transportation Master Plan, Secondary Plans, Riverwalk UDMP)? |
| | Supports Future Land Use | Does the Alternative Solution support the planned growth, development and/or revitalization in this area? |
| | Streetscaping and Placemaking | Is the Alternative conducive to creating a strong and attractive sense of place for the Downtown area? Does it support an attractive and vibrant public realm? |
| | Social Equity | Does the alternative allow different users to gain access to the public amenities? Are all users accommodated, including vulnerable street users? |
| | Access | What impacts will the Alternative Solution have on accesses of adjacent properties or local roads? |
| | Property | Will private property need to be acquired? Will significant amounts of property be needed? |
| **Costs** | Capital Costs | What are the anticipated capital costs of the Alternative Solution? |
| | Maintenance Costs | What are the anticipated maintenance costs of the Alternative Solution? |

## 5.3 Evaluation of Alternative Solutions

The Alternative Solutions identified in Section 5.1 were evaluated against the criteria developed in Section 5.2. The evaluation is completed in detail in **Table 12**.

TABLE 12: EVALUATION OF ALTERNATIVE SOLUTIONS

| Evaluation Criteria | Alternative Solutions | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | |
| | Do Nothing | | Limit Development | | Improve Existing Routes/Intersections | | Extend Ken Whillans to connect with Scott Street | | Extend Ken Whillans to connect with Queen Street | | Extend Ken Whillans to connect with Nelson Street | |
| **TRANSPORTATION & ENGINEERING** | | | | | | | | | | | | |
| Traffic Demand | ◑ | Existing transportation network in the study area is generally adequate to accommodate anticipated growth to 2041. Some segments may operate over capacity. | ◑ | Could potentially reduce growth in traffic demand to some extent, though not anticipated to result in significant reduction in corridor traffic. | ● | Localized intersection and road improvements could result in reducing congestion of future traffic growth. | ◑ | Slightly attracts more traffic to the study area compared to the Do Nothing alternative, however, traffic and design measures can be implemented to reduce attractiveness for cars. | ○ | Attracts more traffic to the study area compared to the Do Nothing alternative, however, traffic and design measures can be implemented to reduce attractiveness for cars. | ◑ | Slightly attracts more traffic to the study area compared to the Do Nothing alternative, however, traffic and design measures can be implemented to reduce attractiveness for cars. |
| Connectivity | ○ | No improvements to connectivity to or through Rosalea Park. | ○ | No improvements to connectivity to or through Rosalea Park. | ○ | No improvements to connectivity to or through Rosalea Park. | ◑ | Enhanced connectivity via connection with Scott Street and the neighbourhood on the east side of the Etobicoke Creek, though no key transit connections. | ● | Enhanced connectivity via connection with Queen Street and the future rapid transit corridor. | ● | Enhanced connectivity via connection with Nelson Street, Brampton GO Station, and Downtown Brampton. |

| Evaluation Criteria | Alternative Solutions | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | |
| | Do Nothing | | Limit Development | | Improve Existing Routes/Intersections | | Extend Ken Whillans to connect with Scott Street | | Extend Ken Whillans to connect with Queen Street | | Extend Ken Whillans to connect with Nelson Street | |
| Safety | ○ | No improvements to safety within the study area. | ○ | No improvements to safety within the study area. | ○ | No improvements to safety within the study area, though potential to improve safety elsewhere. | ● | Greater opportunity to improve safety to all transportation uses through the study area, such as including more travel space for pedestrians and cyclists and enhanced visibility through road design. | ◑ | Greater opportunity to improve safety to all transportation uses through the study area, such as including more travel space for pedestrians and cyclists and enhanced visibility through road design, though the grade difference may cause sight line issues. | ● | Greater opportunity to improve safety to all transportation uses through the study area, such as including more travel space for pedestrians and cyclists and enhanced visibility through road design. |
| Active Transportation | ○ | No improvements for active transportation uses to or through the study area. | ○ | No improvements for active transportation uses to or through the study area. | ○ | No improvements for active transportation uses to or through the study area, though potential to improve elsewhere. | ● | There is an existing off-road trail connection, however enhancement opportunities exist on the section through Rosalea Park. | ● | The extension would create a new connection in the active transportation network, as there is no existing direct connection. Enhancement opportunities also exist on the section through Rosalea Park. | ● | There is an existing off-road trail connection, however enhancement opportunities exist on the section through Rosalea Park. |
| Construct-ability | ● | No constructability concerns as no work is required. | ● | No constructability concerns as no work is required. | ● | No constructability concerns as no work is required in the study area. | ○ | An extension of Ken Whillans to Scott Street geometrically may not be feasible due to close proximity to the creek and Scott Street/Scott Street Bridge, and existing driveway. Additional consideration for flood prevention, sightlines and safety. | ○ | An extension to Queen Street via Maple Avenue is a challenge due to the significant grade difference at the end of Maple Street. This construction may have significant impacts to adjacent uses and buildings and may require a retaining wall. | ● | Minimal constructability concerns and is away from the creek. |

| Evaluation Criteria | Alternative Solutions | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | |
| | Do Nothing | | Limit Development | | Improve Existing Routes/Intersections | | Extend Ken Whillans to connect with Scott Street | | Extend Ken Whillans to connect with Queen Street | | Extend Ken Whillans to connect with Nelson Street | |
| SUMMARY | ○ | Does not support opportunities for enhancements to the transportation environment to and through the study area. | ○ | Does not support opportunities for enhancements to the transportation environment to and through the study area. | ◑ | Does not support opportunities for enhancements to the transportation environment to and through the study area. | ◑ | Supports and improves connectivity and the active transportation environment, however may not be feasible due to limited space at Scott Street for a connection and the proximity to the creek. | ◑ | Supports and improves connectivity and the active transportation environment, however may not be feasible due to the significant grade difference at Maple Street. | ● | Supports and improves connectivity and the active transportation environment with minimal constructability concerns. |
| **NATURAL ENVIRONMENT** | | | | | | | | | | | | |
| Terrestrial | ● | No impacts to the terrestrial environment. | ● | No impacts to the terrestrial environment. | ◑ | No impacts to this EA study area, though there may be impacts to the terrestrial environment to the other existing routes. | ○ | Some impacts to vegetation, particularly street treets in and around Rosalea Park and trees adjacent to Etobicoke Creek. | ◑ | Some impacts to vegetation, particularly street treets in and around Rosalea Park. | ◑ | Some impacts to vegetation, particularly street treets in and around Rosalea Park. |
| Aquatic | ● | No impacts to the aquatic environment. | ● | No impacts to the aquatic environment. | ◑ | No impacts to this EA study area, though there may be impacts to the aquatic environment to the other existing routes. | ○ | Potential impacts to the aquatic environment as construction and permanent road work is in close proximity to the Etobicoke Creek. | ● | No impacts to the aquatic environment. | ● | No impacts to the aquatic environment. |
| SUMMARY | ● | No impacts to the natural environment as no work is being undertaken. | ● | No impacts to the natural environment as no work is being undertaken. | ◑ | No impacts to this EA study area, though there may be impacts to other existing routes depending on the improvements being undertaken. | ○ | Most impacts on the natural environment, as this alignment would introduce works in close proximity to the Etobicoke Creek and adjacent treed lands. | ◑ | Impacts to the natural environment predominantly to street trees in and around Rosalea Park. | ◑ | Impacts to the natural environment predominantly to street trees in and around Rosalea Park. |
| **CULTURAL ENVIRONMENT** | | | | | | | | | | | | |

| Evaluation Criteria | Alternative Solutions | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | |
| | Do Nothing | | Limit Development | | Improve Existing Routes/Intersections | | Extend Ken Whillans to connect with Scott Street | | Extend Ken Whillans to connect with Queen Street | | Extend Ken Whillans to connect with Nelson Street | |
| Archaeology | ● | No impacts to archaeological resources. | ● | No impacts to archaeological resources. | ◑ | No archaeological impacts to this study area, though there may be impacts to the other existing routes. | ◑ | Archaeological potential throughout proposed extension area. Stage 2 AA is required. | ◑ | Archaeological potential throughout proposed extension area. Stage 2 AA is required. | ◑ | Archaeological potential throughout proposed extension area. Stage 2 AA is required. |
| Cultural Heritage | ● | No impacts to cultural heritage resources. | ● | No impacts to cultural heritage resources. | ◑ | No impacts to cultural heritage resources in this study area, though there may be impacts to the other existing routes. | ◑ | Potential impacts to the Scott Street Streetscape and Etobicoke Creek Flood Diversion Channel (cultural heritage landscapes). | ◑ | Potential impacts to one potential built heritage resource, and the Queen Street East and Scott Street Streetscapes (potential cultural heritage lanscapes). | ● | No impacts to cultural heritage resources. |
| SUMMARY | ● | No impacts to the cultural environment as no work is being undertaken. | ● | No impacts to the cultural environment as no work is being undertaken. | ◑ | No impacts to this EA study area, though there may be impacts to other existing routes depending on the improvements being undertaken. | ◑ | Potential impacts to cultural heritage landscapes and area retains archaeological potential, requiring further studies. | ◑ | Potential impacts to cultural heritage landscapes and area retains archaeological potential, requiring further studies. | ● | No impacts to cultural heritage resources. Area retains archaeological potential, requiring further studies. |
| **SOCIO - ECONOMIC ENVIRONMENT** | | | | | | | | | | | | |
| Shaping the City | ✘ | Does not support or is not in line with the plans and policies of the City of Brampton. | ✘ | Does not support or is not in line with the plans and policies of the City of Brampton to redirect growth to downtown Brampton. | ○ | May address the City's plans and policies on other existing routes, but is not in line with plans and policies developed for the study area. | ● | Supports the plans and policies for the study area, particularly improving access and supporting the revitalization of Rosalea Park and the Riverwalk project. | ● | Supports the plans and policies for the study area, particularly improving access and supporting the revitalization of Rosalea Park and the Riverwalk project. | ● | Supports the plans and policies for the study area, particularly improving access and supporting the revitalization of Rosalea Park and the Riverwalk project. |

| Evaluation Criteria | Alternative Solutions | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | |
| | Do Nothing | | Limit Development | | Improve Existing Routes/Intersections | | Extend Ken Whillans to connect with Scott Street | | Extend Ken Whillans to connect with Queen Street | | Extend Ken Whillans to connect with Nelson Street | |
| Supports Future Land Use | ✘ | Does not support the planned revitalization of downtown Brampton and the planned Rosalea Park. | ✘ | Does not support the planned revitalization of downtown Brampton and the planned Rosalea Park. | ○ | May support the planned revitalization of downtown Brampton but not directly the planned Rosalea Park. | ● | Supports increased development and growth in Downtown Brampton and enhances connectivity, particularly to Rosalea Park. | ● | Supports increased development and growth in Downtown Brampton and enhances connectivity, particularly to Rosalea Park. | ● | Supports increased development and growth in Downtown Brampton and enhances connectivity, particularly to Rosalea Park. |
| Streetscaping and Placemaking | ○ | No opportunities for improvements to creating a more attractive and vibrant sense of place. | ○ | No opportunities for improvements to creating a more attractive and vibrant sense of place. | ○ | No opportunities for improvements to creating a more attractive and vibrant sense of place, particularly for Rosalea Park. | ● | Opportunity to construct a road extension using principles of Complete Streets design with a focus on streetscaping to create an improved public realm. | ● | Opportunity to construct a road extension using principles of Complete Streets design with a focus on streetscaping to create an improved public realm. | ● | Opportunity to construct a road extension using principles of Complete Streets design with a focus on streetscaping to create an improved public realm. |
| Social Equity | ◑ | Existing access to Rosalea Park exists, though no improvements are accommodated. | ◑ | Existing access to Rosalea Park exists, though no improvements are accommodated. | ◑ | Potential to improve access for different uses. | ● | Greatest opportunity to improve and support social equity by improving access to Rosalea Park and the broader Riverwalk area. | ● | Greatest opportunity to improve and support social equity by improving access to Rosalea Park and the broader Riverwalk area. | ● | Greatest opportunity to improve and support social equity by improving access to Rosalea Park and the broader Riverwalk area. |
| Access | ○ | Does not impact existing access but does not offer any access improvements. | ○ | Does not impact existing access but does not offer any access improvements. | ◑ | Does not markedly improve access to/through the site, though improvements to the existing road network and adjacent intersections can enhance access to Rosalea Park. | ● | Offers enhanced access to/from Rosalea Park. An extension of Ken Whillans to Scott Street will formalize the park entrance and make the site more inviting and public-facing. | ● | Offers enhanced access to/from the Queen Street corridor and Rosalea Park. An extension of Ken Whillans to Queen Street will formalize the park entrance and make the site more inviting and public-facing, as well as providing connectivity to the future rapid transit line along Queen Street. | ● | Offers enhanced access to/from the Downtown core and Rosalea Park. An extension of Ken Whillans to Nelson Street and the intersection of Union Street will formalize the park entrance and make the site more inviting and public-facing. |

| Evaluation Criteria | Alternative Solutions | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | |
| | Do Nothing | | Limit Development | | Improve Existing Routes/Intersections | | Extend Ken Whillans to connect with Scott Street | | Extend Ken Whillans to connect with Queen Street | | Extend Ken Whillans to connect with Nelson Street | |
| Property | ● | No property impacts as there is no work being undertaken. | ● | No property impacts as there is no work being undertaken. | ● | No property impacts in the study area, but potential property impacts on other reoutes depending on extent of improvements. | ◑ | Some potential property impacts to accommodate the new road, particularly near Scott Street. | ○ | Significant property impacts to accommodate the new road due to the grade difference, particularly to residents south of Rosalea Park, Maple Avenue, and the YMCA. | ◑ | Some potential property impacts to accommodate the new road, particularly to the YMCA and the tennis club. |
| SUMMARY | ✘ | Does not support the planning vision and future land use of the area. | ✘ | Does not support the planning vision and future land use of the area. | ○ | While there would be few impacts to the study area, this alternative does not address the plans, future land use, and access needs of this area | ● | Supports future plans for the area and allows for opportunities for placemaking. | ◑ | Supports future plans for the area and allows for opportunities for placemaking. However, there would be significant impacts due to the grade difference at the end of Maple Street. | ● | Supports future plans for the area and allows for opportunities for placemaking. |
| COST | | | | | | | | | | | | |
| Capital Costs | ● | No capital costs. | ● | No capital costs. | ◑ | No capital costs associated with this project, though additional capital costs on routes elsewhere. | ○ | Significant capital costs to construct the road extension, particularly to accommodate the proximity to Etobicoke Creek. | ○ | Significant capital costs to construct the road extension, particularly to accommodate for the significant change in grade between Rosalea Park and Maple Avenue. | ◑ | Moderate capital costs to construct the road extension, as there will be minimal property impacts and constructability issues. |
| Maintenance Costs | ● | Minimal change to existing maintenance costs. | ● | Minimal change to existing maintenance costs. | ● | Minimal change to existing maintenance costs. | ◑ | A new road would would introduce additional maintenance costs. | ◑ | A new road would would introduce additional maintenance costs. | ◑ | A new road would would introduce additional maintenance costs. |
| SUMMARY | ● | No to minimal cost impacts. | ● | No to minimal cost impacts. | ● | No to minimal cost impacts for this project. | ○ | Significant costs anticipated for this alternative. | ○ | Significant costs anticipated for this alternative. | ◑ | Moderate costs anticipated for this alternative. |

| Evaluation Criteria | Alternative Solutions | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| | Do Nothing | Limit Development | Improve Existing Routes/Intersections | Extend Ken Whillans to connect with Scott Street | Extend Ken Whillans to connect with Queen Street | Extend Ken Whillans to connect with Nelson Street |
| Conclusions | This alternative is **not recommended** as doing nothing does not support or address the problems or opportunities identified in the Problem / Opportunity Statement. Particularly, it does not support the vision and plans for the study area and offers no improvements. | This alternative is **not recommended** as limiting development does not support or address the problems or opportunities identified in the Problem / Opportunity Statement. Particularly, it does not support the vision and plans for the study area and offers no improvements. | This alternative is **not recommended** as improving existing routes and intersections does not support or address the problems or opportunities identified in the Problem / Opportunity Statement. Particularly, it does not support the vision and plans for the study area and offers no improvements to the study area. | This alternative is **not recommended** as the alignment required to connect with Scott Street would require works in close proximity to the Etobicoke Creek watercourse and geometrically, there is little room to accommodate the connection at Scott Street. | This alternative is **not recommended** as the alignment required to connect with Queen Street would require significant works to align the grade differences at the end of Maple Avenue with potential for major impacts to adjacent properties and buildings. | This alternative is **recommended** as it supports the vision and plan for the study area, supporting access and active transportation uses to and from Rosalea Park, with overall limited impacts to the natural and cultural enviroments and adjacent properties. |

## 5.4 Selection of Preferred Alternative Solution

Based on the evaluation, Alternative 6 is recommended as it best meets and aligns with the future use of Rosalea Park, is the most constructable of the extension options, and has minimal to moderate impacts on the cultural and natural environment.

# 6.0 Alternative Design Concepts

## 6.1 Alternative Design Concepts

Alternative Design Concepts are ways to implement the Alternative Solutions identified in Section 5.0. Several street design options were developed to determine what the right-of-way (ROW) would be comprised of and are described in **Table 13** and in **Figure 7**, **Figure 8**, **Figure 9**, and **Figure 10**.

TABLE 13: STREET DESIGN CONCEPTS

| Street Design Options | | Description |
|---|---|---|
| 1 | Shared Street | Low speed environment with a shared space for all modes, with a focus on pedestrian space. |
| 2 | Bike Boulevard | Bike priority street with slightly wider travel lanes to allow car access. |
| 3 | Active Transportation Only Street | No vehicular lanes. The full ROW is for bike lanes and pedestrian space. |
| 4 | Conventional Mixed-use Collector Street | Mediun speed environment with separate ROWs for cars, bikes, and pedestrians. |

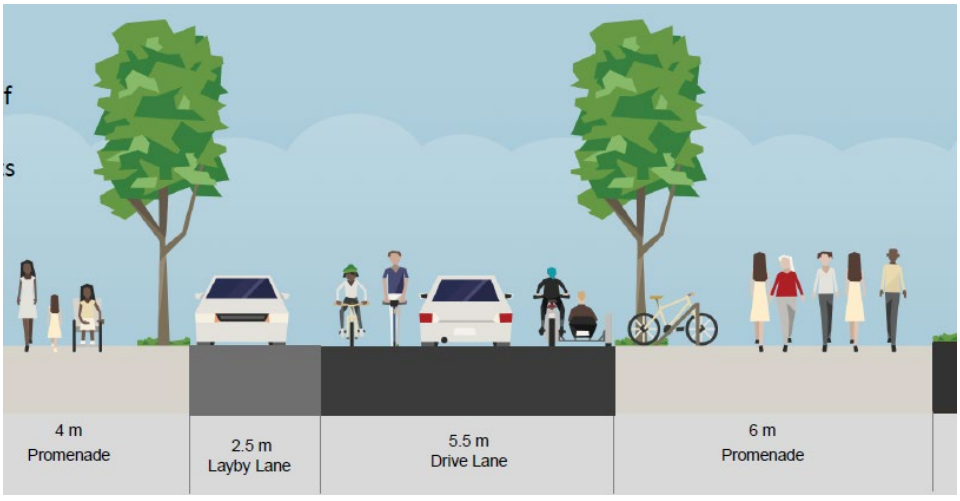



FIGURE 7: STREET DESIGN CONCEPT #1 – SHARED STREET

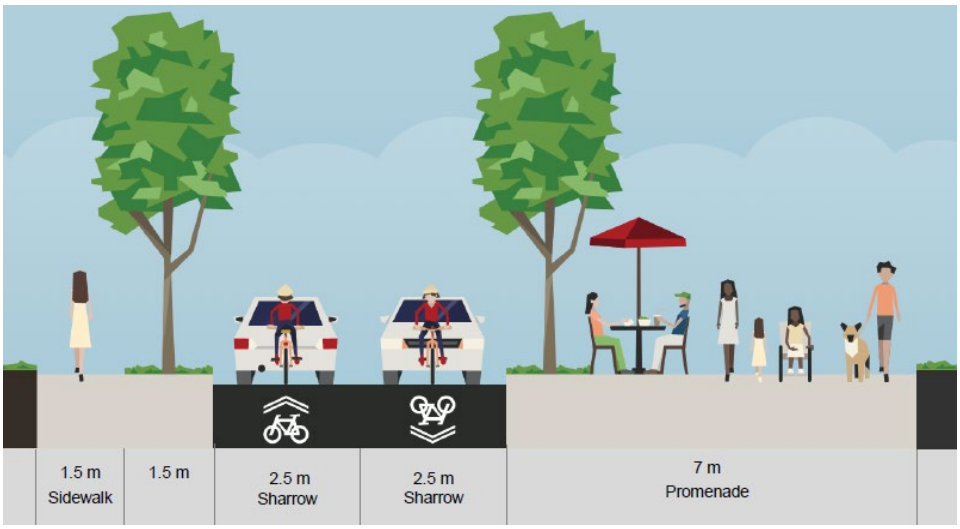



FIGURE 8: STREET DESIGN CONCEPT #2 – BIKE BOULEVARD

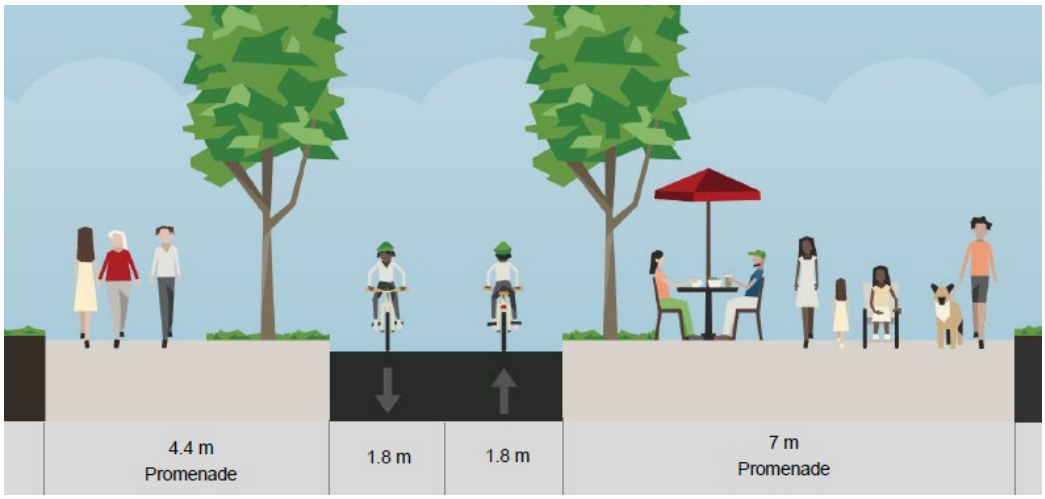



FIGURE 9: STREET DESIGN CONCEPT #3 – ACTIVE TRANSPORTATION ONLY STREET

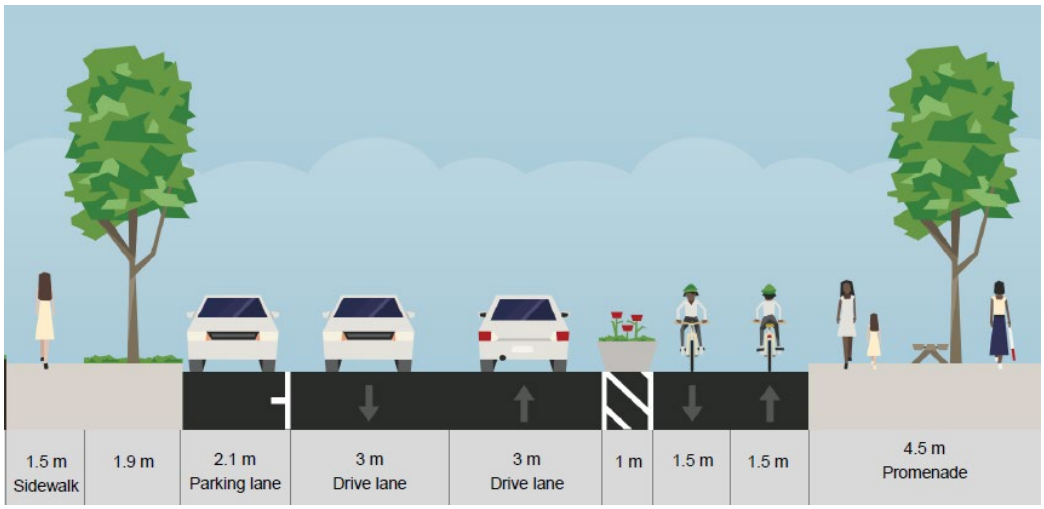



FIGURE 10: STREET DESIGN CONCEPT #4 – CONVENTIONAL MIXED-USE COLLECTOR STREET

## 6.2 Evaluation of Street Design Options

The Street Design Concepts identified in Section 6.1 were evaluated against similar evaluation criteria. The evaluation is completed in detail in **Table 14.**

## 6.3 Selection of Preferred Street Design Option

Based on the evaluation, Street Design Concept #1 – Shared Street is recommended as it provides the best pedestrian priority while still providing cycling and vehicular access. The curb-less and paver design helps to most seamlessly tie into Rosalea Park. All options have comparable impacts to street trees but this option would be best from a stormwater management perspective as it uses permeable surfaces. This street design best supports the future use of Rosalea Park with strong potential for streetscaping and layby and flexible spaces for events.

TABLE 14: EVALUATION OF STREET DESIGN CONCEPTS

| Evaluation Criteria | Evaluation of Street Design Options | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | |
| | Shared Street | | Bike Boulevard | | Active Transportation (AT) Only | | Conventional Multi-modal Street | |
| **TRANSPORTATION & ENGINEERING** | | | | | | | | |
| Limits vehicular demand | ◑ | The street design is primarily for use as a civic function, and as such, cars will ideally be restricted as needed and would deter general use of the road as a mobility connection. | ◑ | The street design is primarily a cycle street, where cars will ideally be restricted as needed. The road width is not wide enough to attract cut through traffic. | ● | Fully limits vehicular demand as no cars are allowed. | ○ | Conventional traffic lanes would be the most inviting to traffic, especially as a through road from Ken Whillans Drive to the north. |
| Provides vehicular access to Rosalea Park | ● | Allows for motor vehicle use and access to the park area. | ● | Allows for motor vehicle use and access to the park area. | ○ | Does not accommodate vehicular access. | ● | Allows for motor vehicle use and access to the park area. |
| Vehicular Speed | ● | Low speed (<15 km/h) environment as there is no dedicated ROW for any mode and all road users are required to use the street collaboratively thus limiting all modes to a pedestrian scale speed. | ◑ | Medium speed environment. Cars are not allowed to pass cyclists, therefore speed is dictated by the speed of cyclists. | ● | Vehicles are not allowed. | ○ | Conventional vehicular lanes, which would be more enticing for drivers to continue through on Ken Whillans Drive, brings faster traffic to the road. |
| Pedestrian Priority | ● | The shared street prioritizes pedestrians. The absence of curbs and clear sidewalks indicate the entire street is for pedestrians as there is no dedicated ROW for any mode and is the most supportive of pedestrian use of the area. | ◑ | While the full street does not prioritize pedestrians, pedestrians still have a large promenade area on both sides of the road. The dedicated bike lane/road is a clear "no-pedestrian zone" that may have faster cyclists and bisects the park. | ◑ | While the full street does not prioritize pedestrians, pedestrians still have a large promenade area on both sides of the road. The dedicated bike lanes are a clear "no-pedestrian zone" that may have faster cyclists and bisects the park. | ○ | Functions as a conventional through road rather than a pedestrian focused space. With the clear delineation of road users, there is limited pedestrian space within the sidewalk/small promenade. |
| Bicycle Facility | ◑ | Anyone including cyclists can use the street, however will have to share the space with other street users. There is no dedicated ROW for cyclists. | ◑ | The bike boulevard prioritizes cyclists through signage and pavement markings, though cyclists will have to share the space with cars using the street for access purposes. | ● | The AT Only design provides a dedicated bike lane and with the absence of cars, would be the safest and most comfortable option for cyclists. | ● | Cyclists are accommodated through dedicated bike lanes fully separated from other uses. |
| Separation of Road Users | ○ | A shared street design is meant to allow for "free" movement of users rather than delineating specific zones for each use, though there is still some delineation of a sidewalk/promenade area. | ◑ | The bike boulevards allow for the separation of pedestrians from cars and cyclists. However, cyclists share the road with cars. | ● | Pedestrians and cyclists are separated from one another, while cars are prohibited from using the ROW. | ● | A conventional multi-modal approach allows for the full separation of user groups that may pose a conflict to others, such as cars to cyclists and cyclists to pedestrians. |

| Evaluation Criteria | Evaluation of Street Design Options | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | |
| | Shared Street | | Bike Boulevard | | Active Transportation (AT) Only | | Conventional Multi-modal Street | |
| Safety | ● | Provides inherentt safety by design as no dedicated ROW for the motorised road users forces them to slow down and usie the street collaboratively with pedestrians and other users. | ◑ | While there is some separation, cars and cyclists share the road in a medium speed environment. Also less safe where pedestrians have to cross the bike lane. | ◕ | Safe for all users as there is separation of uses, however less safe where pedestrians have to cross the bike lane. | ◑ | While there is separation of all uses, cars and cyclists will travel at higher speeds making it less safe. Difficult and unsafe where pedestrians have to cross the road/bike lane. |
| Connectivity | ◑ | Provides connectivity for the the Rosalea Park facilities however restricts through traffic | ◕ | Provides connectivity for the the Rosalea Park facilities, allows through bicycle traffic however restricts through auto traffic | ◔ | Does not provide connectivity to Rosalea Park for auto users. | ● | Provides connectivity for all road users |
| Layby/Onstreet Parking | ● | Incorporates a layby lane which can be used for pickup and drop off as well as for other event uses, food trucks, parklets, drink stalls, etc. | ○ | A bike boulevard is a cycle priority street and parking operations create unsafe environments for cyclists. | ○ | Street design does not allow cars, so no street parking is accommodated. | ● | Incorporates a layby lane which can be used for pickup and drop off as well as for other event uses, food trucks, parklets, drink stalls, etc. |
| SUMMARY | ● | The shared street option best prioritizes pedestrians, while still allowing for cyclists and vehicular access to Rosalea Park. A continuous at grade surface without curbs becomes a natural extension of the future park facilities planned on both sides of the extension. | ◑ | The bike boulevard option accommodates for all road users though prioritizes active transportation. However, this street design does not merge well with future park facilities and physically divides them. Pedestrians will require designated crossings. | ◑ | Active transportation is prioritized however, there is no option to accommodate vehicular traffic access to the park. However, this street design does not merge well with future park facilities and physically divides them. Pedestrians will require designated crossings. | ◔ | While this option accommodates different road users by providing a separate facility for each, a conventional road design will encourage vehicular traffic to use Ken Whillans Drive as a through street, making it unsafe for the park users. It also physically separates the park facilities through a dedicated ROW for bikes and cars. |
| NATURAL ENVIRONMENT | | | | | | | | |
| Storm Water Management | ● | Will generate less storm water comparing to other design option because pavers will allow the water to seep through to the ground. At grade surfaces with no curbs will allow gretaer flexibility in siting the gutters/inlets. | ◑ | This option will use similar surface materials as for conventional multi-modal street, however will generate comratively less storm water due to the less surface area. Presecnce of curbs will restrict the flow to the adjacent natural surface areas | ◑ | This option is smilar to Bike Boulevard and will have similar impacts | ◔ | This option will require detailed storm water management due to dedicated car and bike surfaces separated by raised curbs. Large surface area will generate more storm water flow compared to the other options. |

| Evaluation Criteria | Evaluation of Street Design Options | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | |
| | Shared Street | | Bike Boulevard | | Active Transportation (AT) Only | | Conventional Multi-modal Street | |
| Impact on Trees | ● | Some impacts to vegetation, particularly existing street trees in and around Rosalea Park. The impact will be similar to the other options as all options have similar cross-sectional width however this option provides greater opportunities to plant trees than all the other options | ◑ | Some impacts to vegetation, particularly street trees in and around Rosalea Park. The potential to plant trees is less comparing to Option 1 due to dedicated ROW for the bikes and cars. | ◑ | Some impacts to vegetation, particularly street trees in and around Rosalea Park. Opportunity for additional trees is similar to Option 2. | ◔ | Some impacts to vegetation, particularly street trees in and around Rosalea Park. This option provides least opportunity to grow additional trees due to dedicated surfaces for cars and bikes and associated safety standards. |
| SUMMARY | ● | Minimal impacts overall, some impacts to street trees. | ◕ | Minimal impacts overall, some impacts to street trees. | ◕ | Minimal impacts overall, some impacts to street trees. | ◑ | Minimal impacts overall, some impacts to street trees. |
| **CULTURAL ENVIRONMENT** | | | | | | | | |
| Archaeology | ◕ | Archaeological potential throughout proposed extension area. Stage 2 AA is required. | ◕ | Archaeological potential throughout proposed extension area. Stage 2 AA is required. | ◕ | Archaeological potential throughout proposed extension area. Stage 2 AA is required. | ◕ | Archaeological potential throughout proposed extension area. Stage 2 AA is required. |
| Culrural Heritage | ● | No impacts to cultural heritage resources. | ● | No impacts to cultural heritage resources. | ● | No impacts to cultural heritage resources. | ● | No impacts to cultural heritage resources. |
| SUMMARY | ◕ | Further Stage 2 archaeological investigations required. | ◕ | Further Stage 2 archaeological investigations required. | ◕ | Further Stage 2 archaeological investigations required. | ◕ | Further Stage 2 archaeological investigations required. |
| **SOCIO - ECONOMIC ENVIRONMENT** | | | | | | | | |
| Streetscaping, Placemaking, and Public Realm | ● | The design has a lot of space for streetscaping elements in the promenade or for temporary uses (food trucks, patio seating) using the layby lanes. The priority on pedestrian space would encourage use of this facility, fostering a better sense of place. | ● | The design has a lot of space for streetscaping elements in the promenade. The priority on pedestrian space would encourage use of this facility, fostering a better sense of place. | ● | The design has a lot of space for streetscaping elements in the promenade. The priority on pedestrian space would encourage use of this facility, fostering a better sense of place. | ◑ | The design has the least space for streetscaping elements in the promenade. Temporary uses could be accommodated in the parking lanes. However, the presence of higher speed vehicles may make this less attractive for people to use this facility. |
| Compatibility with Riverwalk UDMP, including future Rosalea Park | ● | This option is most compatible with the Riverwalk UDMP, which envisions a shared street that prioritizes pedestrians, can function as an extension of the park and future events, and would allow for access to the Riverwalk area by all users and modes of transportation. | ◑ | This option is somewhat compatible with the Riverwalk UDMP as it allows for access to the Riverwalk area by all users and modes of transportation. However, it physically divides the future park facilities planned on both sides of the extension. | ◑ | This option is somewhat compatible with the Riverwalk UDMP as it allows for access to the Riverwalk area by all users and modes of transportation, except for cars. However, it physically divides the future park facilities planned on both sides of the extension. | ◔ | This option is least compatible with the Riverwalk UDMP as it does not give priority to AT uses and the conventional roadway may bring more vehicular traffic through the park. The UDMP envisions a more flexible route, wheras this conventional design is more rigid through its separation of uses. |

| Evaluation Criteria | Evaluation of Street Design Options | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | |
| | Shared Street | | Bike Boulevard | | Active Transportation (AT) Only | | Conventional Multi-modal Street | |
| Supports Civic Functions of the Park | ● | The shared street design supports priority for pedestrian use of Rosalea Park and an extension space for public events. | ◑ | The street design supports priority given to AT users, though there is less functional space for community and events. | ◑ | The street design supports priority given to AT users, though there are less functional space for community and event uses. | ○ | Functions more as a conventional through street and less of a park and events space promenade primarily for pedestrians. |
| Property | ● | The shared street option will have a similar ROW width to the other options. | ● | The shared street option will have a similar ROW width to the other options. | ● | The shared street option will have a similar ROW width to the other options. | ● | The shared street option will have a similar ROW width to the other options. |
| SUMMARY | ● | The priority given to pedestrians through street design, and the potential for the promenade to support streetscaping and placemaking, would encourage greater access to Rosalea Park, Riverwalk, and community events. The layby space provides a flexible space for community and event uses. | ◑ | Somewhat consistent with the UDMP as pedestrians are not prioritized and the park facilities are divided, though there is still sufficient room for streetscaping and would support access for users to Rosalea Park. | ◑ | Somewhat consistent with the UDMP as pedestrians are not prioritized and the park facilities are divided, though there is still sufficient room for streetscaping and would support access for users to Rosalea Park. | ◑ | Least room to support streetscaping elements and the provision of conventional vehicular lanes may discourage pedestrians and active transportations from using this facility. |
| COST | | | | | | | | |
| Capital Costs | ◔ | Construction materials will mostly consist of pavers and stones. Surfaces delineations will be done using different types of pavers. Such works require manual installation. Therefore upfront cost of such roads is slightly higher than asphalt roads. | ◕ | Asphalt road construction therefore less capital cost than Option 1. This option will cost less than option 4 as well due to smaller cross-section. | ● | Similar capital costs as Option 2 due to similar cross-section and surface materials. | ◑ | This is a typical asphalt road construction for which construction materials and equipment are commonly available. As such it will cost less than Option 1. Option 2 and Option 3 will have similar construction materials and methodology as this option however it will have higher costs due to larger cross-section. |
| Maintenance Costs | ● | Paver materials and stones are usually have longer life span than asphalt roads and entail less maintenance. | ◑ | Maintenance costs of asphalt roads are generally higher than paver and stone roads. Life span is also less requiring major repairs or rehabilitation of the road. As such maintenance cost is likely to be higher than Option 1 but less than that of Option 4 due to smaller cross-section | ◕ | Similar maintenance costs as option 2 due to similar cross-section and surface materials. | ◔ | Maintenance costs of this option will be the highest as compared to all other options. |
| SUMMARY | ◑ | Moderate cost impacts associated with this right-of-way alternative. | ◑ | Moderate cost impacts associated with this right-of-way alternative. | ◑ | Moderate cost impacts associated with this right-of-way alternative. | ◑ | Moderate cost impacts associated with this right-of-way alternative. |

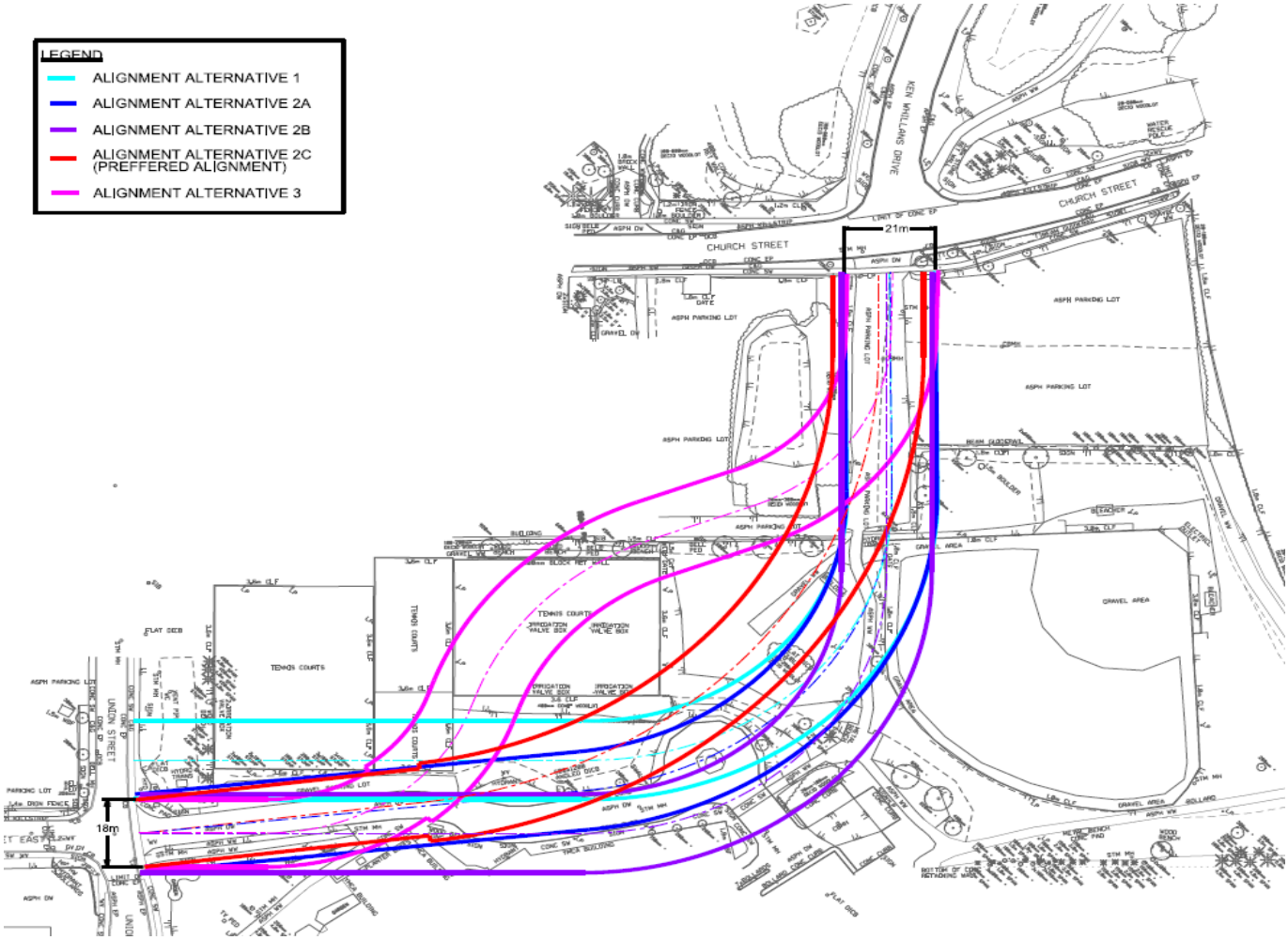
| Evaluation Criteria | Evaluation of Street Design Options | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | |
| | Shared Street | | Bike Boulevard | | Active Transportation (AT) Only | | Conventional Multi-modal Street | |
| Conclusions | ● | This alternative is **recommended** as it best prioritizes pedestrians in the street design, still maintains access for other modes including cars, and is the most compatible with the UDMP and future events. Additionally, this option best supports streetscaping, placemaking, and the future use of Rosalea Park. | ◑ | This alternative is **not recommended.** Pedestrians are not the priority and a more conventional lane configuration would encourage faster speeds through the park from cyclists and cars. While this is somewhat compatible with the UDMP, it is not preferred. | ◑ | This alternative is **not recommended.** Pedestrians are not the priority and a more conventional lane configuration would encourage faster speeds through the park from cyclists. While this is somewhat compatible with the UDMP, it is not preferred. | ◑ | This alternative is **not recommended.** While this ROW option best separates all road users, a conventional road may encourage vehicular through traffic reducing the attractiveness and safety of the road for pedestrians. The need for this road extension is to provide attractive active transportation facilities that support the Riverwalk UDMP and the use of Rosalea Park area as a community hub, and a conventional street would not achieve this. |

## 6.4 Street Alignment Options

Several high-level and conceptual street alignment options were developed for how the Ken Whillans Drive extension would connect to Nelson Street (see **Figure 11**). When assessing and evaluating the different alignment options, the following were considered:

- Can tie into existing intersections (i.e.no skews for safer intersections)
- Balances available park and event space to the east and west of the street
- Minimizes impacts to the YMCA
- Minimizes tree impacts

FIGURE 11: CONCEPTUAL ALIGNMENT OPTIONS FOR THE KEN WHILLANS DRIVE EXTENSION




The preferred alignment is Alignment 2C as it best met the considerations listed above. This alignment was further refined in the preliminary design. See Section 7.0 for a description and plan of the preferred alignment.

# 7.0 Description of the Preferred Design

The preferred design includes extension of Ken Whillans Drive south of Church Street to the west to Union Street. There will be a Shared Street right-of-way that prioritizes pedestrian space. The preliminary preferred design is shown in **Figure 12** and in **Appendix G**. Due to the ongoing DBFP project and the need to tie in this design at the existing Ken Whillans Drive/Church Street intersection, ongoing coordination with with the DBFP project will be required to progress the design.

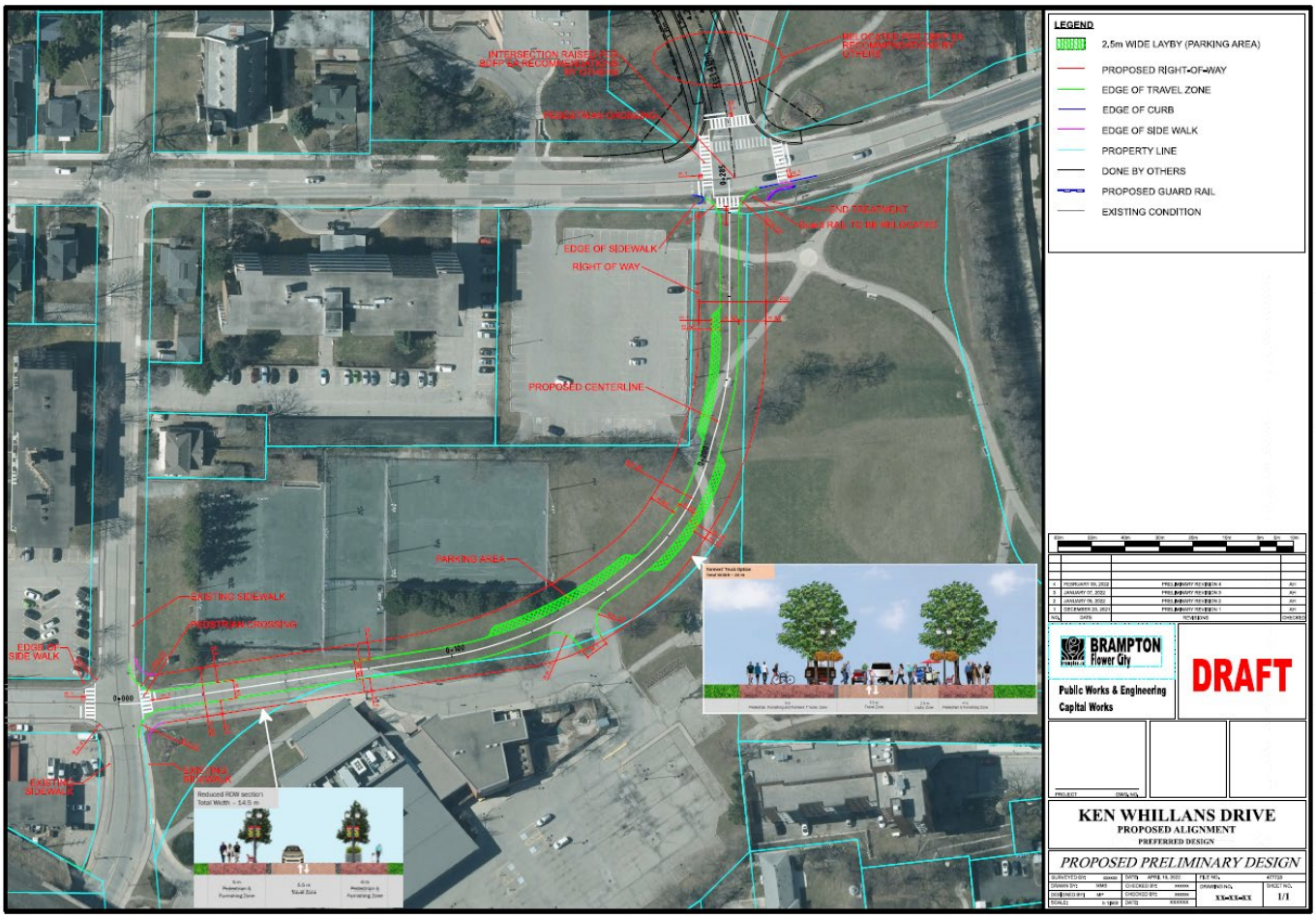



FIGURE 12: PRELIMINARY DESIGN PLAN FOR THE KEN WHILLANS DRIVE EXTENSION

## 7.1 Design Criteria

The preferred "Shared Street" option will not have a dedicated ROW for vehicular traffic and it is assumed that vehicular traffic speed will be less than 15km/h, therefore, the design criteria does not necessarily follow the TAC and City of Brampton design guidelines as the use of this street is not a conventional road design. Ontario Traffic Manual (OTM) Book 18 (Cycling Facilities), OTM Book 15 (Pedestrian Crossing Facilities), the City's Complete Streets Guidelines, and best practices adopted across Europe (specifically Dutch Street Design) and North America were utilized to develop the conceptual design of the preferred Shared Street option.

## 7.2 Typical Cross Sections

The typical cross section of the Shared Street option includes:

- 5.5m travel zone
- 2.5m layby zone (only at certain parts of the extension)
- 4m - 8m pedestrian and furnishing zones on both sides of the road

Two typical cross sections have been developed for the extension due to constraints on the west end where the road will be in close proximity to the YMCA building.

The full right-of-way is 20m wide and includes the travel zone, layby zones, and pedestrian and furnishing zones on both sides of the road. A typical cross section is shown in **Figure 13**.


FIGURE 13: TYPICAL CROSS SECTION OF THE FULL RIGHT-OF-WAY SECTION

A reduced right-of-way is 14.5m and includes the travel zone and pedestrian and furnishing zones on both sides of the road. A reduced right-of-way is used in the vicinity of YMCA to reduce impacts on the building. A typical cross section is shown in **Figure 14**.

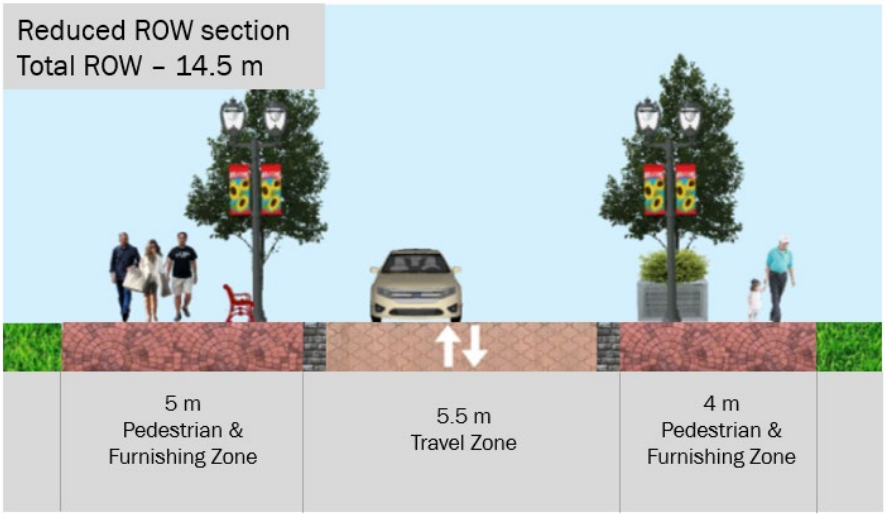



FIGURE 14: TYPICAL CROSS SECTION OF THE REDUCED RIGHT-OF-WAY SECTION

## 7.3 Horizontal / Vertical Road Alignment

The proposed horizontal alignment of the preferred alternative was developed to balance impacts to both sides of Rosalea Park and minimize private property impacts. As such, a sharper radius was utilized mid-corridor to reduce speeds and to further minimize property impacts.

The vertical alignment between Union Street and the YMCA entrance is largely maintained at existing to avoid impacting adjacent properties. As part of the DBFP project, there are plans to raise Church Street approximately 1.25m as part of the reconstruction/raising of the Church Street bridge to the east of the Ken Whillans Drive intersection. As such, the proposed vertical alignment for the Ken Whillans Drive Extension at Church Street climbs to match the proposed Church Street grade. This grade match will need to be confirmed once detailed design for the DBFP project is finalized.

## 7.4 Intersections and Access

The road extension will connect into the existing intersections at Church Street and Ken Whillans Drive and at Union Street and Nelson Street. This will avoid any offset intersections, promote improved intersection operations, and reduce impacts to surrounding uses.

The Church Street and Ken Whillans Drive intersection will become a four-legged all-way stop controlled intersection. As this intersection will match into the realignment of the Ken Whillans Drive north of Church Street as well as the grade raise of Church Street, further coordination with the DBFP project is required for all design components, including roadway and lane alignment, active transportation facility transitions, treatments, lighting, etc.

The Union Street and Nelson Street intersection will become a four-legged all-way stop controlled intersection.

The section of Ken Whillans Drive between Union Street and the YMCA entrance is intended to provide the same access function for the YMCA as the current driveway.

## 7.5 Active Transportation

Active transportation is accommodated through the entire right-of-way in the Shared Street concept. In general cyclists are sharing the travel zone with vehicles and there are large pedestrian areas (ranging from 4-8m wide) on both sides of the travel zone. These are general delineations but the use of this road as a Shared Street and in the context of Rosalea Park, this is a flexible space that ties together both sides of Rosalea Park.

This extension will provide connectivity between the Multi-Use Path that runs beside Ken Whillans Drive north of Church Street to the YMCA, Downtown Brampton and to the Brampton GO station to the west. Connectivity for active transportation users to Rosalea Park is improved as well.

At the Church Street and Ken Whillans Drive intersection and the Union Street and Nelson Street intersection, painted crosswalks are included to facilitate crossing at the stop controlled intersections. During detailed design, improved crossings can be considered based on the Complete Streets guideline being developed by the City.

During detailed design, the design of the extension should be designed according to Accessibility for Ontarians with Disabilities Act (AODA) design standards and guidelines so that the facilities are accessible, even to those with mobility or visibility impairments.

## 7.6 Drainage and Stormwater Management

As the proposed design of the extension will utilize permeable concrete pavers, and will replace the existing asphalt driveway with a more permeable surface, the proposed conditions will result in minimal impacts to drainage and stormwater management. Some drainage inlet structures will be impacted by the proposed street alignment and will be removed/abandoned. Two new catch basins areproposed at low points and conveyed to the existing storm sewer system. General integration of sustainable design principles and features, Low Impact Development (LID) and the infiltration system in the right-of-way will be further assessed in detailed design. The use of soil cell technology as a stormwater management strategy and to promote trees in an urban environment, in this case within the pedestrian furnishing zone, shall also be explored in detailed design.

The site of this study falls below the 0.5 ha threshold for triggering full TRCA stormwater management requirements. As such, the goal for stormwater management criteria is to achieve a best-efforts approach and to attempt to provide quantity and quality control as is practical and feasible.

For stormwater quantity control, the goal is to restrict the peak stormwater run-off post-construction conditions to less than or equal to the peak flow runoff in the existing conditions. The proposed extension will result in less than 1% increase of flow run-off rates. Therefore, no quantity control measures are required or warranted on this project.

For stormwater quality control, the site is limited by the small area of the study. The permeable pavement with subdrain has a reduction of 50% total suspended solids (TSS), and the adjacent grass will provide the remaining TSS removals. Therefore, the proposed shared street will meet the Enhanced Level of TSS removal (i.e. 80%).

The TRCA SWM criteria targets 5mm retention of run-off onsite, through storage, infiltration, evapotranspiration, or water reuse. Due to the small size of the study area, permeability of the pavement along with the subdrains underneath, this extension provides adequate potential to allow the 5 mm rainfall retention. It is worth mentioning that the boulevard embankment areas beyond the paved pedestrian zones will be treated with extra depth topsoil (300mm) to promote increased retention from the typical 5 mm, up to 8-10 mm.

It may be possible to integrate the future drainage and SWM design with the revitalization of Rosalea Park, which should be explored in detailed design. For a full description of the drainage and stormwater management analysis, see **Appendix B**.

## 7.7 Pavement Design

Six (6) geotechnical boreholes were drilled along the alignment of the proposed extension to determine sub surface conditions. Based on the findings and the proposed use of the street as a shared street with pavers, the following is the recommended pavement structure:

- 80mm – Brick Paver (ASTM C 1272, CAN3-A231.2)
- 25mm – Bedding Sand
- 100mm – Base Course Granular A (OPSS 1010)
- 400mm – Subbase Course Granular B Type II (OPSS 1010)
- Total thickness of 605mm

For a full description of the geotechnical findings and the recommendations, see the Geotechnical Report in **Appendix I.**

## 7.8 Utilities and Other Municipal Services

The preliminary design was circulated to the Brampton PUCC for mark up of utility infrastructure. Based on responses from the PUCC, it was determined that Rogers and Alectra have poles, aerial and underground cables, and ground level box/transformer that would need to be relocated to construct the road extension. The utility relocation design should be further explored with the respective utilities and in coordination with the adjacent park development in detailed design and the detailed design drawings should be recirculated to the Brampton PUCC for review and comment. Alectra should be consulted to bring in power to the road right-of-way for future farmer markets and events in Rosalea Park.

During detailed design, Peel Region and Riverwalk City staff should be consulted to determine whether municipal services, such as watermains or sanitary sewers, are required to be extended into the Rosalea Park area via the Ken Whillans Drive right-of-way.

## 7.9 Illumination

The streetlighting design (included in **Appendix G**) considers the use of this extension as a Shared Street with a mixed use and high pedestrian area, rather than a conventional roadway. Preliminary lighting design is based on 4.3m base mounted steel pole with pole top mounted luminaire; as per City of Brampton standard 523.

## 7.10 Streetscaping

Streetscaping and furnishings have not been detailed in the preliminary design beyond identifying "Pedestrian and Furnishing Zones" as part of the street design option. A Streetscape Manual is being prepared by the City of Brampton for the Downtown Brampton area. During detailed design, streetscaping elements should be added to the design plans and should be designed in accordance with the Downtown Brampton Streetscape Manual to complement the City's Integrated Downtown Plan as well as the City's Complete Streets Guidelines that is currently being developed. Streetscaping should also be designed in consideration of the DBFP detailed design also occurring in the study area. The use of soil cell technology as a stormwater management strategy and to promote trees in an urban environment, in this case within the pedestrian furnishing zone, shall also be explored in detailed design.

## 7.11 Construction Staging

As the proposed road extension is largely through undeveloped, manicured park area, the section of the Ken Whillans Drive Extension from north of the existing driveway/cul-de-sac entrance of the YMCA to Church Street may be constructed "offline" without any impact to current traffic and/or access other than construction vehicles.

Construction of the section from the YMCA entrance to Church Street could be done first, thereby providing an alternative access to/from the YMCA via the new road and Church Street, while the section between Union Street and the YMCA entrance is rebuilt. Regardless of which works occur first, access for the YMCA should be maintained at all times and impacts to the accessway should be communicated to YMCA in advance.

## 7.12 Preliminary Cost Estimate

The preliminary construction cost estimate for the preferred alternative is $2,110,000.

# 8.0 Impacts and Mitigation Measures

## 8.1 Transportation Environment

Construction of the preferred design could have potential impacts on the transportation environment, particularly impacts to traffic flow and patterns along Church Street, Ken Whillans Drive, and Union Street. A traffic management plan / construction staging plan will be developed during detailed design to minimize impacts to traffic and access, where possible.

Emergency service providers were contacted during this EA study, but should be contacted again prior to construction to make sure they are aware of the potential traffic disruptions resulting from construction.

The Transportation and Safety Assessment Report in Appendix A also reviews the future traffic conditions of the Ken Whillans Drive extension. Findings determined that all extension scenarios would attract vehicles to the area but the recommended solution of extending to the west resulted in the smallest traffic increase (3%). The road will accommodate cars for local access so some traffic is expected, however, during detailed design, design of the roadway and additional measures should be considered to mitigate speeding.

The report also reviewed impacts to the intersections of Ken Whillans Drive / Church Street and Union Street / Nelson Street where the extension would connect into. Both intersections are anticipated to operate at acceptable or good levels of service. Church Street is anticipated to have some east-west traffic constraints from projected growth but will still operate acceptably.

## 8.2 Socio-Economic Environment

### 8.2.1 PROPERTY REQUIREMENTS AND ACCESS

Most of the extension is located on property owned by the City of Brampton. Some permanent property is required from the YMCA and some property will be required as a temporary easement for construction and grading works. The City of Brampton will work with YMCA to acquire the permanent and temporary property needs. A property plan is included in Appendix G.

The access to YMCA will need to be maintained at all times as the construction work will disturb the existing access road. Access to YMCA should be incorporated into the traffic management plan and YMCA should be consulted during detailed design and construction with regards to access.

### 8.2.2 AIR QUALITY

During construction, air quality can be temporarily degraded due to dust and/or emissions from construction activities and equipment. Activities include vehicular traffic in open construction areas, dust from storage piles, unloading materials, and the operation of construction equipment. The following measures are recommended to mitigate the temporary air quality impacts of construction:

- Keep construction machinery and equipment in good operating condition.
- No unnecessary idling of vehicles and limit the speed of vehicular traffic through the construction site.

- Dust suppressant measures are to be used to reduce dust emissions, when appropriate. Non-chloride dust suppressants for the entrainment of fugitive dust is preferred.
- Regular cleaning of the construction site, access roads, and construction vehicle sto remove construction-caused debris and dust.
- All haul equipment should be covered when hauling fine-grained materials.
- Stockpiles of fine-grained materials should be covered and stabilized, particularly during dry or windy periods.

### 8.2.3 NOISE IMPACT

There will be temporary noise impacts as a result of construction work, however the magnitude of the impacts will vary greatly throughout the construction period. The following measures are recommended to mitigate the noise impacts of construction:

- Limit noise construction activities to daytime hours, where possible.
- Where work is required outside of regular daytime work hours, the contractor should try to minimize noise generated.
- Where works take place outside of the hours permitted by the City of Brampton noise by-law, an exemption should be obtained from the City of Brampton and proper notification to residents should be provided.
- Equipment should be properly maintained and in good operating condition and comply with MECP NPC-115 guidelines.
- If complaints regarding construction noise arise, the contractor must investigate and verify that the noise control measures agreed to are in effect. In the presence of persistent noise complaints, alternative noise control measures may be required.

### 8.2.4 WASTE AND CONTAMINATION

A Phase I ESA was conducted and recommends additional testing be undertaken based on PCAs and APECs identified for the road extension. Based on the Phase I ESA findings, soil quality investigations should be conducted for the purposes of soil management for the road extension project. Groundwater investigations should be conducted for the purposes of groundwater management during construction activities. In addition, as property acquisition is required, confirmation is required from the Region of Peel or City of Brampton on whether a Phase II ESA is required as part of the property acquisition process.

## 8.3 Natural Environment

The analysis of potential impacts was determined by reviewing the preliminary preferred design for the Ken Whillans Drive extension to determine the extent of the impacts on natural features within the study area. It should be noted that potential impacts associated with future staging areas have not yet been determined.

Direct impacts that may occur due to the Project are those associated with the disruption or displacement of natural features caused by the undertaking or activity which may be temporary or permanent (i.e., increased footprint due to permanent infrastructure). Construction is expected to be limited to landscaped parkland (i.e. Constructed Green Lands) including the removal of planted park trees. Most direct impacts occur during the construction phase of a project and contain localized, negative effects that can be reduced through avoidance (as much as possible) and proper construction practices.

Indirect impacts may also occur due to the proposed works and are typically associated with changes in site conditions such as surface drainage, water quality/quantity, increased noise, etc. Most indirect impacts during the construction phase are temporary or can be reduced/avoided with the application of best management practices and mitigation measures. Following construction, there may be more long-term, indirect impacts while the site recovers. Typically, after the site re-vegetates, there is either a neutral or positive impact due to the placement of intentional native plantings, improved sediment control and surface drainage runoff control. Proper design and best management practices can mitigate long-term effects.

The proposed works for the Project include vegetation removal, excavation, grading, paving and other associated construction activities. These activities are expected to result in disturbance and vegetation removal in the parkland, however, are unlikely to encroach natural features. The following sections detail the direct and indirect impacts associated with construction activities, however for full details refer to the Natural Environment Assessment Report in Appendix C. Impact potential to candidate SWH and SAR is considered low as the proposed works are expected to be contained within built areas and the parkland. Future mitigation and compensation can be considered in conjunction with the improvements as part of Riverwalk and Rosalea Park, including coordination with the Riverwalk UDMP's Resilience, Sustainability and Healthy Development Strategy.

### 8.3.1 DESIGNATED FEATURES

Designated features are present within the study area and adjacent lands and include Urban River Valley Greenbelt Area, a City of Brampton (2020) Valleylands and Watercourse Corridor, TRCA Regulated Area, and TRCA's target NHS. Most of the study area and the preliminary design falls within the TRCA Regulated Area. The other designated areas and features within the adjacent lands and the study area and not expected to be impacted by the proposed works, as the preferred preliminary design extending into these features are contained within already paved/disturbed areas. Designated features should be avoided where possible through design.

### 8.3.2 VEGETATION AND VEGETATION COMMUNITIES

The majority of the study area and adjacent lands consist of constructed communities and most of the greenspace is maintained parkland associated with Rosalea Park and the Etobicoke Creek recreational trail. Naturalized vegetation communities are primarily associated with Etobicoke Creek and the adjacent lands with fragmented or small deciduous woodlands also present within the study area, however these communities will not be impacted by the proposed works.

A tree inventory and health assessment of all trees within the Tree Inventory Area was completed on August 12, 2021. A total of 150 trees including seven (7) groupings were documented within the Tree Inventory Area. A summary of the species and number of trees within each diameter range is provided in the Natural Environment Assessment Report. Several invasive and non-native species were documented throughout the Tree Inventory Area. Based on the preliminary design, approximately 45 trees and shrubs will be injured or removed to facilitate the Ken Whillans Drive extension as summarized in Table 15 below. Most of the trees and shrubs impacted are within City of Brampton property associated with Rosalea Park and should be replaced post-construction as per the City of Brampton's (2018) Tableland Tree Assessment Guidelines. Of the seven (7) trees within private property associated with the adjacent YMCA, five (5) of these trees have a DBH greater than 30 cm and will require a tree removal permit prior to removal as per the City's Tree Preservation By-law.

TABLE 15: SUMMARY OF POTENTIAL TREE AND SHRUB IMPACTS

| Location / Ownership | Potential Impact | Trees/Shrubs | Total |
|---|---|---|---|
| City of Brampton | Remove | 10 trees<br>25 shrubs | 38 |
| | Injure | 3 trees | |
| Private | Remove | 6 trees | 7 |
| | Injure | 1 tree | |
| | | TOTAL | 45 |

Additional potential impacts to vegetation and vegetation communities during construction include:

- Soil compaction which can affect growing conditions if replanting is proposed in those areas following construction.
- Injury to trees outside of the construction limits if the proposed works occur within the root zones.
- Damage to vegetation due to fugitive dust suppression, salt spray effects, sedimentation, and accidental spills (e.g., fuel, oil, other hazardous materials).
- Changes to community structure due to the introduction and spread of invasive species.
- Exposure of soils from vegetation clearing, grubbing and grading can result in sediment runoff discharging into nearby terrestrial and aquatic communities.

The following mitigation measures and opportunities are provided to minimize potential impacts to vegetation and natural features in the study area and adjacent lands:

- Avoid encroachment of nearby woodlands and the removal of large native trees (e.g. tree IDs 42, 43 and 45) wherever possible through design.
- Staging areas shall be sited in built-up (e.g. developed) and disturbed areas to minimize impacts to natural features.
- Install surface protection measures to minimize soil compaction in areas where post-construction plantings are proposed.
- The boundaries of the project limits, and trees marked for removal or preservation shall be clearly marked in plans/drawings and in the field.
- Install tree protection fencing along the dripline to protect the root zone of trees adjacent to the work zone and project limits.
- In the case of unexpected vegetation removal or accidental damage to trees, vegetation shall be replaced and/or restored.
- Temporarily disturbed areas shall be restored and vegetated to pre-construction conditions or better. Vegetation plantings shall include seed mixes that are appropriate for the area, and include a mix of native species, including salt-tolerant varieties (as needed) that are appropriate to the site and conditions.
- Compensation as per the City's (2018) Tableland Tree Assessment Guidelines shall be followed. Five (5) trees larger than 15 cm DBH located within the City's property are identified to be removed. As such, 17 replacement trees will be planted or a Cash-in-Lieu rate option for compensation of $500 per tree, $8,500 total, will be paid to compensate for their removal. Tree compensation shall be discussed in conjunction with the Riverwalk UDMP project as there may be opportunities to replant outside of the road right-of-way.

- Maintaining and enhancing the naturalized buffer between the Ken Whillans Drive extension and Etobicoke Creek into the design is also recommended to slow potential runoff into the watercourse. Plantings in this area will be explored through the UDMP.
- During detail design, opportunities for tree plantings within the street extension right-of-way or in Rosalea Park should be explored, including sustainable planting technologies that also address stormwater management and tree health. An Arborist Report should be prepared to document the tree removal and compensation requirements. Plantings should be considered in coordination with the vegetation enhancement as part of the Riverwalk UDMP project.

To address invasive and noxious species management, the following mitigation measures should be followed:

- Develop and implement invasive species management measures that includes measures for the removal, storage, and treatment of invasive species if encountered. These measures shall follow guidance documents such as the Ontario Invasive Plant Council's (2020) Best Management Practices Series available online at https://www.ontarioinvasiveplants.ca/resources/best-management-practices/.
- Implement the Clean Equipment Protocol for Industry (Halloran et al., 2013) to minimize the introduction and spread of invasive species.
- Opportunities for enhancement in the study area include removal of non-native and/or invasive species, utilizing a native seed mix and native species for tree plantings, and restoration of disturbed areas with native species following construction.

### 8.3.3 TERRESTRIAL WILDLIFE AND WILDLIFE HABITAT

The majority of wildlife habitat potential is found in the adjacent lands associated with Etobicoke Creek which contain several naturalized communities, including woodlands and designated features associated with the watercourse. These naturalized areas have the potential to support candidate SWH (including SoCC) and SAR. Etobicoke Creek also provides habitat for fish and aquatic species. Encroachment of these natural features is not expected; however, general impacts to wildlife that may occur due to Project activities include temporary loss, disturbance, and alteration of habitat; disruption and avoidance of habitat; and injury and incidental take.

All vegetated communities and some built areas provide generalized wildlife habitat primarily for common species typical of urban environments. The proposed works have the potential to result in temporary generalized wildlife habitat loss during construction, however permanent habitat loss is not anticipated.

The proposed works have the potential to result in habitat alteration, disruption and avoidance of habitat during construction and operation of the road extension. The following impacts are identified:

- Fugitive dust and salt spray which can affect the health of species.
- Construction activities, such as grading can alter community structure, affect species composition and habitat quality due to changes in moisture regime, flow volume, rates, and water quality if natural drainage pathways are not maintained.
- Construction noise, vibration and increased human presence can result in disruption and avoidance of habitat. While most wildlife that occurs in urban environments are likely adapted, to some extent, to anthropogenic disturbances, such as traffic noise, excess or prolonged disturbances can cause impacts beyond tolerance levels. Construction noise may

result in habitat avoidance or disturbance to individuals where interference with vocalizations could disrupt breeding and other natural processes.
- Temporary loss of access to vegetation/structures currently being used for bird nesting or bat roosting (e.g., buildings, snag trees, etc.).

The proposed works have the potential to result in injury and incidental take during construction and operation of the road extension. The following impacts are identified:

- Collisions with vehicles, machinery, or physical barriers may occur if wildlife are able to access the construction limits (e.g., improper design or installation of exclusionary measures). Bats may also be susceptible to injury and/or incidental take, particularly if trees are removed while being occupied.
- Light pollution, including temporary and permanent lighting may cause disorientation or attract birds and bats to the area due to increased foraging potential which may result in injury or incidental take of individuals through collisions with vehicles or physical barriers.
- Migratory birds' nests and eggs are susceptible to incidental take during construction activities, especially during vegetation removal.
- Increased noise or the proximity of workers could cause nesting birds to temporarily vacate or completely abandon a nest in progress.
- Reptile hibernaculum that is discovered during construction, particularly in areas where there are building foundations or the roots of trees as this habitat type can occur anywhere that provides subterranean access below the frost line.

The following mitigation measures and opportunities are provided to minimize potential impacts to vegetation and natural features in the study area and adjacent lands:

- Time vegetation removals to occur outside the active season for birds and bats.
    - Birds: April 1 to August 31 (active season)
    - Bats: April 1 to September 30 (active season)
- Restrict construction activities to work areas and demarcate construction boundaries to prevent off-site encroachment.
- Direct artificial light away from natural areas to minimize disturbance to wildlife habitat.
- Avoid idling and ensure construction vehicles and machinery are kept in good repair.
- Where feasible, minimize the extent and duration of construction noise and lighting during sensitive seasons and to daylight hours.
- Additional surveys or consultation with the MECP to determine permitting requirements may be required if a potential snag tree that was not assessed needs to be removed.
- If vegetation removal or other activities that could impact birds is required during the active breeding period, prior to undertaking the proposed works a search for nests shall be completed by staff trained in conducting nest sweeps.
- Nest searches shall be completed within 48 hours or immediately prior to the proposed works.
- If an active nest is found within the work area at any time (including times outside of the typical nesting season), construction in the vicinity must cease until the young birds have fledged or the nest is otherwise abandoned.
- A setback from the nest (e.g., 30 m) shall be identified by a Qualified Biologist and the area demarcated to ensure work does not occur within the setback limits.
- Conduct daily visual inspections for wildlife prior to the start of construction. If wildlife are encountered during construction, whenever possible, work shall be temporarily suspended until the species is out of harm's way. If relocation is necessary, a Qualified Biologist shall be

contacted, and the species shall be handled and transported following the MNRF (2015b) Ontario Species at Risk Handling Manual: For Endangered Species Act Authorization Holders. All injured wildlife (SAR or non-SAR) shall be transported to an authorized wildlife rehabilitator.

- Wildlife shall not be harmed or harassed.
- Any SAR observed must be reported to MECP within 24 hours.

### 8.3.4 SAR AND SAR HABITAT

The study area provides limited habitat for SAR which is primarily restricted to the parkland which may support Redheaded Woodpecker and the small deciduous woodlands which may provide habitat for SAR bats. There were no trees with cavities suitable for Red-headed Woodpecker nesting identified within the Tree Inventory Area therefore suitable breeding habitat is not anticipated to be impacted by the proposed works. Furthermore, the woodlands that may provide habitat for SAR bats will not be impacted based on the preliminary design. Impacts to SAR is limited to injury and/or incidental take during construction works.

### 8.3.5 FISH AND AQUATIC RESOURCES

The study area is located in the West Branch of the Etobicoke Creek watershed basin. The only drainage feature identified within the study area that provides fish and aquatic habitat is the Etobicoke Creek. Impacts to Etobicoke Creek are not expected based on the preliminary design as the Ken Whillans Drive extension is more than 30 m southwest of the top of bank. Furthermore, fish and aquatic habitat adjacent to the study area is limited as the creek flows through a trapezoidal concrete channel. Proper erosion and sediment control measures should be implemented to contain all construction material and debris to the construction footprint to minimize risk of off-site impacts to the creek. Potential drainage paths of road salt to Etobicoke Creek should be considered in the design process and in coordination with the DBFP and Riverwalk UDMP projects.

### 8.3.6 EROSION AND SEDIMENT CONTROL

The following erosion and sediment control (ESC) measures shall be implemented to prevent erosion and sediment from traveling offsite:

- Determine and implement Erosion and Sediment Control (ESC) measures prior to construction to prevent erosion and off-site sedimentation.
- Maintain vegetative buffers and retain natural vegetation to the extent feasible, to help control erosion.
- Timing of vegetation removal shall consider rainfall and other weather conditions that could increase the likelihood of erosion and sedimentation.
- Minimize the extent and duration of exposed soil and cover areas to suppress dust and prevent sedimentation due to wind and rainfall erosion.
- Re-vegetate disturbed areas as soon as possible to help re-stabilize soils. Vegetation plantings shall include a seed mix that is appropriate to the area and similar to or better than pre-construction conditions.
- Selection of ESC measures shall be appropriate for the site and extent of disturbance, and potential impacts to wildlife, such as entanglement. For example, measures that contain plastic or wire mesh or netting shall not be used.
- ESC measures shall be installed prior to vegetation removal and remain in place until vegetation has become established and soils re-stabilized.
- Remove non-biodegradable ESC materials, where approved, once site is stabilized.

- ESC measures shall be inspected to confirm they are installed in accordance with manufacturer's instructions and maintained to ensure controls are working effectively and per design.

### 8.3.7 EARTH AND EXCESS MATERIAL, WASTE, REFUELING, SPILLS

- If feasible, avoid storing stockpiles of soil or vegetation on site as wildlife may be attracted to these areas.
- Develop and implement a Spill Prevention and Response Contingency Plan that includes measures for preventing, addressing, and reporting potential spills, in accordance with all applicable regulations, permits, and guidelines. Report any spills to the MECP Spills Action Centre hotline (1-800-268-6060).
- Spill kits shall always be kept on-site and accessible at all times. Equipment shall be maintained to be free of fluid leaks.
- All on-site materials shall be self-contained, maintained according to manufacturer's instructions, and disposed of appropriately to prevent entry of deleterious substances into the natural environment. Stockpiles, on-site hazardous materials, vehicle maintenance and refueling activities shall not be placed or occur within 30 m of a watercourse (i.e. Etobicoke Creek).
- Management of soils must comply with O. Reg. 406/19 On-Site and Excess Soil Management.

### 8.3.8 ENVIRONMENTAL TRAINING AND MONITORING

- Workers shall be educated on the key environmental aspects of the project, including wildlife protocols in the case of potential wildlife encounters (including SAR) on the work site, ESC measures, the Spill Prevention and Response Contingency Plan, invasive and noxious species management, recognizing demarcations of trees marked for preservation in the work zone and other environmental plans/protocols developed for the project.
- Monitoring shall occur to ensure mitigation and contingency measures are implemented and performance objectives are being met.
- Environmental monitoring during construction shall include, but not be limited to, monitoring activities to ensure spills and sediment releases are prevented or addressed quickly and effectively. ESC measures shall be checked daily and before, during, and after major rain events (>10 mm) to ensure it is installed and functioning properly. Any deficiencies shall be repaired immediately. A construction monitoring log shall be maintained to ensure any deficiencies and corrective actions are documented

## 8.4 Cultural Environment

### 8.4.1 CULTURAL HERITAGE

A review of built heritage features was completed and documented in Section 3.6.1. Table 16 below summarizes the potential or anticipated impacts of the recommended design on each cultural heritage resource.

TABLE 16: SUMMARY OF IMPACTS AND RECOMMENDED MITIGATION MEASURES FOR CULTURAL HERITAGE RESOURCES

| Feature ID | Potential/Anticipated Impact | Mitigation Strategy |
|---|---|---|
| BHR 1 – 3 Maple Avenue | It is understood that the limits of the proposed alignment are not adjacent to this BHR. No direct or indirect adverse impacts to this property are anticipated. | No further work required. |
| BHR 2 – 58 Church Street East | It is understood that the limits of the proposed alignment are not adjacent to this BHR as construction related impacts will be confined to the south side of Church Street East. No direct impacts to this property are anticipated.<br><br>Indirect adverse impacts due to construction related vibration are possible as portions of the remnant wall sit approximately 50 m from the proposed work. | Where feasible, the proposed alignment should be designed in a manner that avoids all impacts to BHR 2.<br><br>To address the potential for indirect impacts due to construction related vibration, undertake a baseline vibration assessment during detail design to determine potential vibration impacts.<br><br>As BHR 2 is listed on the City of Brampton's Heritage Register (City of Brampton 2021b), a resource-specific Heritage Impact Assessment (HIA) may be required as per clause 4.10.1.11 of the City of Brampton Official Plan. Email communication with the City of Brampton confirmed that a HIA should be completed for 58 Church Street East (BHR 2) during detailed design. |
| CHR 1 – Central School Neighbourhood | It is understood that the limits of the proposed alignment will be confined to the new road ROW for Ken Whillans Drive south of Church Street East and east of Union Street through an existing recreational property within the study area. No direct or indirect adverse impacts to this CHL are anticipated. | No further work required. |
| CHL 2 – Etobicoke Creek Flood Diversion Channel | It is understood that the limits of the proposed alignment will be confined to the new road ROW for Ken Whillans Drive south of Church Street East through an existing recreational property adjacent to the CHL. No direct adverse impacts to this CHL are anticipated. | Where feasible, the proposed alignment should be designed in a manner that avoids all impacts to CHL 2.<br><br>To address the potential for indirect impacts due to construction related vibration, undertake a baseline vibration assessment during detail design to determine potential vibration impacts. |

| Feature ID | Potential/Anticipated Impact | Mitigation Strategy |
|---|---|---|
| | Indirect adverse impacts due to construction related vibration are possible as the channel sits approximately 50 m from the proposed work. | As CHL 2 is listed on the City of Brampton's Heritage Register (City of Brampton 2021b), a resource-specific Heritage Impact Assessment (HIA) may be required as per clause 4.10.1.11 of the City of Brampton Official Plan. Email communication with the City of Brampton confirmed that a HIA should be completed for the Etobicoke Creek Flood Diversion Channel (CHL 2) during detailed design. |
| CHL 3 – Queen Street East Streetscape | It is understood that the limits of the proposed alignment are not adjacent to this CHL. No direct or indirect adverse impacts to this property are anticipated. | No further work required. |
| CHL 4 - Civic, Religious and Commercial Heart of Old Brampton | It is understood that the limits of the proposed alignment are not adjacent to this CHL. No direct or indirect adverse impacts to this property are anticipated. | No further work required. |
| CHL 5 – John Street and Mary Street Streetscape | It is understood that the limits of the proposed alignment are not adjacent to this CHL. No direct or indirect adverse impacts to this property are anticipated. | No further work required. |
| CHL 6 – Scott Street Streetscape | It is understood that the limits of the proposed alignment are not adjacent to this CHL. No direct or indirect adverse impacts to this property are anticipated. | No further work required. |

### 8.4.2 ARCHAEOLOGY

As the project will impact areas identified in the Stage 1 Archaeological Assessment (AA) as retaining archaeological potential, a Stage 2 AA is required and should be completed to clear all impacted areas of archaeological potential. No construction can proceed until lands have been cleared of archaeological potential. Should findings occur during Stage 2 AA, additional investigations, such as a Stage 3 or 4 AA, may be required.

All other areas as determined in the Stage 1 AA are clear of archaeological potential. However, should previously undocumented archaeological resources be discovered, the contractor should cease all work immediately and engage a licensed archaeologist to carry out archaeological fieldwork.

## 8.5 Climate Change

EA projects are required to assess how the project mitigates impacts on climate change and also how the project seeks to adapt to ongoing climate change impacts.

In terms of mitigation of further impacts on climate change, the shared street concept recommended by the EA is to promote access for active transportation modes of travel to Rosalea Park encouraging less use of the car. The connectivity provided by this road also lines up well with the MUP further north on Ken Whillans Drive and the GO station to the west.

With respect to adapting to climate change, increasing flooding and larger storm events are an ongoing challenge for municipalities, particularly as downtown Brampton is a flood hazard, associated with Etobicoke Creek. The City is undertaking a larger initiative, the Downtown Brampton Flood Protection (DBFP) project which this study has coordinated with. This road extension is planned to be implemented after the DBFP project, i.e. once this area is no longer a flood hazard area to further minimize flooding issues. This study is also associated with the Riverwalk UDMP which is currently developing a Resilience, Sustainability and Healthy Development Strategy that will apply to this study area. As part of the shared street design, minimal stormwater management is required as pavers will be used allowing most of the stormwater and runoff to infiltrate back into the ground, similar to existing conditions.

# 9.0 Additional Work, Permits, and Monitoring

## 9.1 Detailed Design Commitments

Section 8.0 identifies the impacts and mitigation measures associated with the proposed design. Below is a summary of additional works that are required to be completed during the detailed design phase of the project, prior to construction:

Transportation/Technical Requirements

- All detailed design work should be completed in close coordination with the City's Riverwalk and Downtown Brampton initiatives. There is potential for certain design elements to expand or be located beyond the road right-of-way, particularly those that tie into the use of Rosalea Park.
- Complete detailed design of the roadway extension including civil design, drainage (including consideration of LID), and illumination. TRCA should be consulted with for review of the civil and SWM designs.
- Detailed design of the roadway should meet accessibility design standards and consider widths that could accommodate mobility devices. Design should also consider ways to deter through traffic and speeding.
- Develop a Traffic Management Plan / Construction Staging Plan to minimize impacts to the traveling public and maintain road safety and vehicular access during construction.
- Coordinate with YMCA for impacts to their access road.
- Contact EMS prior to construction to advise them of the project.
- Coordinate with utilities requiring utility relocation. The detailed design drawings should be recirculated to the Brampton PUCC for review and comment.
- Peel Region and Riverwalk City staff should be consulted to determine what municipal services and electrical power are required in the Ken Whillans Drive right-of-way to service future use of Rosalea Park.
- Streetscaping elements should be added to the design plans and should be designed in accordance with the Downtown Brampton Streetscape Manual to complement the City's Integrated Downtown Plan as well as the City's Complete Streets Guidelines. Assess the use of soil cell technology as a stormwater management strategy and to promote trees in an urban environment as part of the streetscaping strategy.

Socio-Economic Requirements

- Complete property requirement plans and negotiate with YMCA to purchase property required.
- Complete soil and groundwater testing as per recommendations of the Phase I ESA. Confirm whether a Phase II ESA is required for property acquisition.

Natural Environment Requirements

- Confirm environmental impacts of the detailed design and obtain environmental permits, as required.
- Complete an Arborist Report to document the impacts to trees and the compensation required, based on the impacts of the detailed design.
- Incorporate ESC measures into the drawings.

Cultural Environment Requirements

- Complete a Heritage Impact Assessment (HIA) for BHR 2 and CHL 2. Due to potential indirect impacts at these two cultural heritage resources, a baseline vibration assessment should be completed during detailed design to determine potential vibration impacts.
- Complete a Stage 2 AA for areas impacted and determined to retain archaeological potential. If required, complete further assessments, namely Stage 3 and 4 AA.

## 9.2 Permits and Approvals

The permits and approvals in **Table 17** have been identified as required or potentially required.

TABLE 17: PERMITS AND APPROVALS SUMMARY

| Regulatory Agency | Legislation | Permit / Approval | Description |
|---|---|---|---|
| Ministry of the Environment, Conservation and Parks (MECP) | Ontario *Environmental Assessment Act* | Schedule 'B' Municipal Class EA | Satisfactory completion of EA requirements as per the Municipal Class EA in order to proceed with the implementation of the project. |
| | *Ontario Water Resources Act* | Permite To Take Water (PTTW) / Environmental Activity and Sector Registry (EASR) | PTTW required if >400,000 L/d of surface or groundwater taken, an EASR will be registered as a prescribed activity if the amount of water exceeds 50,000 L/d and is <400,000 L/d. |
| | *Environmental Protection Act* | Environmental Compliance Approval | Required prior to construction to ensure proposed works comply with MECP guidelines for sanitary, storm and water systems. Required if municipal services are part of the project. |
| Toronto and Region Conservation Authority (TRCA) | *Conservation Authorities Act*, O. Reg. 166/06 | Development and Interference with Wetlands and Alterations to Shorelines and Watercourses | A permit is required for works within TRCA Regulated Area, in this case, associated with the Etobicoke Creek floodplain. If the DBFP project is implemented in advance and this is outside of the Regulated Area, a permit may not be required. Nonetheless, TRCA should be consulted with during detailed design. |
| City of Brampton | Tree Preservation By-law 317-2012 | Tree Permit | By-law that regulates the injury and removal of trees greater than 30 dbh on private land in the City of Brampton. Required for tree removal on YMCA (private) property. Landowner's consent is required. |
| | Parklands By-law 161-83 | Permit | By-law that regulates the injury and removal of trees on municipal park land in the City of Brampton. Required |

| Regulatory Agency | Legislation | Permit / Approval | Description |
|---|---|---|---|
| | | | for tree removal on YMCA (private) property. |
| | Noise By-law 93-84 | Noise By-law Exemption | Required for construction works outside regular working hours. |

## 9.3 Monitoring

During construction, standard best management practices and construction monitoring should be undertaken to ensure that construction is occurring according to the design and that mitigation measures are implemented correctly and are functioning as intended. Through the permitting process, additional measures may be required.