Transportation

Region of Peel

The Gore Road
Class Environmental Assessment
Environmental Study Report

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Date:

November 2016

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Revision #	Revised By	Date	Issue / Revision Description
1	KG	Oct. 11, 2016	Revisions as per Oct 6, 2016 conference call

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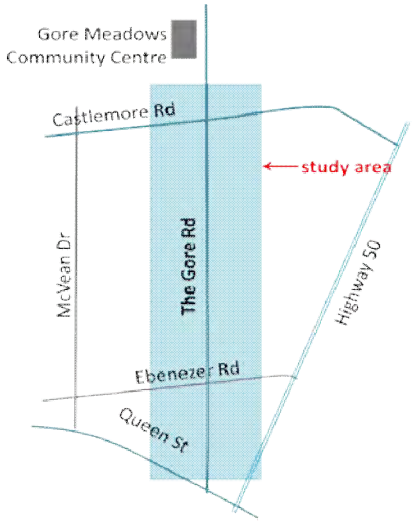
Executive Summary

A. Background



The Region of Peel has completed a Schedule 'C' Municipal Class Environmental Assessment (EA) study for improvements to The Gore Road between Queen Street and Castlemore Road. The study was initiated in response to the Region's Long Range Transportation Plan Update (2012). This Class EA Study was undertaken using a context sensitive solutions approach to provide a complete and environmentally sound transportation and road infrastructure improvement plan for the study corridor.

B. Municipal Class Environmental Assessment Planning Process

The EA process followed the guidelines of the Municipal Engineers Association (MEA) Municipal Class Environmental Assessment (October 2000, as amended in 2007, 2011 and 2015). There are 4 schedules for project classification: Schedule A, Schedule A+, Schedule B and Schedule C, rated according to their potential environmental impact and cost. Schedule C is the most stringent of the four processes and this EA was conducted in compliance with a Schedule C classification.

C. Consultation Program

Agency and potential public stakeholders were identified at the beginning of the study and a contact list was prepared for each group. Agency partners were invited to the Technical Advisory Committee (TAC) kick off meeting to review potential issues and areas of interest or concern. The TAC met several times and also participated with other agency stakeholders in a design workshop that resulted in agreed upon design principals. A list of public stakeholders was created from addresses within and adjacent to the study area. The larger public was invited to participate through placement of notices within local newspapers throughout the stages of the EA. The stakeholder lists were updated as the study progressed. Interest in

Highlights Recommended Design Alternative

- *Maintain the existing 4 lanes;*
- *Modify intersections for transit, active transportation and turning;*
- *Addition of bus stops/bus bays including a new bus shelter (in large island) at redesigned Queen Street/The Gore Road intersection*
- *Narrow lane widths;*
- *Improve safety with signalized bike/pedestrian crossing (location(s) - to be confirmed during detailed design);*
- *Signal timing improvements at The Gore Road and Queen Street intersection;*
- *Provide the opportunity for a healthy lifestyle through connections to multi-use trails;*
- *Sidewalks and raised cycle tracks on both sides of The Gore Road*
- *On east side of road at the 2 Wylie Bridges, multi-use trail around Wylies Creek*
- *Cross ride treatments at intersections;*
- *Pedestrian/cyclist crossings at school locations;*
- *LID to manage stormwater at various locations throughout The Gore Road corridor; and*
- *Streetscaping (to be confirmed during design).*

the project was considered to be any feedback received from a stakeholder indicating that they could be directly affected during the planning, construction and/or operation of the proposed undertaking.

A number of methods were undertaken to ensure robust public consultation including:

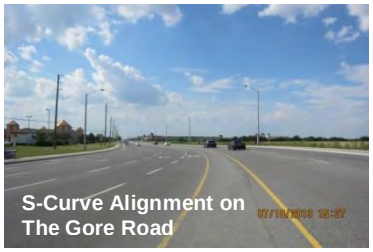
- placement of the Notice of Study Commencement and Public Information Centre #1, Notice of Public Information Centre #2 and Notice of Study Completion within the local newspapers (e.g. Brampton Guardian) on two separate dates before each event;
- distribution of door hanger notices to over 5000 residences in the study area;
- distribution of similar notice-post cards to over 200 local businesses in the study area;
- scheduling of two Public Information Centres, one during Phase 2 and one during Phase 3 of the study;
- placement of notices on the Region's website;
- information mailings to the public and agency stakeholders including First Nations groups during various stages of the study;
- receipt and response to written submissions, emails and phone calls;
- participation in meetings and telephone discussions with local schools, places of worship, agencies, utilities, stakeholders, the public and City of Brampton staff; and
- placement of this ESR on Public Record and provision of a Notice of Study Completion to agencies and the public during Phase 4 of the study.

D. Road Corridor Characteristics

The Gore Road is a conventional suburban four-lane arterial serving recently developed residential communities in the east part of Brampton, Ontario. Anticipating significant additional urbanization in and around the study area, the Region of Peel initiated the planning process to widen a four-kilometre segment of the road to six lanes, per its Long Range Transportation Master Plan.

Initial study findings revealed a few constraints and issues that would challenge the six-laning concept:

- The Gore Road has an awkward S-curve alignment in order to set up a perpendicular crossing at Queen Street with double left turns and channelized right turns, it is not friendly for pedestrians or transit users, and the double lefts conflict with one another and force an inefficient signal operation at a critical location.


S-Curve Alignment on The Gore Road


Ebenezer Community Hall

- At the Ebenezer Road intersection, a heritage church and cemetery on one side kitty-corner from a heritage community hall (recently shifted a few metres west to accommodate the four-laning), would make six-laning difficult.

- The two creek crossing structures had been kept as narrow as possible during the


West Humber River Tributary at Sou
Wylies Bridge-East Side of Road

four-laning in order to avoid impacting the creek bed; six-laning would bring the creek hydraulics (the road is overtopped at the Regional flood levels), fluvial geomorphology, and natural environment into consideration. The sidewalks on the bridges are relatively narrow and have splash guards, which hamper snow clearance and pedestrian movements in winter.


Castlemore Public School

- The Castlemore Public School on the west side of The Gore Road draws almost all its students from the east side, served by a signalized crosswalk; the prospect of two more lanes to cross raised safety concerns.

Lack of Cycling Facilities

- There are no provisions for cycling in the corridor, despite the 70 km/h speed limit and the three schools present; school children and residents tend to cycle on the sidewalk, or not cycle at all.

A feasible six-lane plan per the Region's objectives was developed and considered. However, the traffic modelling done as part of the study area review, revealed the interesting situation whereby widening The Gore Road was not seen to actually yield an improvement in future traffic conditions. The modelling confirmed that widening would simply add more traffic to key intersections that are already operating at capacity during peak periods.

E. Proposed Road Corridor Improvements – Complete Streets Approach

Moving forward, the Region and its study team seized the opportunity to not only retain The Gore Road at four lanes but to transform it into a corridor for all the community by applying Complete Streets principles to its redesign. The specific tools applied to The Gore Road include:

*A **"Complete Street"** is designed for all ages, abilities and modes of travel. On Complete Streets, safe and comfortable access for pedestrians, bicycles, transit users and people with disabilities is not an afterthought, but an integral planning feature.*

Source: Complete Streets Canada

- Reconfiguration of its major traffic intersections to be more functional and safer for non-auto users;
- Ensure transit priority through queue jump lanes and bus bays;
- Reduced speed limit and lane widths to help slow traffic;
- Tighter intersection layouts to benefit pedestrians and cyclists; including crossrides that are painted alongside pedestrian crosswalks to reflect cycling needs;
- New in-boulevard cycle tracks to provide a safe cycling environment alongside a dedicated pedestrian sidewalk system;
- A unique segment of multi-use trail and eco-learning zone which avoids bridge and stream impacts; and
- Low Impact Design for in-corridor stormwater management.

The boulevards will be completely reconstructed to accommodate narrowed lanes, cycle tracks, bus bays, and sidewalks. Cycle tracks are intended to function in one direction, and are linked by crossrides at each intersection. Path connections are recommended at selected locations to

link The Gore Road facilities to nearby recreational path and bike lane segments. All of this is to be accomplished to the greatest extent possible within the existing right-of-way, so as to avoid acquiring or impacting private property. At the same time, the right-of-way that could ultimately accommodate a six-lane right-of-way is defined in order to ensure that no new development infringes on it.


One-Way Cycle Track & Sidewalk


Cross-section and Plan View

Improvements to the Queen Street Intersection include:

- Realignment of The Gore Road to allow southbound and northbound double left turns to occur simultaneously, thereby reducing delays while retaining pedestrian crosswalks on all approaches;
- Realignment would also permit elimination of two of the four free-flow channelized right turns, to create a safer pedestrian and cyclist environment; and
- A carefully-designed larger island in the northwest quadrant would allow the southbound bus stop to be moved close to the intersection, to better serve transferring bus passengers; a “Smart Channel” design brings right turning vehicles to a stop before turning, rather than providing a free-flow move that challenges pedestrians to cross the roadway safely.

Refer to illustration below of the proposed Queen Street and The Gore Road intersection design.

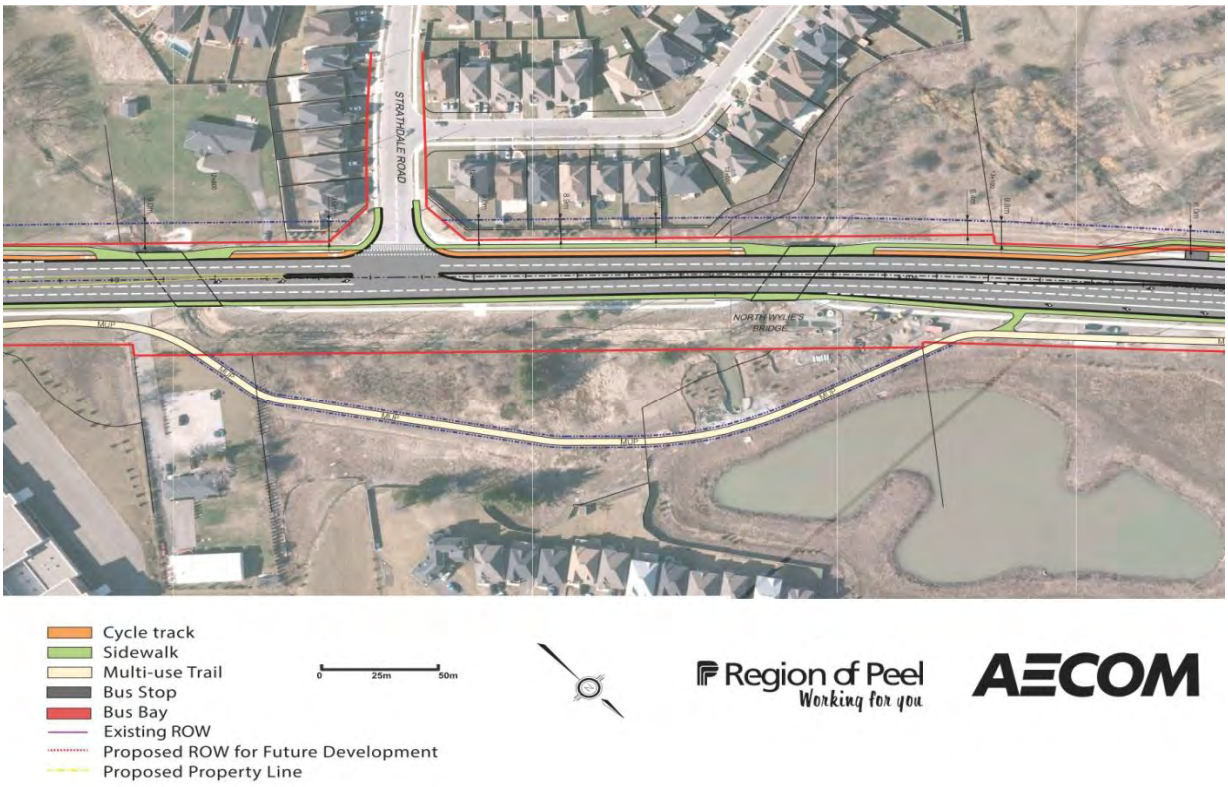
Proposed Queen Street/The Gore Road Intersection Design

Humber River Tributary (Wylie's Creek) Bridges

The decision to maintain The Gore Road at four lanes avoided most of the issues associated with widening or replacing the two bridge crossings (250 m apart) in the study area. However, the introduction of cycling facilities means that the bridge decks are not wide enough to accommodate both sidewalks and cycle tracks.

Creating new pedestrian or cycle structures immediately adjacent to the road bridges would be costly and trigger significant concerns about impact on the streambed, fluvial geomorphology, hydraulic capacity, and overall feasibility. Instead, the Region is proposing a reconfiguration of the roadway to allow four lanes, a reduced-width median, sidewalks, and a west-side cycle track within the existing bridge deck. The east-side cycle track is altered into a multi-use trail that veers off the road alignment and passes through a natural area to the east of the creek (which stays immediately adjacent to the road). This east-side trail travels on a berm holding back a municipal stormwater management pond and links the two secondary schools in the corridor. Some private property will be required for the trail. Refer to the following figure for an illustration of the multi-use trail.

Humber River Tributary (Wylie's Creek) Bridges



F. Stormwater Management / Low Impact Design (LID)

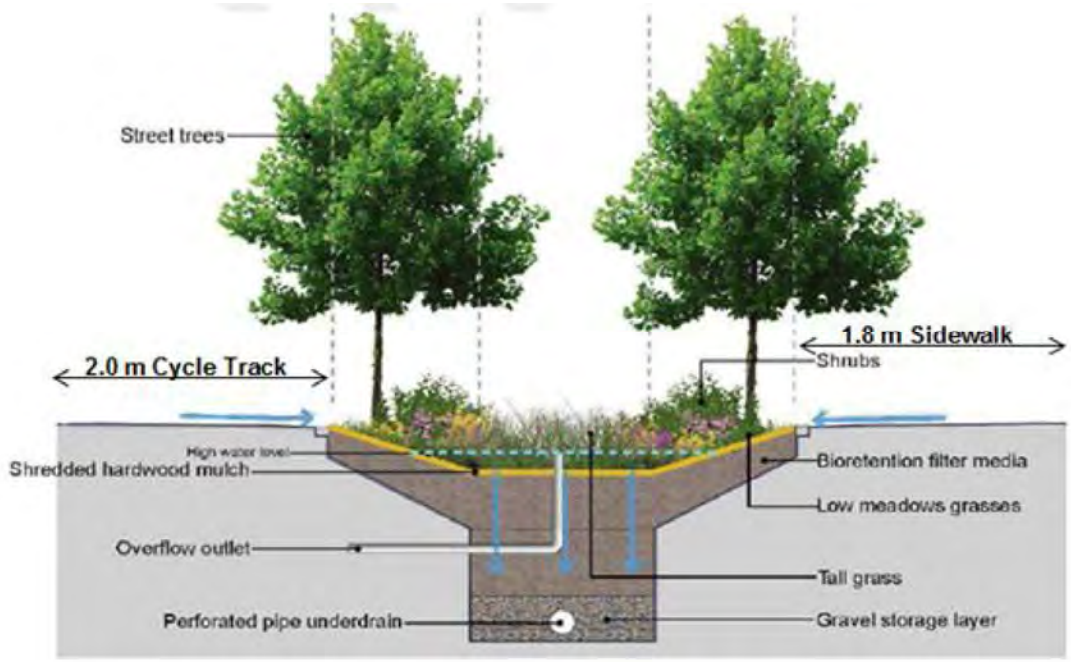
Maintaining a four-lane roadway within a 46m right-of-way that is wide enough for six lanes preserves an opportunity, recognized by the Region of Peel and the Toronto Region Conservation Authority (TRCA), to implement LID stormwater management practices to complement the existing conventional "pipes and ponds" stormwater management techniques. The approach is to consider the entire road allowance rather than just LID pockets, with the system being designed to mimic the natural hydrology of the area.

Example 1 of Stormwater Management

Example 2 of Stormwater Management

Bioretention is a stormwater filter and infiltration practice which temporarily stores, treats and infiltrates runoff. The available space between the proposed cycle track and sidewalk is proposed for bioretention as shown in the following sketch.

Typical Cross Section for Bioretention area between Cycle Track and Sidewalk along The Gore Road (Source: CVC, TRCA LID Guidelines – Figure 13 modified for road corridor)



G. Remaining Approvals

The Region of Peel will work with the TRCA, MNRF, MOECC, Ministry of Tourism, Culture and Sport and the City of Brampton and Brampton Hydro prior to the start of construction during detailed design to ensure that the proposed works are acceptable and to obtain required permits. The Region will also secure all permanent and temporary easements during detailed design.

H. Capital Construction Schedule

Under the Region's 2016 Capital Roads Construction Program, The Gore Road (Queen Street to Castlemore Road) is identified for roadway improvements under the following current schedule:

- Fall 2016 – 2020 – Detailed design, approvals and tendering; and
- 2020 / 2021 – Construction and post construction monitoring

The Region's Capital Construction Program is reviewed on an annual basis with respect to project schedules (accelerated or deferred), new projects and overall capital cost estimates and budget. Since the Capital Program is approved by Regional Council annually, the noted schedule for improvements under the 2016 Program are therefore potentially open to change. Lastly, recognizing the three schools along the road corridor, the timing of construction should try and avoid/minimize impacts to school operations, where possible.

I. Commitments

As the project moves into the design and construction phase, the construction project team will ensure:

Natural Environment:

- All regulatory requirements to protect the environment are followed;
- A tree protection and replanting plan is prepared;
- Construction occurs outside of the nesting bird window; and
- A visual reptile survey is prepared.

Social Environment:

- A traffic management plan is developed to minimize disruption during construction;
- Access to existing properties, business, institutions and commercial areas are maintained during and after construction; and
- The implementation of infrastructure to support healthy lifestyle activities (e.g. walking, biking, etc.).

Cultural Heritage and Archaeology:

- The completion of the Stage 2 archaeological assessment (as required) in detailed design; and
- No impacts to existing archaeological and cultural heritage resources.

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1. Introduction

1.1 Purpose of the Study

The Region of Peel (the Region), has completed a Schedule C Municipal Class Environmental Assessment for improvements to The Gore Road in the City of Brampton (see map).

A "Complete Street" is designed for all ages, abilities and modes of travel. On Complete Streets, safe and comfortable access for pedestrians, bicycles, transit users and people with disabilities is not an afterthought, but an integral planning feature.
Source: Complete Streets Canada

This Class EA study was undertaken to investigate the need for additional north-south capacity and traffic management improvements along the section of The Gore Road, from Queen Street to Castlemore Road, taking into consideration the road's identification as a major Regional arterial and primary municipal transit corridor.

The Region's Long Range Transportation Plan (LRTP) identified that The Gore Road corridor should be widened from the current four lanes to six lanes. This considers projected growth north of Castlemore Road and the future expansion of Highway 427. Following the Complete Streets approach, the study considered the future active transportation corridor needs and connections to other neighbourhoods. Using a Context Sensitive Design approach, this study followed a comprehensive and sound planning process that recognizes the multimodal transportation needs while protecting community features and cultural value.

1.2 Study area

The study area includes a 4.0 kilometre (km) section of The Gore Road (Regional Road 8) between 250 m south of Queen Street East (Regional Road 107) and 250 m north of Castlemore Road in the City of Brampton. The Gore Road's placement within the regional road context is shown in **Figure 1**. The study area is shown in **Figure 2**.

Figure 1 Study Context

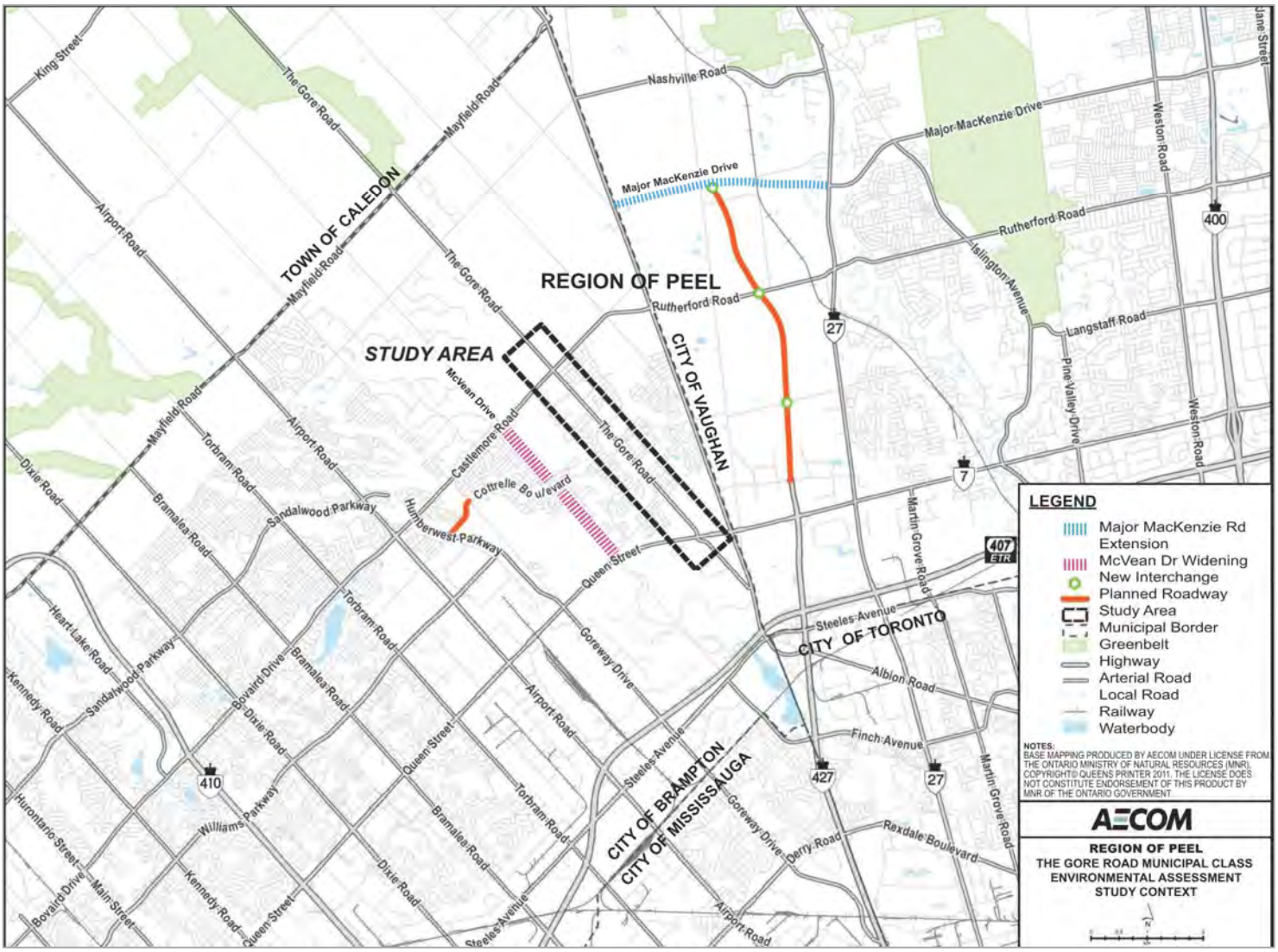
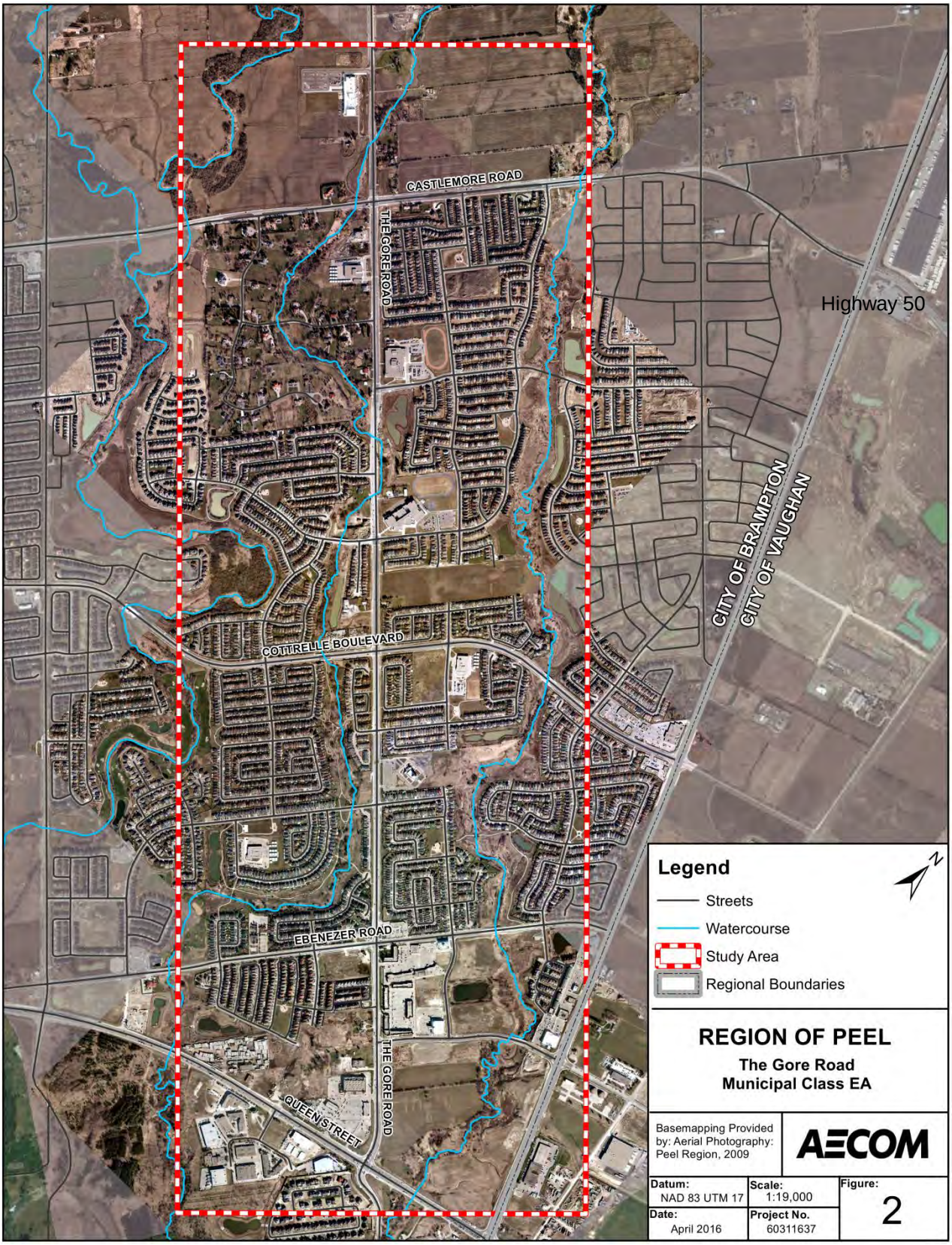


Figure 2 Study area

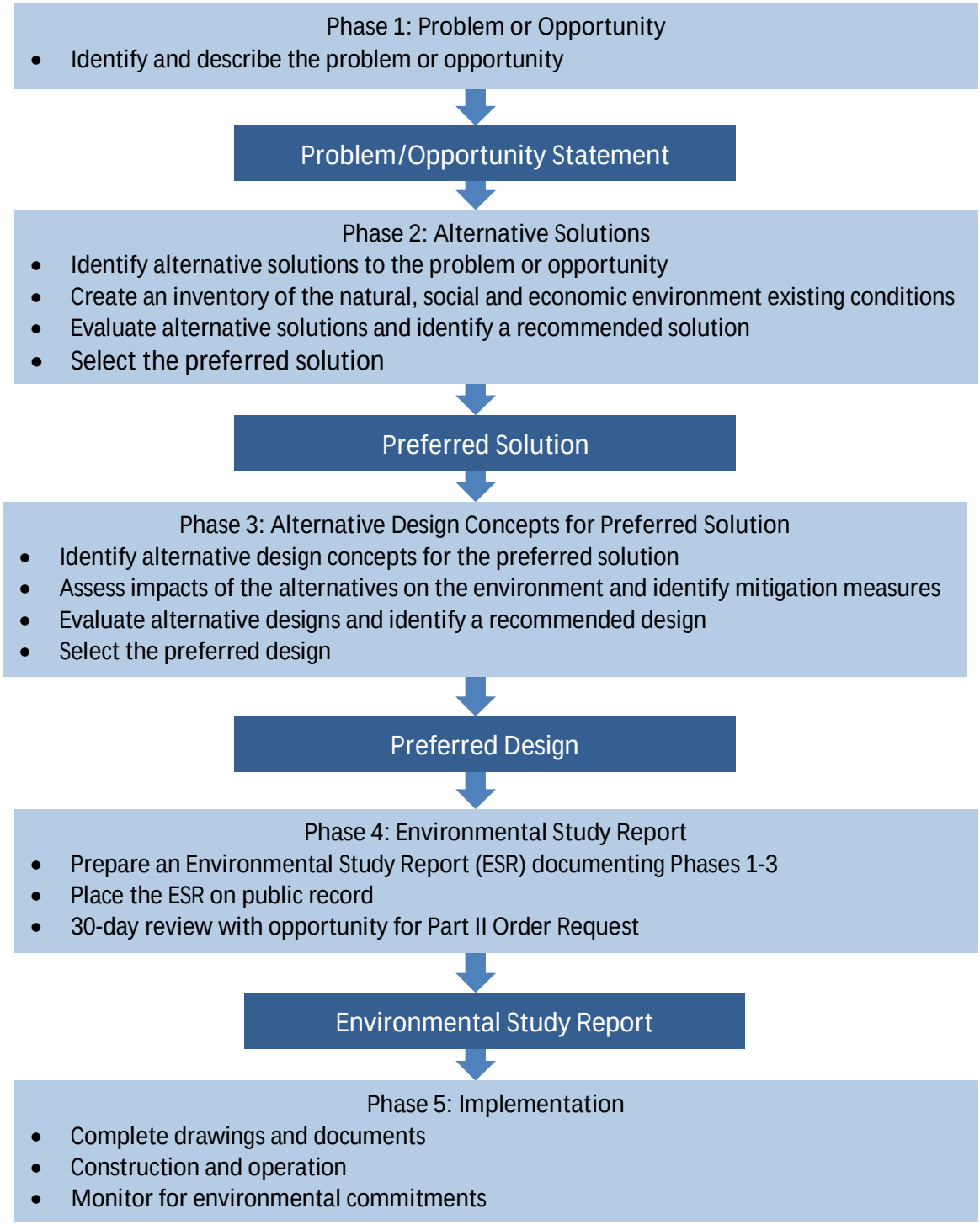


1.3 Environmental Assessment Process

In order to make changes to The Gore Road, the Region of Peel must meet the requirements of the Municipal Engineers Association (MEA) *Municipal Class Environmental Assessment* (EA) document (October 2000, as amended in 2007, 2011 and 2015).

As illustrated in **Figure 3**, the Municipal Class EA document outlines a five (5) phase planning and design process. A project is deemed to have met the requirements of the *EAA* if it is shown to have followed this process.

Figure 3 Municipal Class Environmental Assessment Process



The Municipal Class EA document classifies transportation improvements as either Schedule A, A+, B or C projects based on the anticipated level of impact. As road widening is among the alternatives being investigated in The Gore Road study, it is classified as a 'Schedule C' project, which involves completion of Phases 1 through 4 of the planning and design process (Phase 5 will be completed prior to construction).

It may be noted that the Region is not seeking EA approval under the *Environmental Assessment Act* for The Gore Road improvements project; all recommended municipal road project improvements fall under Schedule A+ and are already approved through the Municipal Class EA as long as they follow the Class EA process. The Region is simply demonstrating (through this document) that the study did in fact follow the EA process, thereby meeting the requirements of the Class EA. A Part II Order request (i.e. a request that the Minister of the Environment and Climate Change require the Region to undertake an Individual EA for the project, or to impose conditions on its implementation) is therefore only valid if it can demonstrate that the Municipal Class EA process was not followed; a Part II Order request will not be considered if it simply reflects a disagreement with the outcome of the study or is seen as a frivolous attempt to delay its completion.

1.4 Project Team Organization

AECOM Canada Ltd. was retained by the Region of Peel to assist it in completing the Class EA study. In order to address all aspects of the environment, the full range of technical issues, and the requirements of the EA process, this study is carried out by a large Project Team consisting of staff from the Region, AECOM and its subconsultants. The Regional team is led by Project Manager Neal Smith, C.E.T., Transportation, Infrastructure Programming & Studies (Public Works Division) while the consultant team operates under the overall direction of AECOM's Stephen Schijns, P.Eng. Other core key team members include the following:

Region of Peel	AECOM
• Sally Rook, Manager, Infrastructure Programming and Studies • Liz Brock, Technical Analyst, Infrastructure Programming & Studies	• Armin Naderi, Project Engineer • Karl Grueneis, Senior Environmental Planner • Jill deMan, Terrestrial Ecology • Wendy Ott, Fisheries Biologist • Adria Grant, Archaeologist • Javeed Khan, Water Resources Engineer • Jessica Mollo, Environmental Planner

2. Public and Agency Consultation

Public and regulatory agency consultation is an integral part of the Municipal Class EA process. For Schedule C projects, three (3) mandatory points of contact are required at key milestones. In addition, First Nations and Aboriginal peoples are important groups to consult, and the Municipal Class EA process identifies specific guidelines to engage those with interest in the study. A project specific communications and consultation plan was developed and used to provide a framework for informing and obtaining input from potentially interested and affected stakeholders during the course of the Class EA Study.

A summary of the consultation activities undertaken for The Gore Road Municipal Class EA is provided below.

2.1 Public Consultation Activities

2.1.1 Notice of Study Commencement and Public Open House #1

Notification of Study Commencement and Public Open House (POH) #1 was undertaken by publishing notices (refer to **Appendix A**) in the Brampton Guardian (May 8 and 22, 2014), and hand delivery of a door hanger (refer to **Appendix A**) to residents along and surrounding The Gore Road corridor (refer to **Appendix A** for a notification area map). Other notices included hand delivery of post cards (same as door hanger) to local businesses in addition to notice mail out to review agencies and stakeholders. Approximately 5,000 door hangers to residences and 200 post cards to businesses were distributed in the study area between May 26 and 27, 2014. The study team also held one on one meetings with local schools, religious leaders and several business store managers. Notice of POH #1 was also communicated via the Region's project web page www.peelregion.ca/TheGoreRoad which went live on Monday, May 15, 2014.

2.1.2 Public Open House #1

The first of two Public Open Houses was held on May 29, 2014 from 5:30pm to 8:30pm at the Gore Meadows Community Centre, Brampton. The POH was conducted in an open house (drop-in) format, with display material and study documentation available for review. Representatives from both the Region of Peel and AECOM were in attendance to discuss the information presented, receive comments and answer questions.

The purpose of the POH # 1 was to introduce the project, share study findings to date and seek comments on the following key information:

- Study background schedule and planning process;
- Road design considerations;
- Study area features;
- Existing conditions;
- Proposed evaluation criteria;
- Screening of long list of alternative ideas;
- Analysis and evaluation process; and
- Next steps.

A large roll plan of The Gore Road was also laid out in the middle of the room to generate discussion along with a board encouraging attendees to note elements of importance to be considered in the planning of the road improvements.

Seventeen people attended the POH including local residents, Regional Councillor John Sprovieri, Public Works Commissioner Dan Labrecque, developer consultants, and members of the general public.

2.1.2.1 Summary of Discussions and Comments Received

General one on one discussions and issues raised by attendees are summarized below:

- Request confirmation on The Gore Road and Queen Street intersection property impacts for following proposed developments (consultant representatives added to contact list):
  - South east quadrant (proposed gas station);
  - North east quadrant (proposed residential/mixed use development);
- Fogal Road/Gore Road Plaza traffic backs up on weekends – consider right turn exit lane to allow better flow outbound;
- What elements (e.g. multi-use path) can be advanced in next few years? (Councillor Sprovieri); and
- Safety concerns related to Castlemore Public School road crossing – consider bridge over The Gore Road.

Five comment sheets (refer to **Appendix A**) were received and are summarized as follows:

- Support for bicycle lanes;
- Road widening and any Queen Street intersection alignment should minimize property impacts – taking at north east corner of The Gore Road and Queen Street (proposed residential/mixed use development);
- Access to adjacent community facilities should be considered (e.g. Nanaksan Temple, Shopping Plazas);
- Study area includes many seniors who have specific needs;
- Do not support widening to 6 lanes or trucks on The Gore Road; and
- General support for the project.

Specific Feedback – The Gore Road's Role in the Community

The following areas of community importance were identified by several attendees through the use of post-it notes.

- Safety;
- Walking;
- Nature;
- Cycling;
- Bridges;
- School crossings;
- Approach to adjacent building;
- Stormwater Management;
- Aging society;
- Architectural look of adjacent buildings; and
- Transit.

The above was considered in the development of road improvement design concepts.

2.1.1 Notice of Public Open House # 2

Notification of POH # 2 was undertaken by publishing notices (refer to **Appendix A**) in the Brampton Guardian on February 11 and 18, 2016. The notice, along with a comment sheet was also sent to residents and businesses fronting The Gore Road corridor.

Regulatory agencies were notified of the second POH via letter (with a comment sheet) during the week of February 8, 2016. A Technical Agency committee meeting was held with the City of Brampton, Toronto and Region Conservation Authority, Enbridge and Bike Brampton prior to the second POH to present the preliminary recommended design concept and gather input on the concept. Any comments received were discussed and incorporated into the design of the project.

2.1.2 Public Open House #2

The second POH was held on February 23, 2016 from 6:30pm to 8:30pm at the Gore Meadows Community Centre, Brampton. The POH followed a "Places and Spaces" public outreach approach where the POH was conducted in the main hallway of the community centre as an open house (drop-in) format. This allowed the Region to reach a wider audience including those who via The Gore Road access-use the community centre. Display material was available for review and a large roll plan of The Gore Road preliminary recommended design was also laid out to generate discussion with those walking by. Representatives from both the Region of Peel and AECOM were in attendance to discuss the information presented, receive comments and answer questions.

The purpose of POH # 2 was to present:

- What has happened since POH # 1;
- The overall preliminary recommended design including property requirements;
- Key features of the preliminary recommended design that includes the "Complete Street" approach;
- Receive specific feedback on the best way to accommodate cyclists;
- Potential environmental impacts and methods of reducing the impacts; and
- Project schedule and next steps.

Eleven people signed into the POH including local residents, Regional Councillor John Sprovieri, Public Works Commissioner Dan Labrecque, developer consultants, members of Brampton Cycling Advisory Committee, Peel District School Board representatives, and members of the general public.

Numerous other passers-by (up to 30) reviewed the displays and discussed the project with staff but did not sign in. It is noted that many of those who did not sign in took a comment sheet.

2.1.2.1 Summary of Discussions and Comments Received

General one-on-one discussions with attendees showed support for the proposed cycle track and sidewalk or multi-use trail along the corridor and in front of schools. The cycling committee also supported the cycling facilities as they will provide connections to other areas of the City. There

were no complaints about congestion nor was any interest expressed in road widening. Some attendees were interested in the timing and implications on the corridor with respect to planned development to the north of the study area, infill within the study area, and the extension of Highway 427. There was general support for the study recommendations and no complaints about the project.

Directly impacted property owners attended and discussed their property situations in detail. This included the property owner at 9601 The Gore Road, located on the east side of The Gore Road at the south Wylie Bridge where property is needed for the multi-use trail.

Thirteen comment sheets (refer to **Appendix A**) were received and are summarized as follows:

- 11 out of 14 agreed with the "Complete Streets" approach presented;
- 9 out of 14 would use a raised cycle track, 2 out of 14 would not use a raised cycle track; and

- 9 out of 14 preferred a cycle track and sidewalk rather than a multi-use trail, 3 out of 14 preferred a multi-use trail.

The above feedback has been considered in the recommended design. Additional general comments received relate to the turning signals at the intersection of Castlemore Road and The Gore Road, and need for cycling improvements, shelters at bus stops, preference for cycle tracks and sidewalks and landscaping along The Gore Road. A discussion was also held regarding the widening of The Gore Road and how the traffic flows down the corridor, the bottle neck at the Queen Street intersection and how the improvements at this intersection will keep traffic moving. Additional comments can also be found in **Appendix A**.

2.2 Agency Consultation

2.2.1 Agency Mailing List

Regulatory agencies were notified of the Study Commencement and POH # 1 via letter, which included a copy of the Notice of Commencement and POH # 1 during the week of May 5, 2014. Copies of the notification letter and agency list are provided in **Appendix B**. Key agencies such as the City of Brampton and the Toronto and Region Conservation Authority (TRCA) were contacted prior to the release of the notice for information gathering purposes. The Notice of POH # 2 was also circulated to agencies and meetings were held with key agencies prior to the open house. Agency correspondence is included in **Appendix B**. Upon receipt of agency feedback, the agency mailing list was updated to maintain currency.

2.2.2 Review Agency Consultation

2.2.2.1 Project Kick Off and Technical Agency Committee Meeting # 1

A project kick off meeting was held on February 13, 2014 with representatives from the Region of Peel, City of Brampton and TRCA. The purpose of this meeting was to introduce the project, discuss anticipated issues and studies to be completed and to gather input from the agencies present.

2.2.2.2 City of Brampton

A meeting was held with the City of Brampton on April 8, 2014 to discuss existing and future conditions, approach to alternatives development and identify project issues and expectations.

A second meeting was held with the City of Brampton on November 23, 2015 to update the City on project status. The proposed preliminary recommended design was presented to the City to obtain comments. The City was in general agreement with the design and provided comments relating to the location of bus stops/bays. Following the meeting, bus stop/bay locations were modified on the design drawings (refer to **Appendix C**).

The POH # 2 display boards were circulated to the City for review and comment. The City's street lighting section responded on February 5, 2016 providing comments on the City's street lighting requirements. These requirements are noted in Section 8 as a commitment for detailed design and construction.

On February 23, 2016 the City requested traffic numbers for parallel City roads (e.g., McVean Drive and Clarkway Drive); the information was provided, with analytic commentary that outlined the relatively minor impacts that the Gore Road project might have on City roads.

The City was also an active participant on the TAC and a project design working meeting as described in Section 6.6.

2.2.2.3 Regional Council

A meeting was held with Regional Councillor Sprovieri, who represents Wards 9 and 10 on April 22, 2014 to introduce the project, and provide notification of the May 29, 2014 Public Open House # 1. City Councillor Dhillon was also invited however, he was unable to attend. Other items discussed included community issues and considerations related to The Gore Road and approach to community consultation.

An email was sent to Councillor Sprovieri and Councillor Dhillon on February 8, 2016 which provided details regarding POH # 2. A meeting was held on February 22, 2016 to provide the Regional Councillor and the City Councillor an opportunity to review the preliminary recommended design and display boards. Both councillors were forwarded all notices and documentation.

2.2.2.4 Toronto and Region Conservation Authority

A meeting was held with the TRCA on March 5, 2014 to discuss the overall project with a focus on the two West Humber River Tributary crossings. TRCA's main concerns include filling, extensions and how the tributary will fit in between the two bridges. The preferred design does not involve modification to the existing Wylie's bridges abutments or in water works. As such, the Tributary of the West Humber River will remain as is. As described in Section 7, the preferred design for The Gore Road is either a uni-directional cycle track and sidewalks (on both sides of the corridor) or a two way multi-use trail on both sides of the corridor, with the west side multi-use trail on the existing bridges.

TRCA responded to the Notice of Study Commencement and Public Open House on May 21, 2014 requesting a copy of the POH display materials for their files. A response was provided directing TRCA to the project website where relevant project information can be found.

A site visit was conducted on October 23, 2014 with TRCA to facilitate a high level discussion of the alternatives and potential impacts to the three West Humber Tributary (Wylie's Creek) crossings. TRCA indicated a preference for infrastructure (i.e., culvert works) to be established at a skew to the watercourse and that any in water works would require permitting and assessment

for fresh water mussels. It is noted that since the site visit, it was determined that The Gore Road is not being widened to six lanes and as such, culvert replacement is not required.

A meeting was held with TRCA on October 9, 2015 to present design alternatives and provide a project status update. TRCA was in agreement that optimizing the four lane cross section with the west side multi-use trail on the existing bridge has the least amount of impact to the floodplain and watercourse.

TRCA responded to the Notice of POH # 2 noting staff is unable to attend the POH, but acknowledges that the display boards will be available on the Region's website.

TRCA was also an active participant on the TAC and a project design workshop as described in Section 6.4.

2.2.2.5 Technical Agency Committee Meeting # 2

A technical agency committee (TAC) meeting was held on December 15, 2015 to present the preliminary recommended design and gather input on the design. Attendees at the meeting included representatives from the Region of Peel, City of Brampton, TRCA, Enbridge and Bike Brampton. Concerns expressed at the meeting included cyclists and pedestrians sharing a multi-use trail and approach to stormwater management. TRCA requested that the tributary on the west side of The Gore Road, north of Castle Oaks Crossing remain open. Following the meeting, it was confirmed that this tributary will remain open.

2.2.2.6 Ministry of Natural Resources and Forestry

A meeting was held with the Ministry of Natural Resources and Forestry (MNRF) on April 8, 2014 to review the project and understand road design and permitting-approval considerations with a focus on the three water crossings and Species at Risk (SAR).

2.2.2.7 Infrastructure Ontario

Infrastructure Ontario and Lands Corporation (OILC) responded to the Notice of Study Commencement and Public Open House # 1 on May 15, 2014 with comments to assist the study team in identifying and avoiding potential negative impacts to IO lands (i.e., provincially owned or managed properties) and in identifying potential MOI Class EA triggers. This project does not impact IO lands.

2.2.2.8 Brampton Bicycling Advisory Committee

A meeting with a representative from the Brampton Bicycling Advisory Committee (BBAC) was held on June 16, 2014 to introduce the study and gather input regarding the provision of bike facilities including current level of safety, linkages and multi-use trails.

Representatives of the BBAC provided comments following the POH and were supportive of the separated cycle track and sidewalk.

2.2.2.9 Ministry of the Environment and Climate Change

The Ministry of the Environment and Climate Change (MOECC) responded to the Notice of Study Commencement and Public Open House # 1 on June 20, 2014. MOECC's response identified areas of interest (e.g., ecosystem protection and restoration, surface/groundwater, etc.) with the proposed undertakings and provided general comments to assist the project team in addressing these areas of interest. They also requested a copy of the draft Environmental Study Report (ESR) for review as well as a copy of the Notice of Study Completion and final ESR.

2.2.2.10 Other Meetings

A meeting was also held with one property owner on July 4, 2014 to explain the purpose of field investigations and obtain permission to enter. Copies of field investigation reports were also provided to the property owner.

2.3 First Nations Consultation

2.3.1 Study Notification Letter

First Nations groups/bands were notified of the Study Commencement and Public Open House #1 via letter, which included a copy of the Notice of Commencement and POH #1, on May 9, 2014. A First Nations mailing list and correspondence is included in **Appendix B.**

Alderville First Nation responded to the Notice of Study Commencement and Public Open House # 1 on May 28, 2014 indicating that the proposed project is deemed a level 3, having minimal potential to impact First Nations' rights. Alderville would like to be informed of any archaeological findings, burial sites or any environmental impacts, should any occur.

The Chippewa's of Rama First Nation responded to the notice on May 27, 2014 indicating that a copy of the notice has been forwarded to their Barrister and Solicitor for review and response and also requested that future notification be sent to this contact.

First Nations groups/bands were notified of the second POH via a notice letter on February 9, 2016. Also enclosed with the notice was a comment sheet.

The Mississaugas of the New Credit responded to the Notice of POH # 2 indicating that they do not have a high level of concern regarding the project and approves the continuation of the project. They also requested a copy of environmental and archaeological reports. The environmental and Stage 1 Archaeological Assessments will be provided to the Mississaugas of the New Credit First Nation once they are finalized.

2.4 Public and Stakeholder Consultation

2.4.1 Religious/Spiritual Institutions

2.4.1.1 Hindu Sabha Temple

A meeting was held with the leadership of the Hindu Sabha Temple on May 22, 2014 to introduce the project, provide notification of the first POH and understand how the temple operates in the community. It was noted that the temple's main activities, on Tuesday evenings and Saturdays, do not conflict with peak traffic periods. However, the temple does host numerous festivals, special guests, and events throughout the year; four or five times per year they might overlap with rush hour. No real traffic safety problems were noted, however, previously there was one minor collision during an event, and a fatality (unrelated) in front of the property three or four years ago.

Hindu Sabha Temple was notified of the second POH via a notice letter on February 9, 2016. Also enclosed with the notice was a comment sheet.

2.4.1.2 Sant Gyaneshwar Ashram

A meeting was held with Sant Gyaneshwar Ashram leadership on May 22, 2014 to introduce the project, provide notification of the first POH and understand how the temple operates in the community. The primary interest of this institution was traffic operations, road safety, and

access, particularly at the Fogal Road / The Gore Road intersection. The Region might consider a field study of the intersection operations to see if further improvements are possible.

Sant Gyaneshwar Ashram was notified of the second POH via a notice letter on February 9, 2016. Also enclosed with the notice was a comment sheet.

2.4.1.3 Chinmaya Vedanta Heritage Centre

A meeting was held with the leadership of the Chinmaya Vedanta Heritage Centre on May 23, 2014 to introduce the project, provide notification of the first POH and understand how the centre operates in the community. It was noted that the centre's events occurred mainly in the evenings and do not conflict with traffic peak periods; activity is relatively low - most of the time there would be 5 or 10 cars in the parking lot, with an occasional peak of up to 40 vehicles on Sundays. The only concerns with the corridor relate to dirt from constructions sites, garbage, and weeds in the right-of-way. The Region promised to advise the relevant authorities, and suggested that any complaints be directed to Brampton or Peel complaints lines.

Chinmaya Vedanta Heritage Centre was notified of the second POH via a notice letter on February 9, 2016. Also enclosed with the notice was a comment sheet.

2.4.2 Schools

2.4.2.1 Cardinal Ambrozic Catholic Secondary School

A meeting was held with the Vice Principal of Cardinal Ambrozic Catholic Secondary School on May 23, 2014 to introduce the project, provide notification of the first POH and understand how the school operates in the community. The school population is approximately 1,300 plus 100 staff. Approximately 36% of the students are bused from beyond a 4.8 km radius. Heavy traffic in the area makes getting the buses in and out a key issue. It was agreed that the bus pick up and drop off should not occur on The Gore Road. No particular collision problems have arisen despite the many curbside drop-offs on the area streets. It was also noted that the school would also be in support of a bike path along The Gore Road. Project staff offered to work with Geography, Science, or Environmental Sciences teachers to engage the school further in the project.

Cardinal Ambrozic Catholic Secondary School was notified of the second POH via a notice letter on February 9, 2016. Also enclosed with the notice was a comment sheet.

2.4.2.2 Castlebrooke Secondary School

A meeting was held with the Vice Principal of Castlebrooke Secondary School on May 23, 2014 to introduce the project, provide notification of the first POH and understand how the school operates in the community. The school population is approximately 1,450 plus 100 staff. There is very little busing or public transit use as a majority of students either walk, bike or are dropped off. Since the school currently only goes up to grade 11, it is expected that next year when the school extends to grade 12, more students will be driving. The major concerns noted include the intersection of Gardenbrooke Trail and The Gore Road, where heavy student volumes conflict with high-speed (70 km/h) traffic. It was also noted that the 40 km/h school zone to the north did not extend to the Castlebrooke area.

Project staff offered to work with Geography, Science, or Environmental Sciences teachers to engage the school further in the project; a Grade 11 class followed up (see below).

Castlebrooke Secondary School was notified of the second POH via a notice letter on February 9, 2016. Also enclosed with the notice was a comment sheet.

Youth Engagement

On October 17, 2014 the project team gave a lesson on transportation planning-road design and environmental assessment to the Castlebrooke Secondary School Grade 11 Environmental Studies Class. The lesson focused on the need for transportation planning and was structured as follows:

- Introduction to the project – personal connections to The Gore Road;
- Terrestrial ecology (trees and soil types);
- Aquatic biology (water quality, temperature and riparian zone);
- Fluvial geomorphology (depth of water and speed of flow); and
- Stormwater management (existing facilities and Low Impact Development (LID) principles).

The students were divided into four focus teams and completed field investigations that involved field data collection (e.g., species identification, watercourse temperature, depth, quality) and analysis. The project team followed up with the class on October 31, 2014 to help with interpretation of findings and presentation preparation. Students then presented their findings and recommendations, many of which related to improving traffic flow and safety.

2.4.2.3 Castlemore Public School

A meeting was held with the Vice Principal of Castlemore Public School on May 23, 2014 to introduce the project, provide notification of the first POH and understand how the school operates in the community. The school population was approximately 1,000 but has been gradually reduced to 600. There are only two buses that serve the school; the walk vs. auto drop-off/pick-up ratio for the rest of the students is about 60/40. The kiss & ride drive-through is well used but cars back up onto The Gore Road. Concerns that the school expressed included the increase in distance for pedestrians to cross The Gore Road (as a result of the recent road widening to four lanes) and reduced sidewalk storage space on the school property.

Castlemore Public School was notified of the second POH via a notice letter on February 9, 2016. Also enclosed with the notice was a comment sheet.

3. Project Need and Justification

The Gore Road (Regional Road 8) is operated and maintained by the Region of Peel. The Gore Road study area is situated entirely within the City of Brampton, which is a municipality in the Region of Peel. The Region has a two-tier planning system whereby planning responsibilities are divided between the Region and its three area municipalities.

The Region of Peel's 2012 Updated Long Range Transportation Plan (LRTP) identifies the need to widen The Gore Road from Queen Street to Castlemore Road to six lanes (starting in 2020) to meet future needs. The LRTP Update 2012 was conducted as a Region-wide transportation master plan that followed the requirements of the Master Plan process, as defined the Manual of the Municipal Engineers' Association *Municipal Class Environmental Assessment* (EA) document, including Phases 1 and 2 of the EA process. The LRTP was developed in consultation with area municipalities (including the City of Brampton) and with full regard for relevant provincial, regional, and municipal policies.

Having completed phases 1 and 2 of the Municipal Class EA, the Region's LRTP provides the need and justification for the widening of The Gore Road in the Regional context and need not be repeated here.

A copy of the LRTP can be found at:

http://www.peelregion.ca/planning/residents/transportation/LRTP-Report.pdf

4. Description of the Existing Environment

The following provides an overview of the existing conditions within the study area, including a summary of the transportation system and natural, physical, socio-economic, and cultural environments.

4.1 Transportation Infrastructure

4.1.1 The Gore Road

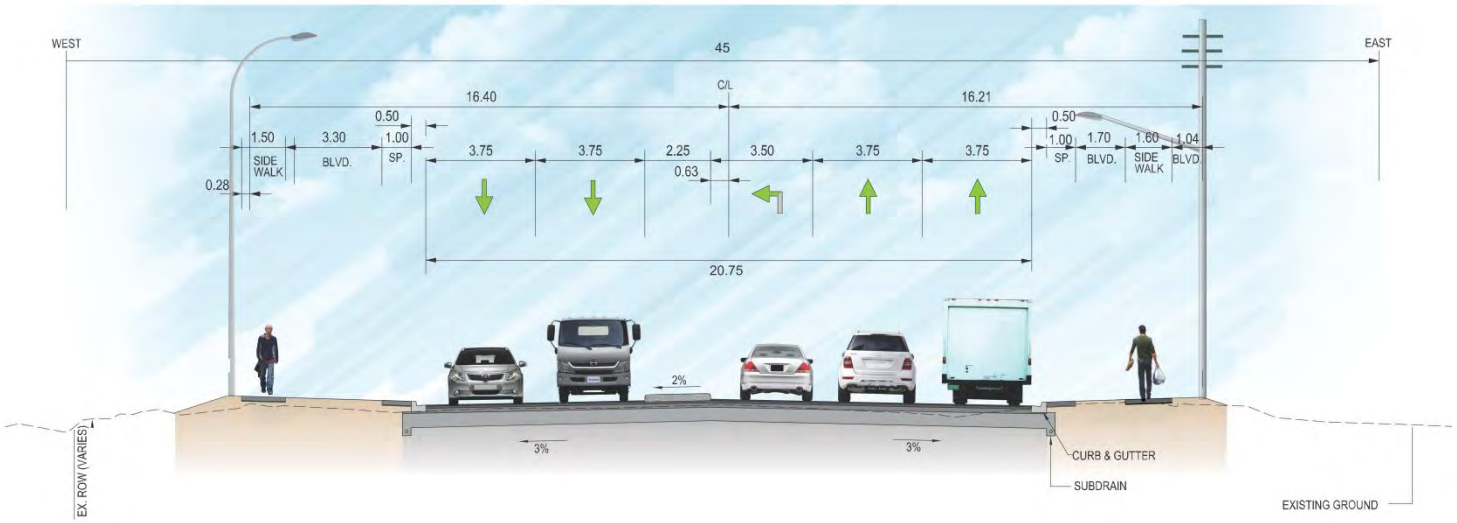
The Gore Road runs northwesterly for 33 km from its southern terminus at Highway 50 to the Regional boundary with Simcoe County at Highway 9. It is under the jurisdiction of the Region of Peel and is designated Regional Road 8.

The function of a Regional Road is to "provide a high transportation capacity for inter-municipal service. This is accomplished by controlling access to Regional roads to optimize traffic-carrying capacity and limiting the number and location of intersections with Regional roads in consultation with the affected area municipalities. Residential development adjacent to Regional roads will be protected from vehicular noise through noise mitigation, planning and design, and by ensuring appropriate noise attenuation measures at the time of development."[1]

The Gore Road is designated as a Major Arterial in the City of Brampton's Official Plan (OP), Schedule B (City Road Hierarchy) and as mentioned above is designated as a Primary Corridor in Schedule 2 of the Brampton OP. According to the OP, major arterial roads under the jurisdiction of the Region are designed to accommodate medium to high volumes of medium distance intra-regional traffic at medium speeds coupled with provision of transit services through transit priority measures or lanes. The arterials are usually designed with high degree of access control to minimize conflicts with mainstream traffic flow.

Within the study area, The Gore Road carries two lanes of traffic in each direction. The road was widened from one lane per direction over the past few years. Left turn lanes and a median two-way-left-turn-lane are provided as appropriate.

Typical Four Lane Cross Section



[1] *P. 12, Peel Long Range Transportation Plan Update 2012*

It has a posted speed limit of:

- 60 km/h between the south end of study limit to 400m north of Queen Street;
- 70 km/h between the section 400m north of Queen Street to 60m north of Cottrelle Boulevard;
- 60 km/h between the section 60m north of Cottrelle Boulevard to 365m north of Castlemore Road, incorporating
  - 40 km/h "when flashing" around the school zone between 35m north of Fitzpatrick Drive to 90m south of Castlemore Road.

The corridor within the study area features ten signalized intersections:

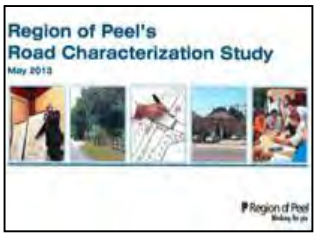
- Queen Street — Major Arterial (Peel Region Road 107)
- Fogal Road — Collector (Tee)
- Ebenezer Road — Collector
- Tyler Avenue / Don Minaker Drive — Collector
- Eastbrook Way — Local
- Cottrelle Boulevard — Minor Arterial
- Gardenbrooke Trail / Pannahill Drive — Local
- Castle Oaks Crossing — Local (Tee)
- Castlemore School Access — Local (Tee)
- Castlemore Road — Major Arterial

There are several unsignalized full-move intersections:

- Strathdale Road — Collector (Tee)
- Fitzpatrick Drive — Collector (Tee)
- Royston Street — Local (Tee)
- Commercial Plaza (NW corner of Queen St) — Private Entrance

There are a few private driveways and commercial plaza entrances on The Gore Road within the study area.

4.2 Peel Road Characterization Study (2013)



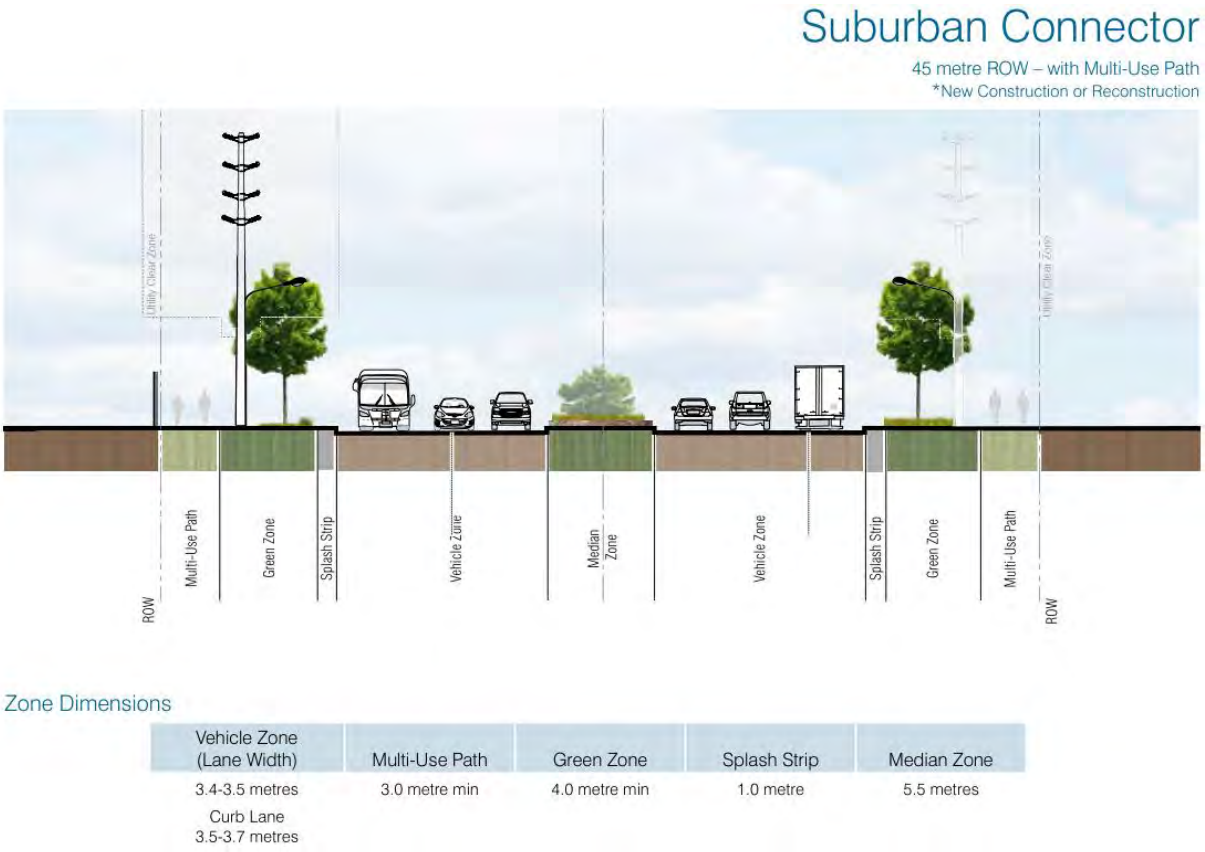
The Peel Road Characterization Study (RCS) is a Council approved report published in May 2013 that provides updated recommendations for access management and balancing the needs of all road users within a right-of-way, applicable to all Regional Roads (see http://www.peelregion.ca/pw/transportation/business/pdfs/rcs-full-report.pdf). The RCS maintains the arterial road classification of all Regional Roads while assigning one of six character typologies that describe the land use and transportation patterns along a segment of Regional Road. The segment of The Gore Road within the study area has been characterized as a Suburban Connector.

The Suburban Connector is generally the link between strip commercial retail development hubs and suburban housing. It has:

- auto-oriented development, with street fronting retail malls and located behind surface parking areas;
- reverse frontage residential development;
- some mid-density residential units often in the form of row housing or stacked units;
- Pedestrian traffic that is generally moderate, with isolated examples of high pedestrian activity; and
- Public transit service (bus).

In addition, bicycle traffic is low with limited integrated facilities and transit services the area, unlike automobile traffic which is intended to be free-flowing with limited access between major intersections.

The RCS provides a typical cross section for a six-lane Suburban Connector in a 45 m right-of-way, as follows:



The typical Suburban Connector cross section illustrates 45m ROW with 6 lanes, 3.0m multi-use path, both sides, green zones. The study segment of The Gore Road closely matches the Suburban Connector description, other than being four lanes wide.

However, The Gore Road, south of Castlemore Road, shares few characteristics with other Regional six-lane arterials (e.g. Airport Road, Mayfield Road, Erin Mills Parkway, Bovaird Drive). In particular, a six-lane arterial carrying longer-distance regional traffic would be expected to connect with a provincial 400-series highway and to support significant truck use. The Region has banned trucks from The Gore Road and it does not connect with a 400-series highway. In most respects, The Gore Road is more analogous to other regional four-lane roads and to municipal arterials.

The RCS also makes recommendations related to access management. **Table 3** shows the minimum intersection spacings that are recommended along Suburban Connectors.

Table 1 Minimum Intersection Spacing along Suburban Connectors

Spacing Between ↓ and →	Full	Left-In/Right-In/Right-Out	Right-In/Right-Out
Full	300 m	150 m	75 m
Left-In/Right-In/Right-Out	150 m	150 m	75 m
Right-In/Right-Out	75 m	75 m	75 m

Source: Peel Road Classification Study, 2013.

Left-turn lanes should be implemented at all intersections where left-turn movements are permitted. Right-turn lanes should be installed based on the results of a traffic impact assessment.

Section 1.1 has more information on how active transportation infrastructure should be designed at intersections and how such infrastructure may impact access management along The Gore Road.

4.3 Transportation Network Plans

4.3.1 Region of Peel

The Region of Peel Long Range Transportation Plan (LRTP) was prepared in 2005 and updated in 2012; see http://www.peelregion.ca/planning/residents/transportation/long-range.htm . The LRTP was carried out as an EA study and functions as the Transportation Master Plan for Peel Region. It is fully compatible with Provincial growth guidelines and policies. As a Regional road, The Gore Road is covered and governed by the Peel LRTP.

The LRTP focuses on responding to challenges of population growth, congestion, economic competitiveness, and sustainability. It notes that, “The road improvements (i.e. widening, intersection improvements) could strengthen the goods movement network and provide temporary relief of car congestion, but more importantly, it could reserve the space the Region may need in the future for other purposes such as transit-dedicated lanes, active transportation infrastructure and streetscaping. In order for the Region to maintain the high quality of life enjoyed by its residents, it must shift away from a culture of auto-dependency and auto-oriented development to one of sustainable, transit-oriented development.”

In the LRTP, Figure 4.15 shows that The Gore Road is planned to be widened to six lanes between Queen Street and Castlemore Road by 2021. The need and justification for these plans is based on traffic demand forecasting documented in the LRTP, as applied to various road network alternatives.

4.3.2 Brampton

The City of Brampton’s Transportation and Transit Master Plan (TTMP) was completed in 2004. Its key principles are:

- Coping with Growth;
- Sustainability, Efficiency, and Equity; and
- Containing Urban Sprawl and Promoting Quality of Life.

The TTMP aims to expand road capacity to accommodate growth while improving transportation alternatives to improve the sustainability of the overall transportation network and influence land use. Future transit mode share targets include:

- 15% for internal trips;
- 15% for key rapid transit corridors, such as Queen Street; and
- 70% to 80% for GO Rail corridor nodes.

Some key policies building on the 2004 TTMP vision include:

- Public transit is the first priority for moving people;
- Provision of a safe and comfortable pedestrian network;
- Increased modal share of transit; and
- Optimized goods movement systems.

Transit infrastructure and services to be implemented as a means of reaching those mode share targets includes Bus Rapid Transit (BRT) on Queen Street from Chinguacousy Road to the eastern City limit and a north-south BRT on Hurontario/Main Street for 2011. BRT operations on Steeles Avenue and Bovaird Drive are included in the 2021 plan.

In 2009, Brampton updated its 2004 Transportation and Transit Master Plan, calling it the **Sustainable Update** (see http://www.brampton.ca/en/Business/planning-development/projects-studies/TransportationandTransitMasterPlan/Pages/transportation-transit-master-plan.aspx). The purpose of the update was to ensure the plan reflected many changes since the original plan was adopted such as the new Official Plan, the creation of Metrolinx and its regional transportation plan, the Province's *Growth Plan for the Greater Golden Horseshoe*, and changes in forecasts and travel patterns. The update maintained the designation of Queen Street as a rapid transit corridor, reinforced by *The Big Move*, Metrolinx's Regional Transportation Plan. The recommended BRT network in this plan was adopted into the committed Züm network.

Additional recommendations in the Brampton TTMP include:

1. Implementation of Transit Signal Priority system to Primary Transit Corridors;
2. Provision of HOV lanes on 6-lane roadways;
3. Provision of queue jump lanes and bus bays on Züm and Primary Transit Corridors;
4. Provision of turning lanes where required and where feasible;
5. Segregation of slow moving traffic;
6. Minimizing pedestrian-vehicle conflicts while maintaining pedestrian-friendly streets and roads and minimizing size of intersections;
7. Exploring new Intelligent Transportation Systems (ITS) opportunities;
8. Traffic signal control systems;
9. Transit management systems; and
10. City-wide multi-modal traveller information systems.

Points 1, 2, and 3 are relevant to The Gore Road in particular, while the others are more general and should be taken into consideration in developing The Gore Road plan.

The 2009 Brampton TTMP scaled back the recommendation in the 2004 document that The Gore Road be widened to six lanes south of Queen Street; that segment is now recommended

for four lanes in the ultimate plan. North of Queen Street, The Gore Road remains as a six-lane roadway in the ultimate plans of both Brampton and Peel Region, with the Brampton TTMP showing the segment up to Cottrelle Boulevard widened by 2016 and the segment to Castlemore Road by 2021.

Brampton is currently undertaking the 2014 TMP review and update. Its conclusions are not likely to be available in time to provide significant input to the current EA study, so planning will continue to rely on the 2009 document in the meantime.

4.3.3 Ministry of Transportation of Ontario

Highway 427's current northern terminus north of Highway 7 is an interim situation. The Ministry of Transportation of Ontario undertook an EA study in the 2004 – 2010 period to determine the long-range plan for a northerly extension of the route. The recommended plan includes:

- A 6.6 km extension of Highway 427 northerly from Highway 7 to Major Mackenzie Drive with six lanes proposed from Highway 7 to Rutherford Road and four lanes proposed from Rutherford Road to Major Mackenzie Drive;
- New interchanges at Langstaff Road, Rutherford Road and Major Mackenzie Drive; and
- Protection for a dedicated transitway along the west side of the extension and three transitway stations.

The Highway 427 Extension EA report can be found at http://www.ene.gov.on.ca/environment/en/industry/assessment_and_approvals/environmental_assessments/projects/STDPROD_082704.html?page=3

Peel - Highway 427 Extension Area Transportation Master Plan

The Peel - Highway 427 Extension Area Transportation Master Plan study was carried out by municipal agencies (including Peel and Brampton) in 2006-09 in conjunction with the MTO's Highway 427 Extension study; the purpose was to understand the implications for the municipal road network of the Highway 427 plan. The study served to confirm the need to plan for widening The Gore Road to six lanes north of Castlemore Road as part of a system of road network improvements to serve the long-range travel needs in the area.

Queen Street Environmental Assessment (West Drive to Highway 50)

The Region of Peel carried out an Environmental Assessment study in 2001 for Queen Street between Highway 410 to Highway 50. The study recommended a six-lane configuration with curb lanes designated for transit priority. Transit-related intersection improvements were also recommended and have been implemented, but the curb lanes remain open to general traffic.

4.3.4 Transit

4.3.4.1 Bus Stops and Services

There are currently several bus routes that serve The Gore Road within the study area. **Figure 4** shows the overall Brampton Transit route network in eastern Brampton and the overall York Region Transit route network in western Vaughan. **Figure 5** includes the specific route maps for the Brampton Transit services running on The Gore Road.

The major route serving The Gore Road is Brampton Transit Route 50 – Gore Road. Route 50 begins near Castlemore Road at the Gore Meadows Community Centre and generally runs along The Gore Road and Highway 50/Albion Road, eventually to Humber College in Toronto. Through most of the study area, Route 50 serves both directions of The Gore Road; the

exception is between Castlemore Road and Castle Oaks Crossing, where only northbound service is on The Gore Road. Other services running along part of The Gore Road include[2]:

- The eastern end of Brampton Transit Route 23 – Sandalwood and the southern end of Brampton Transit Route 35 – Clarkway terminate using a one-way loop incorporating northbound The Gore Road from Queen Street to Ebenezer Road;
- The southern end of Brampton Transit Route 31 – McVean terminates using a one-way loop incorporating southbound The Gore Road from Cottrelle Boulevard to Queen Street; and
- The western end of York Region Transit Route 77 – Highway 7 terminates using a one-way loop incorporating northbound The Gore Road from Queen Street to Fogal Road[3].

There are other Brampton Transit services crossing The Gore Road on east-west streets:

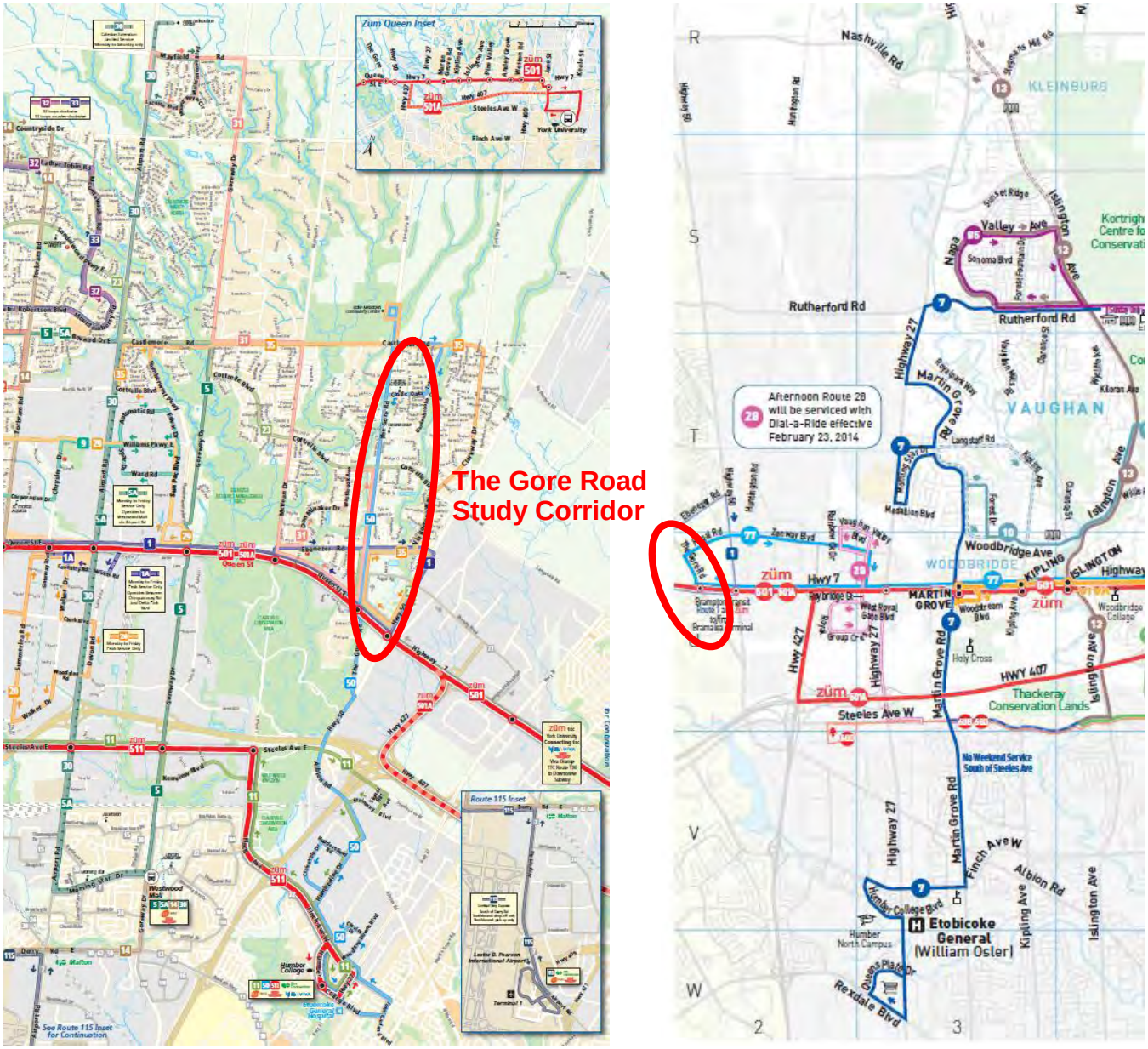
- Route 501/501A is a medium- to high-frequency, limited-stop service running along Queen Street from Downtown Brampton to York University. This service is branded as Züm and is discussed more in Section 4.3.4.2;
- Route 1 – Queen crosses The Gore Road eastbound on Ebenezer Road and westbound on Queen Street. Route 1 runs from Downtown Brampton to Highway 50, generally along Queen Street;
- Route 23 – Sandalwood also crosses The Gore Road on Cottrelle Boulevard. Route 23 runs from Mount Pleasant GO Station to Queen Street and Highway 50, generally along Sandalwood Parkway and Cottrelle Boulevard; and
- Route 35 – Clarkway also crosses The Gore Road on Castlemore Road. Route 35 runs from Airport Road and Castlemore Road to Queen Street and Highway 50, generally along Castlemore Road and Clarkway Drive.

[2] *Brampton Transit Route Schedules, various dates, retrieved March 17, 2014, and Brampton Transit Rider Guide, September 2013 Edition, retrieved March 12, 2014.*

[3] *York Region Transit System Map, Effective December 22, 2013, retrieved March 12, 2014.*

Figure 4 Brampton Transit and York Region Transit Routes in the Vicinity of the Study area

Brampton Transit **York Region Transit**



Sources: Brampton Transit Rider Guide, September 2013; York Region Transit System Map, December 2013; both retrieved March 12, 2014

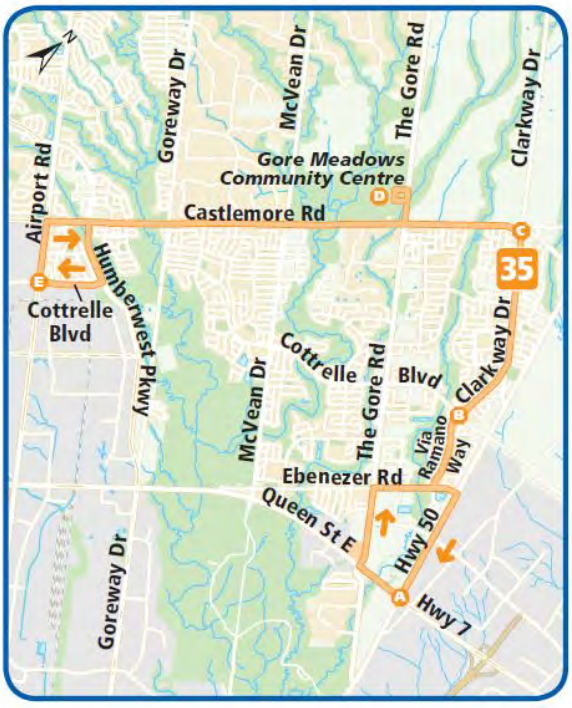
Figure 5 Brampton Transit Route Maps for The Gore Road Services

Route 50 – Gore Road

Route 23 – Sandalwood

Route 31 – McVean

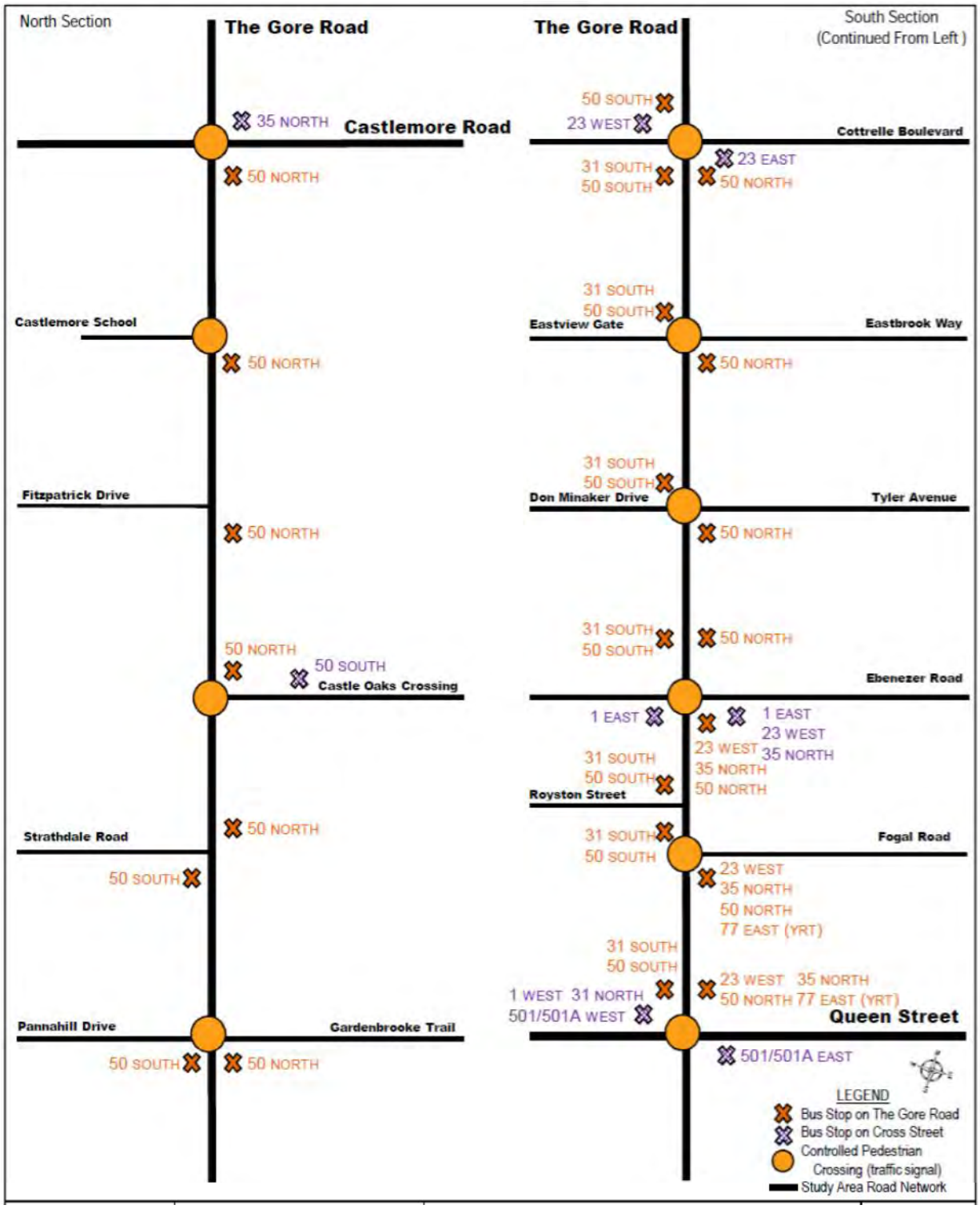
Route 35 – Clarkway



Source: Brampton Transit route schedules, retrieved March 17, 2014.

Figure 6 illustrates the bus stops in the study area along The Gore Road and on cross streets. This figure also shows the locations of controlled pedestrian crossings along The Gore Road. Note that some bus stops are not located near a designated, controlled pedestrian crossing; users of these bus stops must cross the street without a designated crossing or walk out of their way to cross the street.

Figure 6 Bus Stops in the Study area



Route 50 and the other routes along The Gore Road provide a base level of service to the segment of The Gore Road within the study area. **Table 2** outlines the approximate headways for routes serving The Gore Road.

Table 3 shows the average headways by direction along each segment of The Gore Road throughout the week. None of the individual services running on The Gore Road have headways low enough to be considered a "frequent" service; typically, headways must be approximately 10 minutes or less for a route to be considered frequent. However, along the northbound segment of The Gore Road from Queen Street to Ebenezer Road, the combined transit service during weekday peak periods can be considered to be frequent.

Table 2 Approximate Headways for Transit Routes Servicing The Gore Road

Time Period (with approximate spans of service)		**Brampton Transit**				**York Region Transit**
		Route 50 – Gore Road	**Route 23 – Sandalwood**	**Route 31 – McVean**	**Route 35 – Clarkway**	**Route 77 – Highway 7**
Weekday						
Early Morning	4:30 AM – 6 AM	40 min	30 min	No service	40 min	15 min
AM Peak	6 AM – 9:30 AM	20 min	15 min	30 min	40 min	15–21 min
Midday	9:30 AM – 3 PM	35 min	30 min	60 min	40 min	22–25 min
PM Peak	3 PM – 6:30 PM	20 min	15 min	30 min	40 min	15 min
Evening	6:30 PM – 1 AM	30–35 min	30–45 min	60 min (service ends approx. 7:30 PM)	No service	30 min
Saturday						
Morning	6 AM – 10 AM	35 min	30 min	No service	No service	31 min (service starts approx. 5:00 AM)
Midday	10 AM – 7 PM	35 min	30 min	60 min	40 min	31 min
Evening	7 PM – 12:30 AM	35 min	35–50 min	No service	No service	31 min
Sunday/Holiday						
All Day	8 AM – 10 PM	35 min	30 min (service ends approx. 8:00 PM)	No service	No service	42 min

Source: Brampton Transit and York Region Transit route schedules, retrieved March 17, 2014.

Table 3 Average Transit Headways on The Gore Road

Time Period (with approximate spans of service)		Castlemore to Cottrelle		Cottrelle to Ebenezer		Ebenezer to Queen	
		South-bound†	North-bound	South-bound	North-bound	South-bound	North-bound††
Weekday							
Early Morning	4:30 AM – 6 AM	40 min	40 min	40 min	40 min	40 min	12 min
AM Peak	6 AM – 9:30 AM	20 min	20 min	12 min	20 min	12 min	7 min
Midday	9:30 AM – 3 PM	35 min	35 min	22 min	35 min	22 min	12 min
PM Peak	3 PM – 6:30 PM	20 min	20 min	12 min	20 min	12 min	7 min
Evening	6:30 PM – 1 AM	30–35 min	30–35 min	20–22 min (30–35 min after 7:30 PM)	30–35 min	20–22 min (30–35 min after 7:30 PM)	15–20 min
Saturday							
Morning	6 AM – 10 AM	35 min	35 min	35 min	35 min	35 min	16 min
Midday	10 AM – 7 PM	35 min	35 min	22 min	35 min	22 min	12 min
Evening	7 PM – 12:30 AM	35 min	35 min	35 min	35 min	35 min	18–21 min
Sunday/Holiday							
All Day	8 AM – 10 PM	35 min	35 min	35 min	35 min	35 min	16 min (35 min after 8:00 PM)

Notes: Since headways of each route are not multiples of one another, the scheduled combined headways between buses will vary. Average headways are included in the table above.

† Southbound headways are for south of Castle Oaks Crossing only. There is no southbound transit service at any time between Castlemore Road and Castle Oaks Crossing.

†† Average transit headways northbound between Queen Street and Fogal Road are shorter than what is shown due to addition of York Region Transit Route 77 along this segment.

Source: Brampton Transit and York Region Transit route schedules, retrieved March 17, 2014.

4.3.4.2 Transit Plans

Metrolinx/GO Transit

Metrolinx, the regional transportation agency for the Greater Toronto and Hamilton Area (GTHA), published *The Big Move*, the Regional Transportation Plan in 2008.[4] The Plan does not contain any projects on The Gore Road itself; however, several projects are planned close to The Gore Road:

- Rapid transit on Queen Street from Downtown Brampton into York Region;

[4] *The Big Move, Schedules 1 and 2, retrieved March 17, 2014 from http://www.metrolinx.com/thebigmove/en/default.aspx.*

- Rapid transit along Highway 427;
- Rapid transit along Steeles Avenue from Lisgar GO Station to Highway 427;
- Bus rapid transit along Highway 407;
- Express rail service on the Kitchener Line from Downtown Brampton to Union Station in Toronto; and
- Peak-period commuter rail service on the Bolton Line from Bolton to Union Station in Toronto.

In 2013, Metrolinx selected a subset of projects from *The Big Move* as the "Next Wave" of transit projects to be implemented in the GTHA.[5] The Next Wave projects are not currently funded, but represent the list of priority projects to be funded when funding becomes available. One of the Next Wave projects includes rapid transit along Queen Street, eastward from Downtown Brampton. The project would involve the construction of dedicated transit lanes. The east limit of the project has not been defined, but is likely near Airport Road or Goreway Drive. A business case for this project has also been completed.

Brampton Transit

Along Queen Street, Züm Route 501 is a rapid, limited-stop express service operating every 7.5 minutes during peak periods between downtown Brampton and York University. Brampton Transit Route 1 is the main local route on Queen Street and provides service as frequent as 10 minutes during peak periods. Both services stop at The Gore Road intersection. **Figure 7** illustrates Brampton Transit's Züm network, and shows that The Gore Road station at Queen Street is the only point of interest for the current study.

Züm is the brand used on limited-stop bus services in Brampton ("light" bus rapid transit). The Züm web site is http://www.brampton.ca/en/residents/transit/zum/Pages/welcome.aspx .

Current Züm services are limited-stop services with moderate to high frequencies. Larger shelters with real-time information and off-board fare payment are installed at every stop. Transit signal priority and queue jump lanes have been installed at major signalized intersections. Dedicated buses are used, with higher-end finishes and distinct branding. Züm services are intended to be the initial phase of a more extensive bus rapid transit (BRT) system along major corridors.

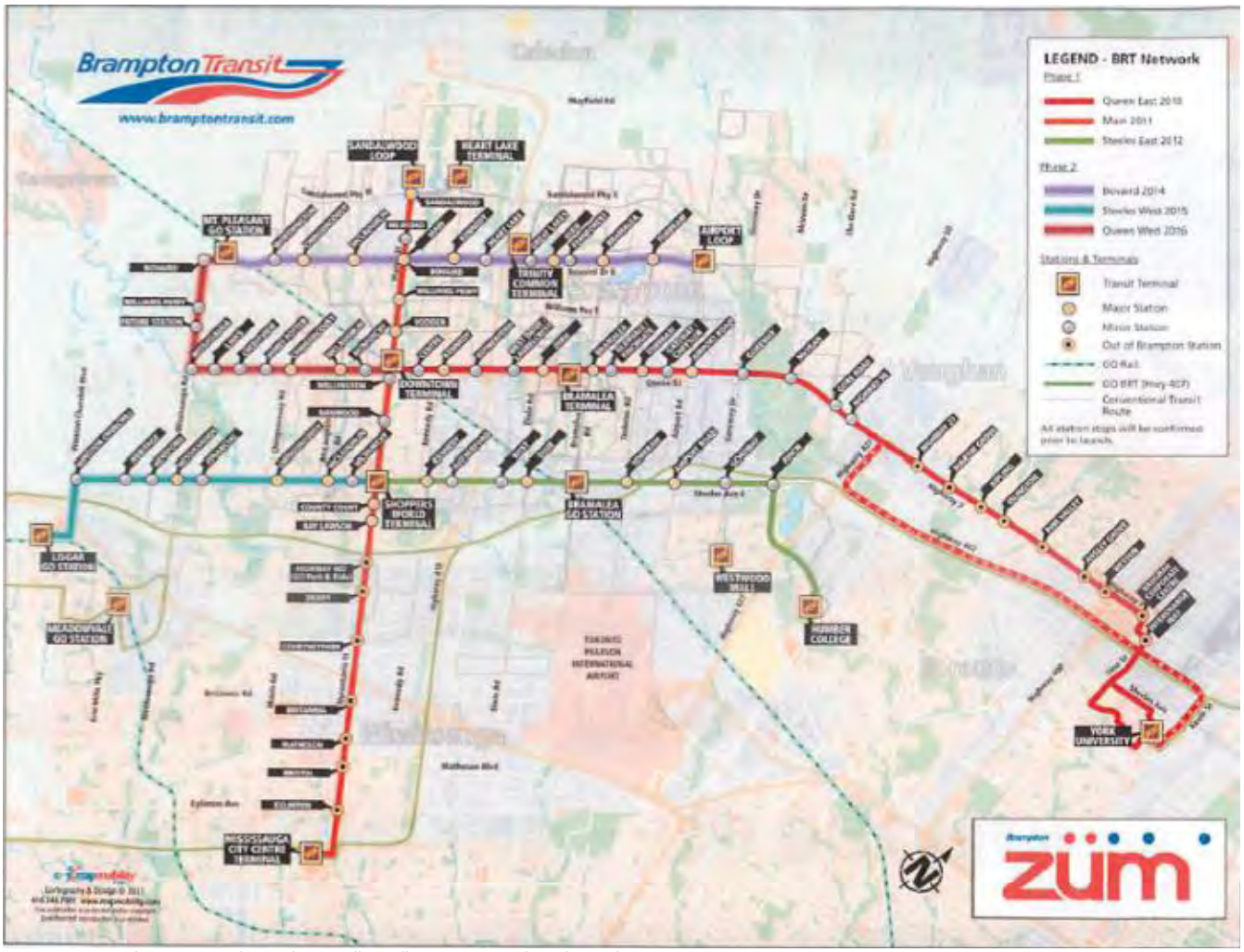
Züm is being implemented in two initial phases:[6]

- Phase 1: The first phase of Züm implementation has been completed. The implementation of Züm began in 2010 with the introduction of Route 501/501A service on Queen Street East, from Downtown Brampton to York University. Route 502 began operation on Main Street from Sandalwood Parkway to Mississauga City Centre in 2011. Route 511 began operation in 2012 on Steeles Avenue from Shoppers World Terminal (Main Street) to Humber College; and
- Phase 2: The second phase of Züm will include a service on Bovaird Drive in 2014, Steeles Avenue West in 2015, and Queen Street West in 2016.
- The City of Brampton also provided input to the location and design of transit facilities. Further engagement will be undertaken during detailed design.

[5] *Next Wave Project Update, presentation to Metrolinx Board, retrieved March 17, 2014 from http://www.metrolinx.com/en/docs/pdf/board_agenda/20130627/20130627_BoardMtg_Next_Wave_Projects_Update_EN.pdf*

[6] *Presentation to Committee of Council, April 20, 2011; retrieved March 18, 2014.*

Figure 7 Planned Initial Phases for the Brampton Züm Bus Network



Source: Presentation to Committee of Council, April 20, 2011; retrieved March 18, 2014.

Brampton Official Plan (2006)

The 2006 Brampton Official Plan designates key transit corridors throughout the City of Brampton and defines a set of policies supporting an expanded transit network and increased transit use[7]. The Official Plan defines a hierarchy of transit services along three types of corridors:

- Bus Rapid Transit Corridors would be high-frequency transit spines with transit priority. These corridors would initially have bus-based services but should have the flexibility to be converted to light rail. Target peak headways would be 5 minutes or less;
- Primary Transit Corridors would form a grid of high-frequency services across Brampton, with target peak headways between 5 and 7.5 minutes; and
- Secondary Transit Corridors would carry medium-frequency services, with target peak headways between 10 and 15 minutes.

[7] *2006 Brampton Official Plan, November 2013 Office Consolidation, Section 4.5.4.*

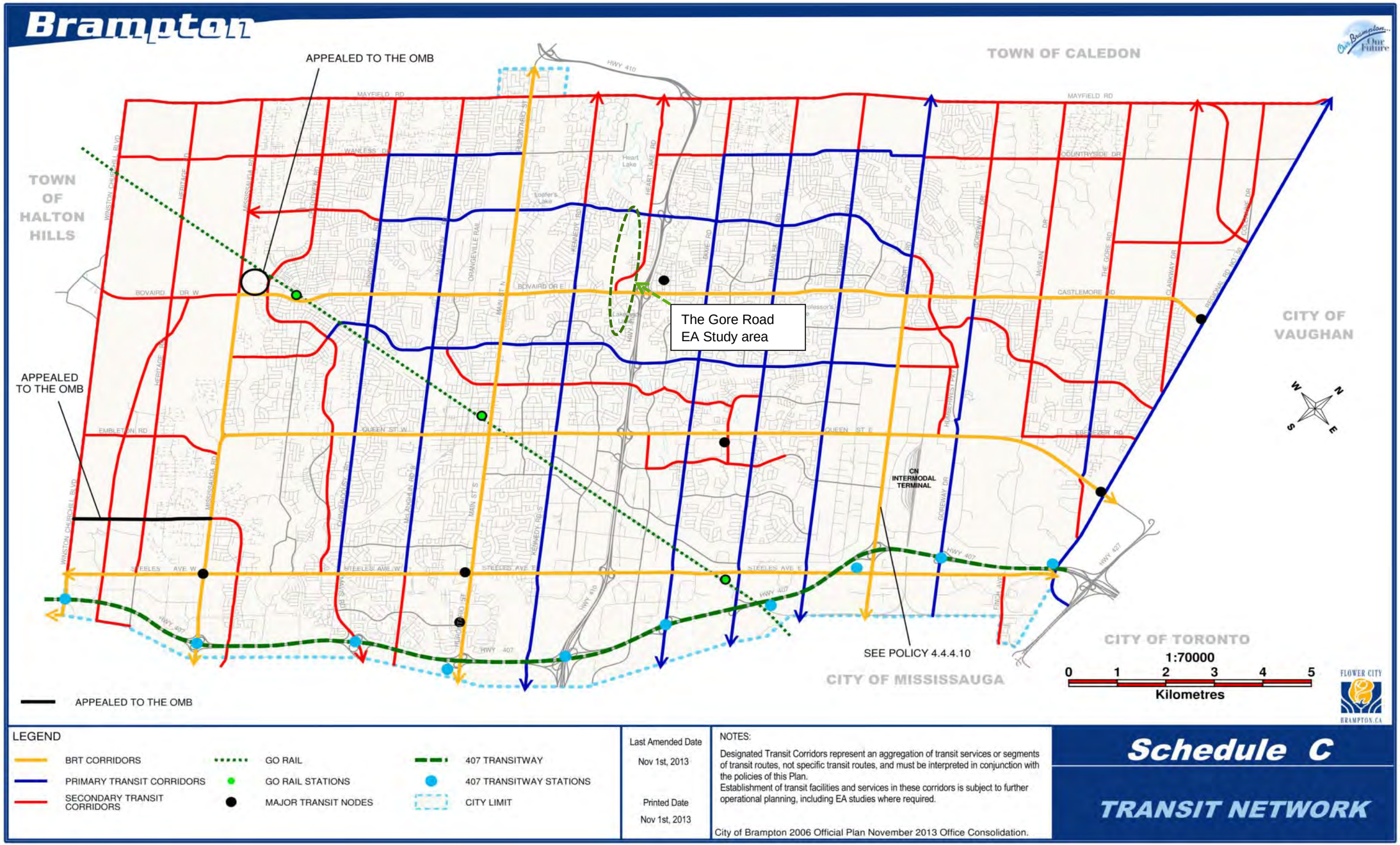
Figure 8 shows the designated Bus Rapid Transit, Primary Transit, and Secondary Transit Corridors in Brampton. Community Transit Services are an additional classification of service intended to serve neighbourhoods and connect them with higher-frequency services; these routes have not been defined in the Official Plan.

The segment of The Gore Road within the study area limits, from Queen Street to Castlemore Road, has been designated a Primary Transit Corridor. Queen Street and Castlemore Road in the vicinity of The Gore Road have been designated as Bus Rapid Transit Corridors. Cottrelle Boulevard and Ebenezer Road in the vicinity of The Gore Road have been designated as Secondary Transit Corridors.

Some of the other relevant transit policies defined in the Official Plan include:

- The citywide target transit mode share for peak periods is 25 percent. To achieve this average mode share, some corridors will require higher transit mode shares;
- Major Transit Nodes have been defined at major transit stations and mobility hubs. One of these Major Transit Nodes has been designated at Queen Street and Highway 50, just east of the intersection of The Gore Road and Queen Street;
- Brampton shall promote the use of transit signal priority and reserved bus lanes or high-occupancy vehicle lanes, and work with the Region of Peel on planning transit priority measures on Regional Roads;
- Brampton shall endeavour to locate a local transit stop within a walking distance of 300 to 400 m of all urban land uses;
- Measures to increase the efficiency and attractiveness of the transit system may be considered, such as exclusive and reserved transit lanes, bus bays along arterial roads and/or primary and secondary transit corridors, transit signal priority and bus queue jump lanes, and express or limited-stop services;
- Accessibility and convenience shall be improved through measures such as weather-protected stops along major transit routes, including transit facilities in roadway design proposals, designing stop and transfer locations to minimize walking distance, and providing continuous sidewalks along roads with transit routes; and
- Transit-supportive forms of development will be encouraged along transit routes, with superior urban design at Major Transit Nodes, including safe, comfortable, and convenient access to walking, cycling, and transit.

Figure 8 Designated Transit Corridors in the Brampton Official Plan

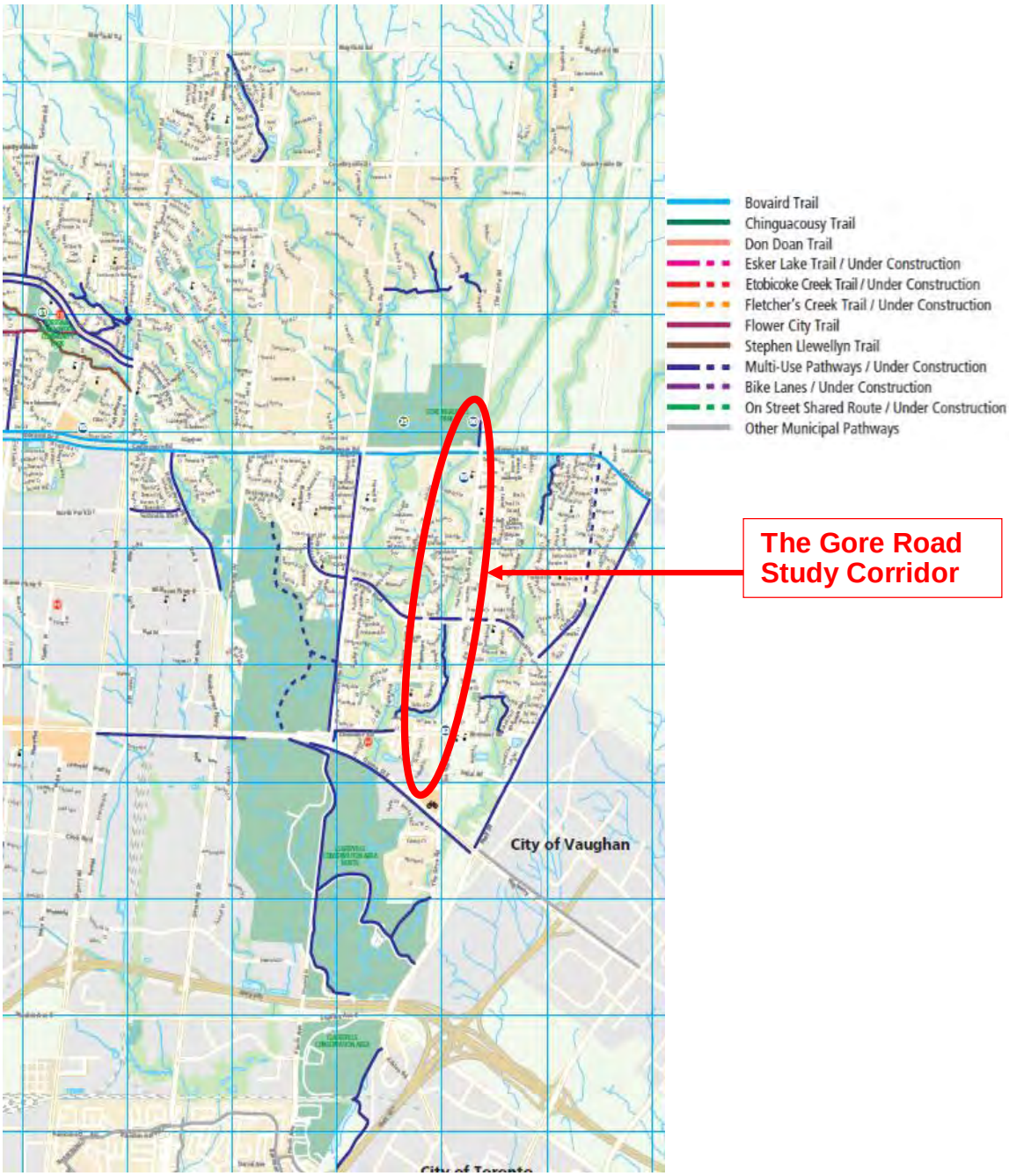


Source: City of Brampton 2006 Official Plan, November 2013 Office Consolidation, retrieved March 13, 2014.

4.3.5 Active Transportation

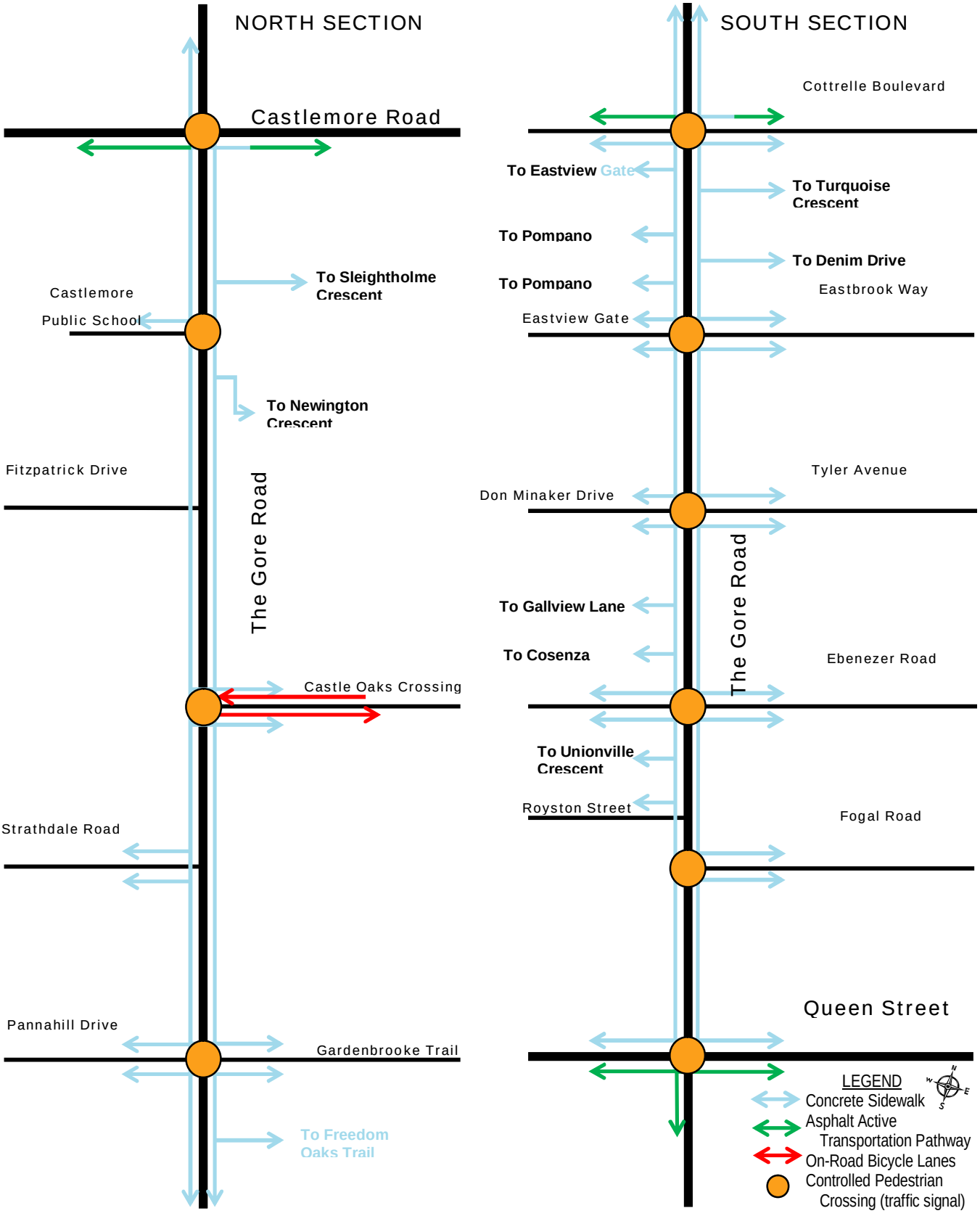
Within the study area of The Gore Road, there are three types of active transportation infrastructure currently in place: concrete sidewalks, asphalt active transportation pathways (shared-use for cyclists, pedestrians, and other non-motorized users), and on-road bicycle lanes. **Figure 9** shows existing trails, pathways, and cycling facilities in East Brampton. **Figure 10** illustrates the existing active transportation infrastructure in the immediate study area.

Figure 9 Existing Trails and Cycling Facilities in East Brampton



Source: Brampton Trails and Pathways Map, May 2013 Edition.

Figure 10 Existing Active Transportation Infrastructure in Study area



4.3.5.1 Pedestrian Infrastructure

As shown in **Figure 10**, there are currently concrete sidewalks along both sides of The Gore Road continuously through the study area. In addition, most cross streets have concrete sidewalks on both sides of the street. Crosswalks across The Gore Road are provided on all legs of all signalized intersections within the study area, with the exception of the south leg of the intersection at the Castlemore Public School driveway. No designated crossing facilities exist between signalized intersections.

Pedestrian signals are provided for all crosswalks along or across The Gore Road. The majority of intersections have countdown pedestrian signals, though some intersections from Cottrelle Boulevard to Queen Street have non-countdown signals. Pedestrian detection is provided at many crosswalks, either with a push-button or with a touchless sensor mounted on a signal pole. At some intersections, the crosswalks parallel to The Gore Road do not have pedestrian detection, as a WALK indication is automatically displayed on every signal cycle. None of the pedestrian signals are equipped with audible functionality.

There are a number of sidewalk connections to nearby residential streets. These connections provide an important link between these residential areas and the sidewalks along The Gore Road, providing an opportunity for direct north-south walking along The Gore Road and shorter walking distances to the bus stops along The Gore Road. There are also sidewalk connections to other land uses along The Gore Road, including retail plazas, schools, and religious institutions.

4.3.5.2 Cycling Infrastructure

Dedicated cycling infrastructure is nearly non-existent within the study area. As shown in **Figure 10**, the only dedicated cycling facilities are on-road, non-separated bicycle lanes on Castle Oaks Crossing, eastward from The Gore Road.

4.3.5.3 Shared Multi-Use Infrastructure

There are a few shared multi-use active transportation pathways within the study area. There is no multi-use path infrastructure along The Gore Road. Therefore, people wishing to cycle along The Gore Road must use the curbside general traffic lane; although illegal and unsafe, it is common for cyclists to ride on sidewalks in the corridor. There are three boulevard pathways crossing The Gore Road: one on the south side of Castlemore Road (the Bovaird Trail), one on the north side of Cottrelle Boulevard, and one on the south side of Queen Street. The Castlemore and Cottrelle pathways are discontinuous at The Gore Road; they are both interrupted by a short segment of concrete sidewalk for the first 50 m to 60 m east of The Gore Road. Users of all three pathways must walk across The Gore Road to continue travel; the crossings of The Gore Road are marked with crosswalks. In accordance with the Highway Traffic Act, people cycling along these pathways must dismount before using the crosswalks across The Gore Road.

Beyond the study area limits, there is a short segment of pathway on the west side of The Gore Road from Queen Street to Kelways Circle, a distance of approximately 200 m.

Throughout the length of the study area, there is a north-south watercourse that roughly parallels The Gore Road (it is the same watercourse that crosses under The Gore Road twice near the Strathdale Road intersection). From Cottrelle Boulevard to north of Ebenezer Road, this watercourse is approximately 200 m west of The Gore Road. There is an off-road pathway to the

west side of this watercourse, connecting Cottrelle Boulevard to Ebenezer Road (via a short on-road section on Alfonso Crescent).

4.3.5.4 Active Transportation Plans

Peel Active Transportation Study (2012)

The Peel Active Transportation Study (PATS) was completed in 2012 and is the Region of Peel's first regional active transportation plan.[8] The PATS explores existing travel patterns and travel attitudes within Peel Region. The PATS recommends an integrated program of policies, programming, and infrastructure along regional roads. The PATS was developed with extensive public and stakeholder consultation.

Figure 11 shows the cycling infrastructure proposed in the PATS in eastern Brampton. **Figure 12** shows the pedestrian infrastructure in the PATS in eastern Brampton. Along The Gore Road within the study area, the PATS proposes a multi-use trail on one side of the road and a sidewalk on the other side of the road. There would also be a connection to the multi-use trail on Queen Street.

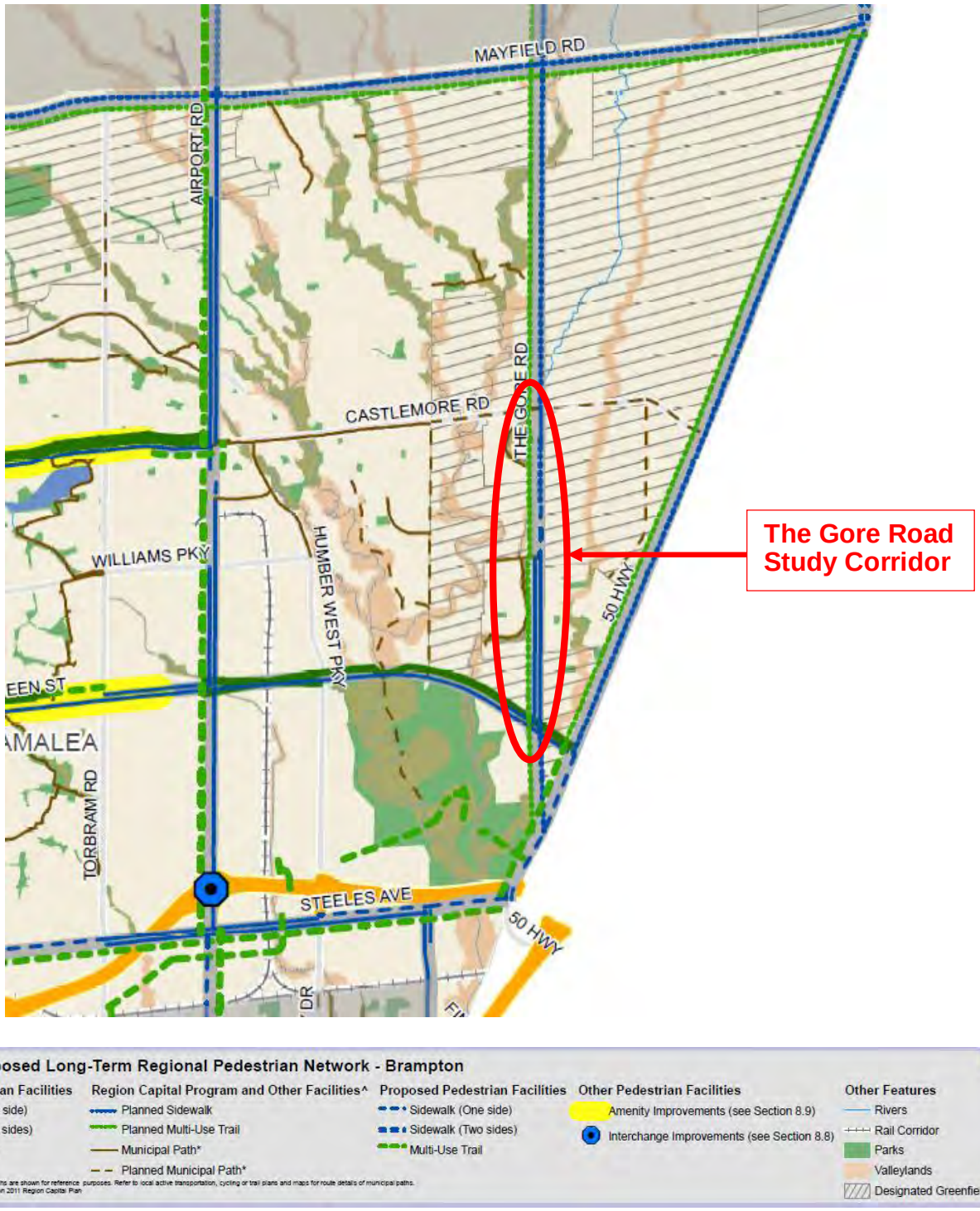
[8] *Peel Active Transportation Study, retrieved March 18, 2014 from http://www.walkandrollpeel.ca/projects/peel-active-transportation-study.htm.*

Figure 11 Proposed Regional Cycling Infrastructure in East Brampton

Source: Peel Active Transportation Study, 2012.

Note: Multi-use pathways that are planned to be on one side of the road are shown with a single line; the location of the line does not necessarily reflect the side of the road along which the pathway would be built.

Figure 12 Proposed Regional Pedestrian Infrastructure in East Brampton



Source: Peel Active Transportation Study, 2012.

Note: Multi-use pathways that are planned to be on one side of the road are shown with a single line; the location of the line does not necessarily reflect the side of the road along which the pathway would be built.

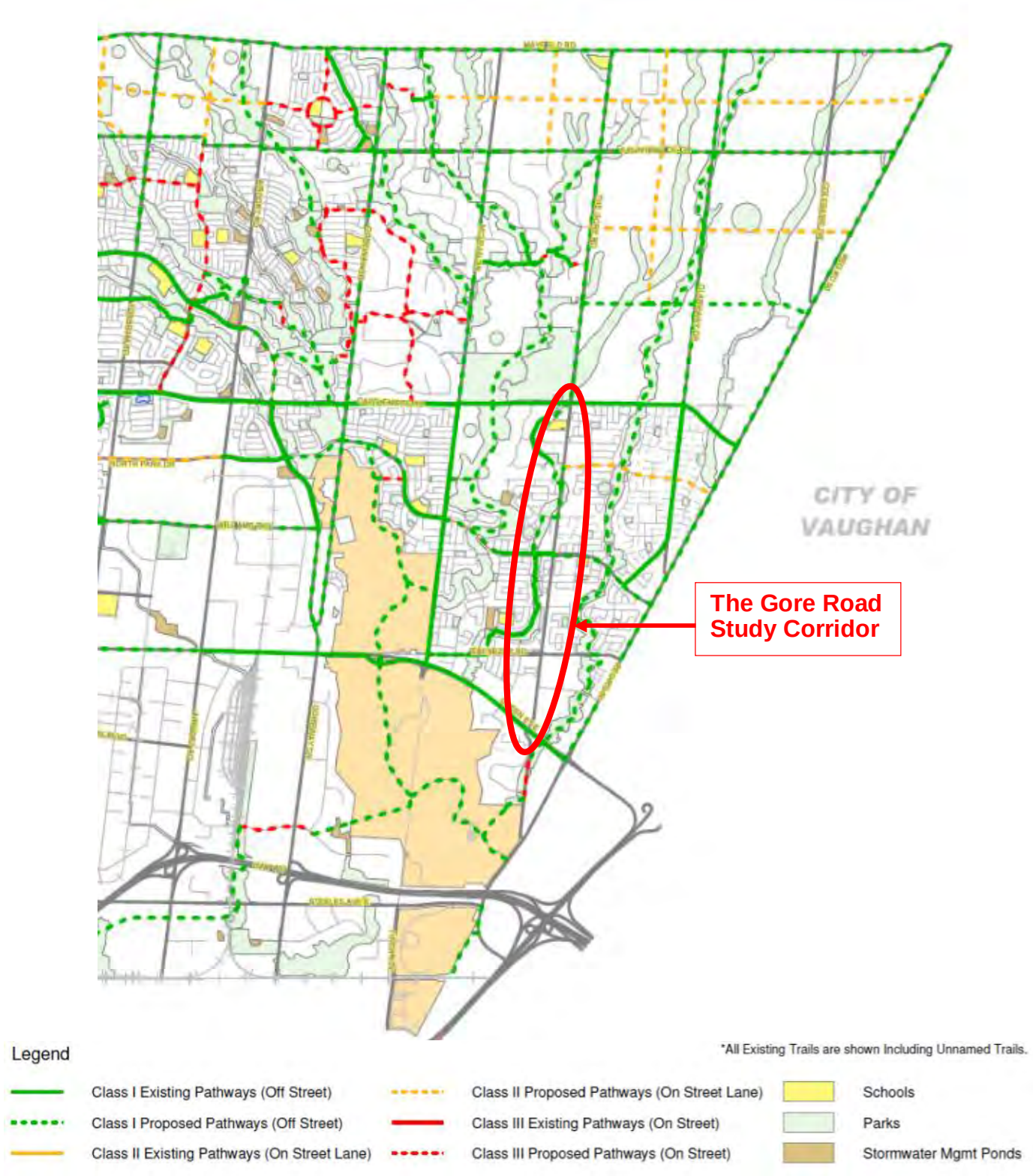
Brampton PathWays Master Plan (2002 and 2008)

The Brampton PathWays Master Plan is a citywide plan, originally released in 2002, that proposes a network of cycling and multi-use pathway infrastructure throughout Brampton.[9] The types of infrastructure in the plan include off-street pathways (in an exclusive right-of-way or in the boulevard of a road right-of-way), on-street bicycle lanes, and designated shared bicycle / vehicle lanes. Refer to http://www.brampton.ca/en/Business/planning-development/Documents/CD/ParksPl/Pathways%20Master%20Plan,%20Vol.%201.pdf

Figure 13 shows the most recent map (updated in 2008) of proposed cycling and multi-use pathway infrastructure in Brampton. The PathWays plan does not include any cycling or pathway infrastructure along The Gore Road within the study area. However, the plan does include an extension of the aforementioned existing pathway that is along the watercourse just west of The Gore Road, south of Cottrelle Boulevard. The northward extension would continue the pathway along this watercourse to the intersection of The Gore Road and Castlemore Road and would likely run along a very short stretch of the west side of The Gore Road near Strathdale Road.

[9] *Brampton PathWays Master Plan, Volume 1, June 2002, document provided to study team.*

Figure 13 Proposed Local Cycling and Pathway Infrastructure in East Brampton



Source: Draft PathWays Routing Plan, updated April 2008 and published August 2010.

4.4 Transportation Operations

A review of the existing traffic conditions was undertaken throughout the corridor and included:

- Analysis of the function of intersections and midblock road sections that considered Level of Service (LOS) and special trip generators (e.g., schools and religious institutions);
- A north modal review of the safety performance for the corridor that examined collision history and patterns as well as potential safety improvements;
- An assessment of future travel demands and deficiencies that confirmed how traffic will move down The Gore Road corridor towards the Queen Street intersection;
- Identification of transit and active transportation issues and opportunities that support the "Complete Street" approach; and
- Identification of potential improvements for intersections and road sections to handle future travel demands.

Detailed analysis and findings are included in **Appendix C**.

Confirmation of No Need to Widen from 4 to 6 Lanes

The traffic modelling done as part of the study area review revealed the interesting situation whereby widening The Gore Road was not seen to actually yield an improvement in future traffic conditions. With the southbound double left turn onto Queen Street at the end of the corridor already operating at capacity during peak periods, funneling even more traffic into that bottleneck made little sense. Even with the reassignment of travel demand to new southbound double lefts at Cottrelle Boulevard and Castlemore Road to feed future traffic to Highway 427 and destinations to the east, operating conditions on the rest of The Gore Road would remain good into the foreseeable future.

Additional model iterations with four- and six-lane configurations demonstrated how traffic could disperse across the network and into the shoulders of the peak period when the capacity of The Gore Road was taken as constrained by the southbound double left turn movements at key intersections. Whether the road was four lanes or six lanes had little impact on the outcome, which helped confirm that the additional midblock capacity with two added lanes was unnecessary (beyond improvements at the key intersections themselves).

4.5 Physical Environment

4.5.1 Physiography and Topography

Several tributaries of the West Humber River meander through The Gore Road alignment draining into the West Humber River, south of the project site.

During the late Wisconsinan time, the Ontario ice lobe advanced up the wide depression occupied now by the Main and West Humber Rivers and their several tributaries. This ice advanced over glaciolacustrine sediments depositing the fine-grained Wildfield till. The ice did not remain long in this position but melted back thereby impounding the waters of glacial Lake Peel.

The deposits from this Peel ponding is a discontinuous veneer of fine-grained stratified and non-stratified deposits of clays and silts interbedded with bands of till-like material. Associated with these deposits are deltaic sands and silts. These deposits and the till phase are commonly

referred to as the Lacustrine-Wildfield Till Complex. The deposits are commonly about 1m thick but may be up to 3m thick in places.

The overburden is underlain by grey shale bedrock of the Georgian Bay Formation (also known as the Meaford-Dundas Formation). The Georgian Bay Formation belongs to the Ordovician Period and is approximately 450 million years old. It is known to consist of grey shale with interbeds of relatively more competent siltstone and sandstone and harder limestone. It is also known to contain occasional thin clay seams. The hard layers/seams are usually less than about 100 to 150mm thick but some layers are much thicker. These are actually lenses and they can vary significantly in thickness over short distances. Stress relief features, such as folds and faults are also found in the formation. These structural features are believed to result from the relief of high horizontal residual stresses occurring within the bedrock at shallow depths and which owe their own origin to pre-existing loads of overburden (now eroded away) or possible glacial loading.

4.6 Natural Environment

As part of assessing the existing Natural Environment Conditions within the study area, current and historical background information was collected and reviewed and applicable regulatory agencies were consulted regarding specific natural heritage data sources. Furthermore, field investigations have been conducted where data gaps were identified in the Study area through the background information review. Initial site visits were conducted to characterize terrestrial and aquatic conditions in December 2013.

4.6.1.1 Terrestrial Environment

Preliminary terrestrial field investigations took place on December 5, 2013 within the study area and included vegetation community assessments; floral species list; wetland community assessments; and wildlife assessments. The study area consists of a combination of low density residential dwellings as well as urban greenspace.

A total of six (6) ELC communities were delineated along the entirety of the study area. They are defined as: CUM1: Mineral Cultural Meadow Ecosite; CUM1-1: Dry-Moist Old Field Meadow Type; FOD7-2: Fresh-Moist Ash Lowland Deciduous Forest Type; FOD7-3: Fresh-Moist Willow Lowland Deciduous Forest Type; MAS2-1: Cattail Mineral Shallow Marsh Type; and MAM2-2: Reed-canary Grass Mineral Meadow Marsh Type. None of the above communities are considered to be rare within the Region of Peel or Provincially Significant. Refer to **Appendix F** for figures illustrating the ELC's.

Wetlands


Cattail Mineral Shallow Marsh Type

The wetland communities observed, include meadow marsh and shallow marsh vegetation types. Both community types were closely related to the West Humber River Tributary typically found within the riparian zone. The wetlands were found to be less than 0.5ha in size and do not contain any significant ecological habitat attributes. As such, a wetland evaluation is not required, however, MNRF should be consulted during detailed design to confirm. A notation/description of vegetation species which were observed within these communities is provided as part of the plant list in **Appendix F**. All plants that were observed within these communities are common throughout Ontario. No Species at

Risk (SAR) were observed. The water inputs to this wetland community primarily consist of water contained within the facility.

Breeding Birds

Formal breeding bird surveys were not completed for the study area in December 2013; however, the Atlas of Breeding Birds of Ontario provides a tool where existing breeding bird data for 10 km squares can be downloaded. This information can then be used to target specific breeding birds for the area during detailed design. Square number 17PJ04 generated a total of 105 bird species which were identified within the project study area. Of the identified species four (4) are listed as threatened including Barn Swallow, Bobolink, Chimney Swift and Eastern Meadowlark which are protected under the *Endangered Species Act*, 2007. One (1) Species of Special Concern (Common Nighthawk) was found on the Species at Risk List and is not protected under the *Endangered Species Act*. However efforts should be made to ensure they are not harmed during construction.

Appendix F presents a list of breeding birds.

Tree Inventory

Trees along The Gore Road study area were inventoried on April 24, 2014. The inventory is attached as **Appendix G**. Some 247 individual trees were recorded in terms of species, size and condition. Mature ash trees located at the northern limits of the study area showed distinct evidence of being infected with Emerald Ash Borer (D-shaped exit holes). The additional ash trees inventoried do not show distinct evidence, but do show symptoms of being infected (sapsucker holes, dieback). With the known progression of the insect, it should be considered likely that all the ash trees will be infected and die within the next few years. This should be taken into consideration of the detailed design when considering tree preservation. New tree plantings should be considered to increase the aesthetic appeal and the urban canopy.


Recently planted street tree

Incidental Wildlife Observations

Incidental wildlife observations were recorded during the field investigation. Seven common bird species and evidence of three mammal species were observed throughout the study area, as summarized in **Table 4**. It should be noted that as the field investigation was conducted outside of the bird breeding season (May 1 to July 31), any incidental observations of bird species were that of non-migrant individuals. All of the wildlife species observed are common in the area; none are considered to be significant within Ontario and/or Peel Region.

Table 4 Incidental Wildlife Observations

Common Name	Scientific Name
Birds	
American Goldfinch	*Spinus tristis*
Black-capped Chickadee	*Poecile atricapillus*
Blue Jay	*Cyanocitta cristata*
Cliff Swallow (nests)	*Petrochelidon pyrrhonota*
Mourning Dove	*Zenaida macroura*
Ring-billed Gull	*Larus delawarensis*
White-breasted Nuthatch	*Sitta carolinensis*

Mammals	
Coyote (tracks)	*Canis latrans*
Raccoon (scat)	*Procyon lotor*
Squirrel species (nest)	*Sciurus sp.*

Cliff swallow nests were observed within cement box culverts along The Gore Road. The Significant Wildlife Habitat Guide (OMNR, 2000) states that colonial-nesting birds (cliff swallow) which breed within man-made structures do not qualify as Significant Wildlife Habitat.

4.6.1.2 Aquatic Environment


Tributary at South Wylie's Bridge, April 6, 2014

The West Humber River Tributary is classified as a permanent warmwater system which supports a mixed warm/coolwater baitfish community. This tributary appears to have been impacted by urban development and although it contains moderately degraded aquatic habitat, it still continues to directly support a resident forage fish community.

Preliminary fisheries field investigations took place on December 5, 2013. Field investigations focused on visual observations of various habitat features to identify factors that may influence fish community composition within the study reach. These features included in-stream cover; bank stability; substrate composition; stream morphology; barriers to fish movement; canopy cover; aquatic vegetation; and riparian vegetation.

The study area is situated within the Western branch of the Humber River Watershed which covers a drainage area of approximately 911 km^2 and is under the jurisdiction of the TRCA. Within the watershed, the main branch of the river flows 126 km from its source on the Niagara Escarpment to Lake Ontario. The East Humber is 63 km and originates in the kettle lakes region of Richmond Hill and King Township. The West Humber begins in Caledon, in the rolling hills of the South Slope, and flows 45 km over the Peel Plain in Brampton before joining the Main Humber River in Toronto.

Fish data collection records for the study area were obtained from TRCA on February 13, 2014. A total of 16 fish species were recorded at four monitoring stations along West Humber River Tributary between 1972 and 1983. The majority of the species are representative of a primarily intermediately tolerant, mixed cool and warmwater fish community. Common fish species include White Sucker (*Catostomus commersonii*), Northern Hog Sucker (*Hypentelium nigricans*), Common Shiner (*Luxilus cornutus*), Blackchin Shiner (*Notropis heterodon*), Rosyface Shiner (*Notropis rubellus*), Bluntnose Minnow (*Pimephales notatus*), Fathead minnow (*Pimephales promelas*), Blacknose Dace (*Rhinichthys atratulus*), Creek Chub (*Semotilus atromaculatus*), Brown bullhead (*Ameiurus nebulosus*), Rock Bass (*Ambloplites rupestris*), Pumpkinseed *(Lepomis gibbosus*), Largemouth Bass (*Micropterus salmoides*), Yellow Perch (*Perca flavescens*), Rainbow Darter (*Etheostoma caeruleum*) and Johnny Darter (*Etheostoma nigrum*).

Based on a review of the TRCA fish community data, no records of aquatic Species at Risk were identified according to the Species at Risk in Ontario (SARO) list, or Committee on the Status of Species at Risk in Ontario (COSSARO) or the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Of note, however, these records are from over 30 years old and are considered historicalRefer to Appendix H for the Aquatic Conditions Memo including TRCA regulated areas.

4.6.1.3 Fluvial Geomorphology


Looking downstream in the recently realigned portion of the channel between The Gore Road and Castlemore Road

A fluvial geomorphological assessment was completed by AECOM that included desk-based assessment and field reconnaissance. Field reconnaissance was completed on August 24, 2014 to assess location geomorphological form and function; existing conditions at the Wylie bridges and verify findings of the desk-based assessment.

The West Humber River Tributary was broken into three reaches for the field reconnaissance. During the field investigations, it was found that the channel and riparian area have been extensively modified including straightening and realignment since 1946 as a result of agricultural practices and urbanization. For the detailed fluvial geomorphological assessment, refer to **Appendix I**.

4.6.2 Species at Risk

Terrestrial

A list of Species at Risk (SAR) known to occur within the Region of Peel was obtained from the MNRF SAR website, and then supplemented with the records obtained from the Atlas of Breeding Birds of Ontario to create a full list of potential SAR species located within the study area. **Appendix J** presents the SAR Habitat Assessment.

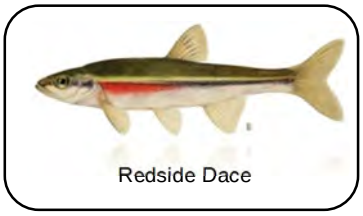
Based on the combination of agency correspondence and background information, a total of 25 SAR were determined to potentially occur within the Region of Peel, as tabulated below. Based on the habitat assessment of the corridor, it was determined that six terrestrial species (three listed as threatened and three listed as Special Concern) have the potential to be found within the study area and include the following:


Barn Swallow

- Barn Swallow (Threatened) - Barn Swallows often live in close association with humans, building their cup-shaped mud nests almost exclusively on human-made structures such as open barns, under bridges and in culverts. The species is attracted to open structures that include ledges where they can build their nests, which are often re-used from year to year. They prefer unpainted, rough-cut wood, since the mud does not adhere as well to smooth surfaces.
- Chimney Swift (Threatened) - Formerly nested in the trunks of large, hollow trees. Today, mainly use chimneys or abandoned buildings as nesting sites. May forage over wide variety of habitats. It requires dead trees >30 cm for roosting and possibly nesting. Where swifts observed foraging only, is not Significant habitat.
- Eastern Meadowlark (Threatened) - Most common in native grasslands, savannah, old fields, hayfields, lightly grazed pastures, weedy meadows, fields with occasional shrubs. Minimum area of grassland required is about 5 ha.
- Eastern Ribbonsnake (Special Concern) - Usually found close to water, especially in marshes, where it hunts for frogs and small fish. A good swimmer, it will dive in shallow water, especially if it is fleeing from a potential predator. At the onset of cold weather, these snakes congregate in underground burrows or rock crevices to hibernate together.

- Milksnake (Special Concern) - Can be found in a range of habitats including rocky outcrops, fields and forest edges. In southern Ontario, it is often found in old farm fields and farm buildings where there is an abundance of mice. The Milksnake hibernates underground, in rotting logs or in the foundations of old buildings.
- Snapping Turtle (Special Concern) - Spend most of their lives in water. They prefer shallow waters so they can hide under the soft mud and leaf litter, with only their noses exposed to the surface to breathe. During the nesting season, from early to mid-summer, females travel overland in search of a suitable nesting site, usually gravelly or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dams and aggregate pits.

Aquatic


Redside Dace

The Region of Peel is known to provide suitable habitat for Redside Dace (Clinostomus elongatus). New urban growth, which is anticipated in East and West Humber subwatersheds, will likely affect known Redside Dace habitats, making the protection of this species and its habitat a high priority. As such, a preliminary meeting with MNR was held on April 8, 2014, in advance of spring and/or summer field surveys to specifically determine the likelihood of Redside Dace presence and the suitability of the habitat for their use within the study area. Mr. Mark Heaton, Species at Risk biologist with MNRF confirmed on April 8, 2014 that there is no occupied or recovery reaches for Redside Dace within the study area.

4.6.3 Designated Natural Areas

4.6.3.1 City of Brampton

According to the City of Brampton's Official Plan Schedule A: General Land Use Designations, Schedule E: Major Recreational Open Space and Schedule D: Natural Heritage Features and Areas the study area includes a couple key features important to land development in the area. Lands designated as Valleylands/Watercourses Corridors in the City of Brampton Official Plan are intended primarily for the preservation and conservation of the natural features, functions and linkages. Although development is generally prohibited within valleylands and watercourse corridors, there are some existing uses and some permitted uses that must be recognized. There are small fragments of woodlands and Urban Forest in the study area closely linked with the watercourse corridors. In the context of Brampton, the urban forest refers to the mix of the remnants of native forest cover and planted trees and vegetation on all private and public lands in and around the built-up areas. The urban forest is valued for its ecological, social and economic benefits.

4.6.3.2 Ministry of Natural Resources and Forestry

According to MNRF's Natural Resource Values Information System (NRVIS) mapping (MNRF, 2011), there are no Provincially or Locally Significant Wetlands, unevaluated wetlands or Provincial Parks in or within the vicinity of the Study area. In addition, there are no Areas of Natural Scientific Interest (ANSI) or Environmentally Sensitive Areas (ESA) located in the Study area; however, the Meadowvale Stations Woods Environmentally Sensitive Area (ESA), Conservation Area and Regionally Significant Life Science ANSI are approximately 550 m east of the Study area near Hwy 401. Meadowvale Station Woods ESA and ANSI provides habitat for a high diversity of plant and wildlife species. In addition, this forested area supports a high deer

population (MMM and Ecoplans Ltd., 2005; CVC, Date Unknown). No negative impacts are anticipated to this ESA and ANSI as result of the proposed undertaking given its distance from the study area.

4.6.3.3 Toronto and Region Conservation Authority (TRCA) Regulated Areas

The study area is located within the jurisdiction of the TRCA, which enforces the Ontario Regulation 160/06 - Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses under Section 28 of the *Conservation Authorities Act*. Therein, Regulated Areas are defined where development could be subject to flooding, erosion or dynamic beaches, or where interference with wetlands and alterations to shorelines and watercourses might have an adverse effect on those environmental features. Any proposed development, interference or alteration within a Regulated Area would require a permit from TRCA. Within the study area, The Gore TRCA regulated areas apply to the West Humber River Tributary that crosses and runs parallel to The Gore Road:

- North of Castlemore Road;
- Whylie North Bridge; and
- Wylie South Bridge.

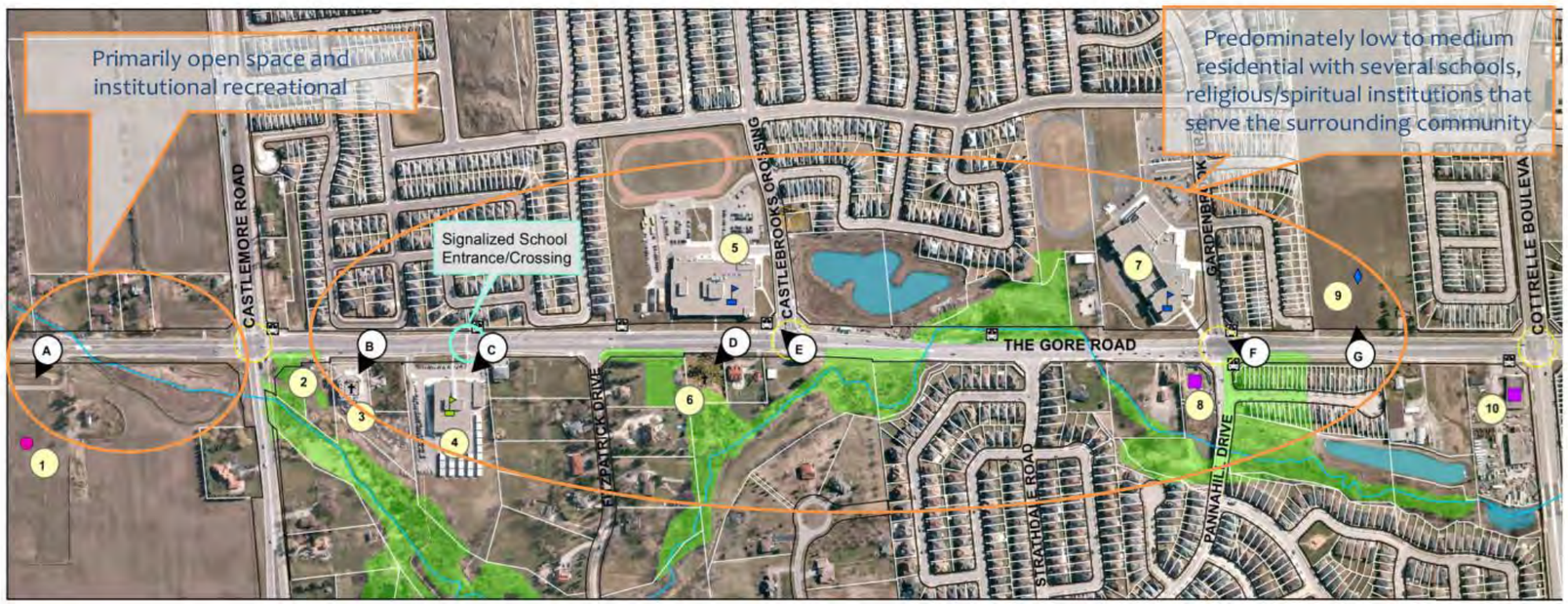
4.7 Socio-Economic Environment

The following describes the socio-economic environment within The Gore Road Class EA study area, based on a windshield survey and reference documents.

4.7.1 Existing Land Uses

The northern and central portions of the study area (from Castlemore Road to Ebenezer Road) are characterized by low to medium density stable residential areas and institutional uses including several schools and spiritual institutions. While low density residential in nature, the northwest quadrant is representative of more mature residential estate housing characterized by large homes on large lots. Immediately north of Castlemore Road, land uses can be described as primarily open space and institutional-recreational which includes The Gore Meadows Community Centre and Library. This facility is served by Brampton Transit, is well used by the community and also located along with adjacent City of Brampton outdoor sports playing fields. South of Ebenezer Road to Queen Street land uses are predominantly retail commercial along with several banquet/convention centres and spiritual institutions. Retail commercial shopping plazas on the east side of The Gore Road offer a wide range of goods and services including food, clothing and personal services. This area also includes vacant lands slated for future development. Immediately south of Queen Street East lands are mainly single family residential with some industrial-light manufacturing. See **Figures 14** and **15** for existing land uses in the study area.

Figure 14 Existing Land Uses - North



Land Uses

1. Gore Meadows Community Centre & Library
2. Vacant – Future Retail Commercial/Office Development
3. Nanaksar Thath Isher Darbar Sikh Temple
4. Castlemore Public School
5. Cardinal Ambrozic Catholic Secondary School
6. St. John Cemetery
7. Castlebrooke Secondary School
8. Commercial (under development – future Asian Food centre)
9. Vacant (future development – to be determined)
10. Retail Commercial

Legend

- Elementary School
- Secondary School
- Community Centre
- Industrial
- Brampton Transit Bus Stop
- Commercial
- Signalized Intersection
- Spiritual Centres
- Vacant Lands
- Watercourse
- Trails
- 1 Land Use Feature ID #
- A Land Use Feature Photo
- Cemetery
- Natural Cover

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Figure 15 Existing Land Uses - South

Land Uses

11. Hindu Sabha Temple
12. Retail Commercial
13. Ebenezer Community Hall (formerly Ebenezer School)
14. Ebenezer Chapel and Cemetery
15. Gurdwara Sahib Dasmesh Darbar Temple
16. Retail Commercial
17. Retail Commercial
18. Grand Empire Banquet and Convention Centre
19. Townhouses (under development)
20. Sant Gyaneshwar Hindu Ashram
21. Vacant (future development-to be determined)
22. Chinmaya Mission Toronto
23. Embassy Grand Convention Centre
24. Retail Commercial
25. Vacant-Future Low and Medium Residential
26. Vacant - Future Highway Commercial
27. Industrial-Light Manufactoring (EM Plastics and Electric Products Ltd.)
28. Hampton Inn Hotel

Legend

- Elementary School
- Secondary School
- Community Centre
- Industrial
- Brampton Transit Bus Stop
- Commercial
- Signalized Intersection
- Spiritual Centres
- Vacant Lands
- Watercourse
- Trails
- 1 Land Use Feature ID #
- A Land Use Feature Photo
- Lands Under Development or subject to a Municipal Planning Application Process
- Cemetery
- Natural Cover

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4.7.2 Future Development

While lands along the corridor are essentially developed, The Gore Road study area also includes several parcels of vacant land, some of which are currently in the municipal planning development application stage. These have been identified on the preceding **Figures 14 and 15**. Of most significance is a proposed residential development on the east side of The Gore Road between Queen Street East and Fogal Road which, if approved, will consist of 630 residential units (single detached, semidetached, townhouses, live-work and apartments) in addition to park, open space and stormwater management pond. The City of Brampton Planning Department provided an update on this planning application status on June 24 (telephone call Nasir Mahmood, Karl Grueneis). The above OPA, ZBL and Plan of Subdivision was not approved over concern about displacing designated employment lands. The applicant has revised their application to include a combination of employment lands and residential lands. The applicant and City are negotiating plan options for residential and employment blocks (next meeting is June 30, 2016). Also discussed below are two City of Brampton Secondary Plan Areas (SPA 47 and SPA 26) which are located directly north of the study area and represent significant future growth. Other potential development areas along The Gore Road include:

- East side of The Gore Road between Gardenbrooke Trail and Cottrelle Boulevard; and
- South side of Cottrelle Boulevard between The Gore Road and Thorndale Road.

4.7.3 Land Use Planning Policy

Schedule A of the City of Brampton Official Plan sets out general land use designations across the City including the project study area. The project study area is located within the Brampton East Secondary Area (SPA) 41. Figure 16, excerpted from Schedule SP41(a), shows a further breakdown of land use designations and Special Policy Areas for the Brampton East Secondary Plan Area Schedule A1 also identifies lands on the west side of The Gore Road between Castlemore Road and Cottrelle Boulevard as Upscale Executive Housing Special Policy Area (Area 6 Brampton East Secondary Plan).

4.7.4 Future Population and Employment Growth

Section 4 transportation policies in the Brampton Official Plan reflect the intricate relationship between transportation, land use and physical form. The Official Plan adopts the balanced approach and advocates the necessary improvements to the road system and stresses the importance of establishing a greater role for public transit and encouraging transit-supportive development.

City of Brampton's latest growth forecasts published in 2015 provides population, housing units and employment forecasts for the period 2011 to 2041. The City of Brampton undertakes growth forecasts to provide input into planning and managing growth in the City and are specifically used for the Development Charges By-law Review, service and infrastructure planning and input into the Region of Peel's growth allocation exercise. These forecasts have been prepared in the context of the Province's Growth Plan Amendment 2, Peel's ROPA 24 and the City's official plan which is undergoing its 5 year review.

Table 5 shows the projected population growth based on City of Brampton growth forecasts listed in the City's Transportation Master Plan and on the City's website.

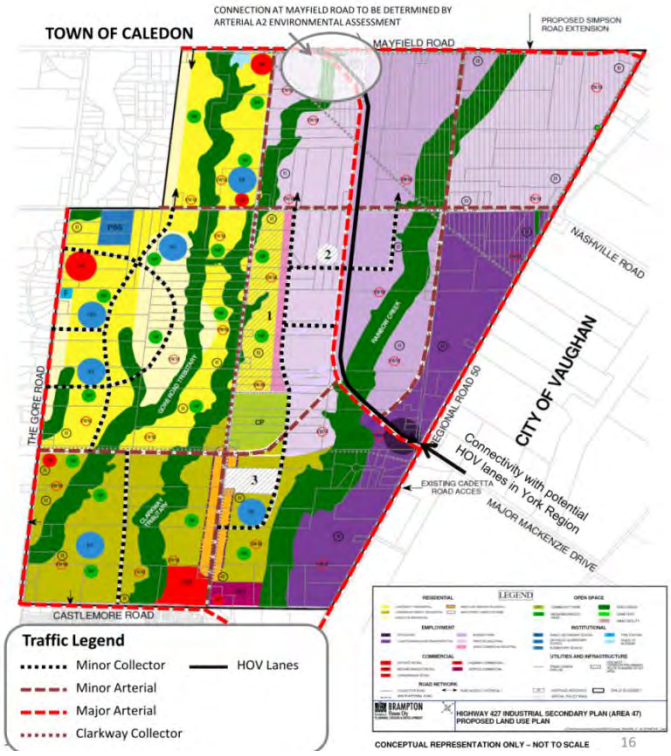
Table 5 Population and Employment Growth

Location	Population[10]		Employment[11]	
	2011	2041	2011	2041
City of Brampton	523,900	899,500	182,000	325,200

Much of the above growth will be allocated across the City including Secondary Plan Area 47 (directly north of Cottrelle Boulevard and east of The Gore Road) which is described below.

4.7.5 Secondary Plan Area 47 Study

City of Brampton, Secondary Plan Area 47



Secondary Plan Area 47 is about 3,000 acres in size and is bounded by Mayfield Road to the north, Castlemore Road to the south, Highway 50 to the east and The Gore Road to the west. It represents the last available greenfield area for large scale employment uses in the northeast Brampton.

On September 10, 2014, City Council approved the Official Plan Amendment to implement the Highway 427 Industrial Secondary Plan, which establishes land use designations and a policy framework that will guide the development of a complete community with residential, retail, institutional and employment land uses. It also protects lands for the planning of the future GTA West Corridor.

At build-out, Area 47 is planned to accommodate approximately 6,700 residential units, 26,000 people and 20,500 jobs, resulting in a combined density of 45 people and jobs per hectare. The Secondary Plan also requires the development of a minimum 600 upscale executive housing units.

Lands fronting on the east side of The Gore Road (north of Castlemore Road) are primarily planned for low and low-medium density residential uses including estate residential along with open space and supporting institutional and commercial uses.

Projected traffic volumes from Area 47 have been factored into The Gore Road transportation network and operations analysis.

4.7.6 Secondary Plan Area 26

Lands directly north of Castlemore Road and west of The Gore Road are part of the Toronto Gore Rural Estate Secondary Plan (Area 26). Estate residential uses comprise the majority of

[10] *City of Brampton Transportation Master Plan Update, Final Report. MMM Group. September 2015*
[11] *City of Brampton Transportation Master Plan Update, Final Report. MMM Group. September 2015*

the area surrounding this site. A secondary plan policy framework does not exist for this area. Currently, the City of Brampton is undergoing an Official Plan Review process and The Toronto Gore Rural Estate Secondary Plan has been identified as an area for review. The purpose of the review will be to create policies to direct future development in this community that support appropriate intensification and a mix of land uses.

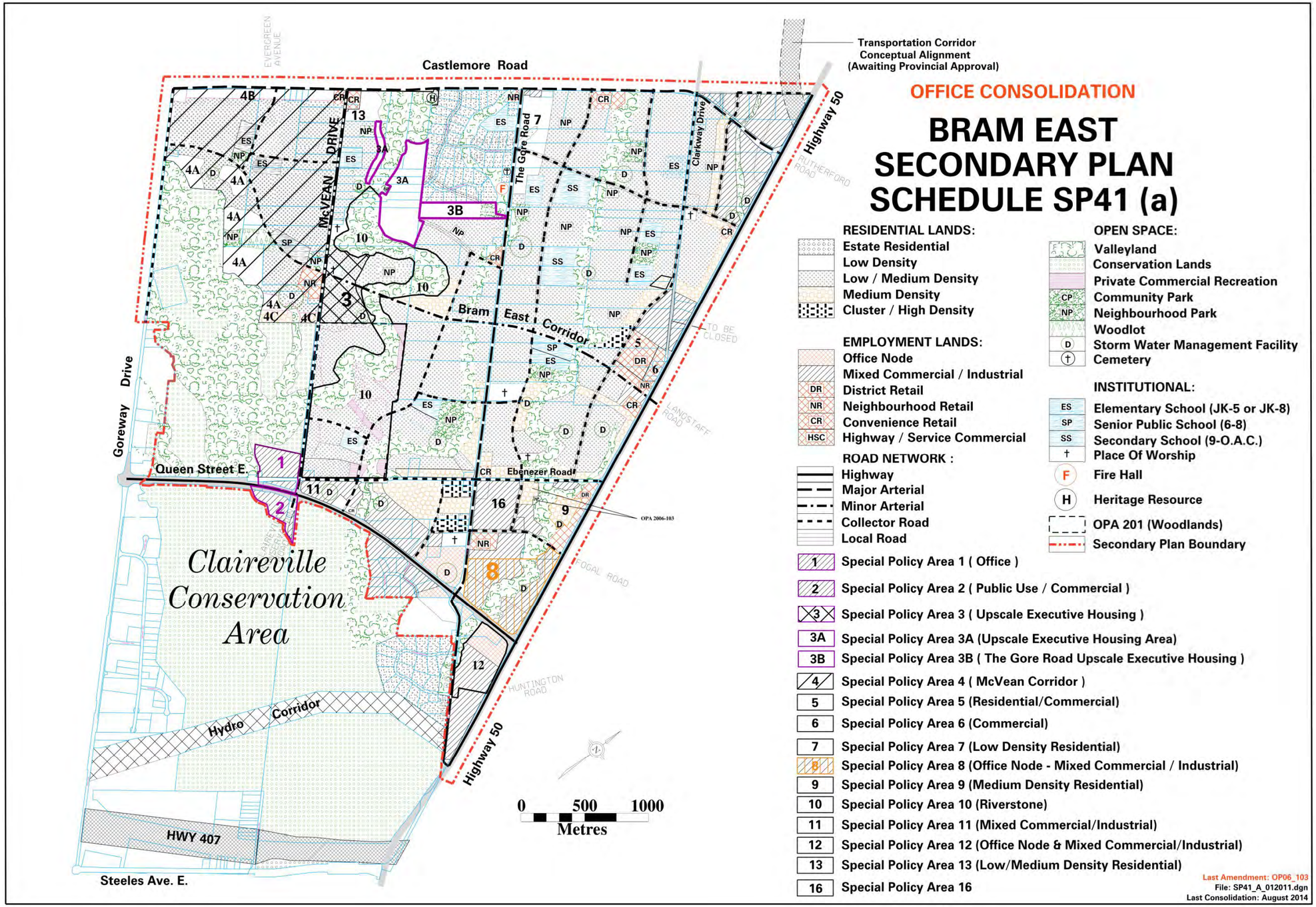
4.8 Other Planning Policies

4.8.1 Places to Grow

As part of its membership in the GTA, the Region of Peel is part of the Greater Golden Horseshoe (GGH) growth plan area, the fastest growing urban area in Canada. In 2006, the Province (former Ministry of Public Infrastructure Renewal) approved its "Growth Plan for the Greater Golden Horseshoe" which sets specific population and employment forecasts for upper tier municipalities and also prescribes density targets for intensification and greenfield development. According to Schedule 3 of the Growth Plan, the 2031 population forecast for the Region of Peel is 1,640,000, a 59 % increase from 2001, while the employment forecast is 870,000, a 64 % increase. With respect to the Provincial Places to Grow growth plan forecasts, the Region's ROPA 24 will address how the provincial growth plan target (1.69 million people by 2031) will be met.

On May 29, 2013, Amendment 2 (2013) to the Growth Plan was recommended by the Minister and approved pursuant to Order in Council 767/2013. Amendment 2 updates and extends the Growth Plan's population and employment forecasts by 10 years, from 2013 to 2041.

Figure 16 Bram East Secondary Plan Schedule SP41(a)



4.9 Cultural Environment

4.9.1 Cultural and Built Heritage Assessment Report

MHBC Cultural Heritage Division prepared a preliminary summary report **(refer to Appendix K)** that contains a summary of the fieldwork undertaken and background research to identify known or potential cultural heritage resources within or adjacent to the study area and to identify if a Heritage Impact Assessment is required. The summary report identified three cultural heritage resources and one potential cultural heritage resource in close proximity to The Gore Road existing right of way and includes:

- 8999 The Gore Road – Ebenezer Primitive Methodist Chapel and Cemetery (designated);
- 4494 Ebenezer Road – Ebenezer Schoolhouse (designated);
- The St. John's Castlemore Cemetery (west side of The Gore Road, south of Fitzpatrick); and
- Mature spruce treelines at the subdivision SWM pond area (east side of The Gore Road between Castle Oaks Crossing and Gardenbrooke Trail).

As such, the need for a Heritage Impact Assessment was identified to determine if the proposed widening of The Gore Road will have adverse impacts on the above cultural heritage resources.

4.9.2 Archaeology

AECOM completed a Stage 1 archaeological assessment for The Gore Road study area, included as **Appendix L**. As part of the Stage 1 assessment, previously completed archaeological assessment reports were requested and reviewed. Based on the review of available reports, The Gore Road right of way was previously assessed as well as a few areas outside of the right of way. As such, twelve areas outside of The Gore Road right of way have been identified as requiring a Stage 2 assessment. Furthermore, nine areas within and outside of the right of way were assumed to have been assessed as these areas are now built up.

4.10 Structures

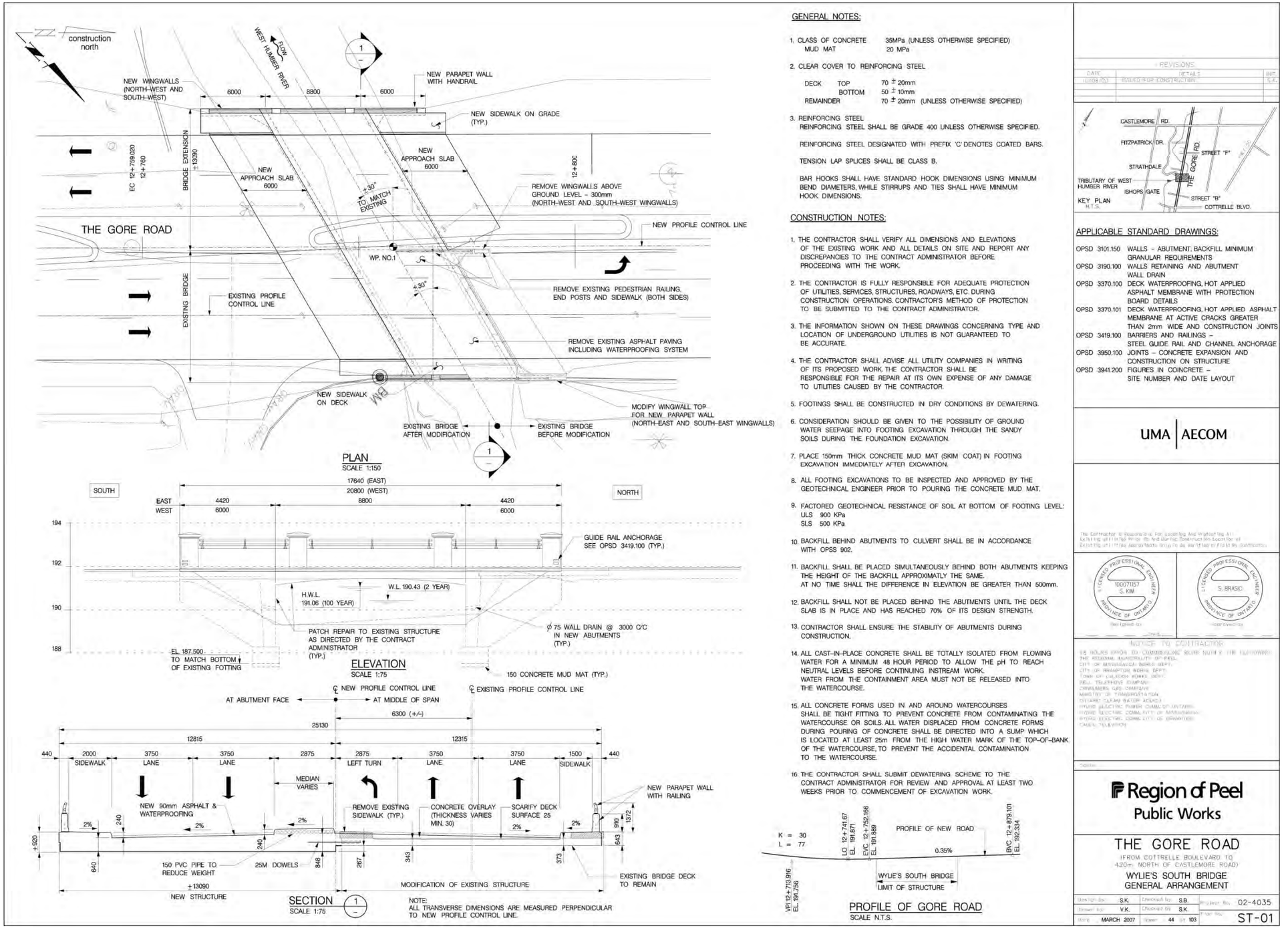
There are three structures in the study area, each carrying The Gore Road over minor tributaries of the West Humber River.

Figures 17 to 19 show the general arrangements for the three bridges referred to as:

- North of Castlemore;
- Wylie North; and
- Wylie South.

They are in generally good structural condition and were expanded as part of the recent 4-lane widening program. However, the crossings are all substandard in terms of MTO freeboard requirements.

Figure 17 Wylie's Creek South Structure



GENERAL NOTES:

1. CLASS OF CONCRETE 35MPa (UNLESS OTHERWISE SPECIFIED)
   MUD MAT 20 MPa
2. CLEAR COVER TO REINFORCING STEEL
   DECK TOP 70 ± 20mm
   BOTTOM 50 ± 10mm
   REMAINDER 70 ± 20mm (UNLESS OTHERWISE SPECIFIED)
3. REINFORCING STEEL
   REINFORCING STEEL SHALL BE GRADE 400 UNLESS OTHERWISE SPECIFIED.
   REINFORCING STEEL DESIGNATED WITH PREFIX 'C' DENOTES COATED BARS.
   TENSION LAP SPLICES SHALL BE CLASS B.
   BAR HOOKS SHALL HAVE STANDARD HOOK DIMENSIONS USING MINIMUM BEND DIAMETERS, WHILE STIRRUPS AND TIES SHALL HAVE MINIMUM HOOK DIMENSIONS.

CONSTRUCTION NOTES:

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2. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ADEQUATE PROTECTION OF UTILITIES, SERVICES, STRUCTURES, ROADWAYS, ETC. DURING CONSTRUCTION OPERATIONS. CONTRACTOR'S METHOD OF PROTECTION TO BE SUBMITTED TO THE CONTRACT ADMINISTRATOR.
3. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE.
4. THE CONTRACTOR SHALL ADVISE ALL UTILITY COMPANIES IN WRITING OF ITS PROPOSED WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR AT ITS OWN EXPENSE OF ANY DAMAGE TO UTILITIES CAUSED BY THE CONTRACTOR.
5. FOOTINGS SHALL BE CONSTRUCTED IN DRY CONDITIONS BY DEWATERING.
6. CONSIDERATION SHOULD BE GIVEN TO THE POSSIBILITY OF GROUND WATER SEEPAGE INTO FOOTING EXCAVATION THROUGH THE SANDY SOILS DURING THE FOUNDATION EXCAVATION.
7. PLACE 150mm THICK CONCRETE MUD MAT (SKIM COAT) IN FOOTING EXCAVATION IMMEDIATELY AFTER EXCAVATION.
8. ALL FOOTING EXCAVATIONS TO BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO POURING THE CONCRETE MUD MAT.
9. FACTORED GEOTECHNICAL RESISTANCE OF SOIL AT BOTTOM OF FOOTING LEVEL:
   ULS 900 KPa
   SLS 500 KPa
10. BACKFILL BEHIND ABUTMENTS TO CULVERT SHALL BE IN ACCORDANCE WITH OPSS 902.
11. BACKFILL SHALL BE PLACED SIMULTANEOUSLY BEHIND BOTH ABUTMENTS KEEPING THE HEIGHT OF THE BACKFILL APPROXIMATELY THE SAME. AT NO TIME SHALL THE DIFFERENCE IN ELEVATION BE GREATER THAN 500mm.
12. BACKFILL SHALL NOT BE PLACED BEHIND THE ABUTMENTS UNTIL THE DECK SLAB IS IN PLACE AND HAS REACHED 70% OF ITS DESIGN STRENGTH.
13. CONTRACTOR SHALL ENSURE THE STABILITY OF ABUTMENTS DURING CONSTRUCTION.
14. ALL CAST-IN-PLACE CONCRETE SHALL BE TOTALLY ISOLATED FROM FLOWING WATER FOR A MINIMUM 48 HOUR PERIOD TO ALLOW THE pH TO REACH NEUTRAL LEVELS BEFORE CONTINUING INSTREAM WORK. WATER FROM THE CONTAINMENT AREA MUST NOT BE RELEASED INTO THE WATERCOURSE.
15. ALL CONCRETE FORMS USED IN AND AROUND WATERCOURSES SHALL BE TIGHT FITTING TO PREVENT CONCRETE FROM CONTAMINATING THE WATERCOURSE OR SOILS. ALL WATER DISPLACED FROM CONCRETE FORMS DURING POURING OF CONCRETE SHALL BE DIRECTED INTO A SUMP WHICH IS LOCATED AT LEAST 25m FROM THE HIGH WATER MARK OF THE TOP-OF-BANK OF THE WATERCOURSE, TO PREVENT THE ACCIDENTAL CONTAMINATION TO THE WATERCOURSE.
16. THE CONTRACTOR SHALL SUBMIT DEWATERING SCHEME TO THE CONTRACT ADMINISTRATOR FOR REVIEW AND APPROVAL AT LEAST TWO WEEKS PRIOR TO COMMENCEMENT OF EXCAVATION WORK.

PROFILE OF GORE ROAD
SCALE N.T.S.

APPLICABLE STANDARD DRAWINGS:

OPSD 3101.150	WALLS – ABUTMENT; BACKFILL MINIMUM GRANULAR REQUIREMENTS
OPSD 3190.100	WALLS RETAINING AND ABUTMENT WALL DRAIN
OPSD 3370.100	DECK WATERPROOFING, HOT APPLIED ASPHALT MEMBRANE WITH PROTECTION BOARD DETAILS
OPSD 3370.101	DECK WATERPROOFING, HOT APPLIED ASPHALT MEMBRANE AT ACTIVE CRACKS GREATER THAN 2mm WIDE AND CONSTRUCTION JOINTS
OPSD 3419.100	BARRIERS AND RAILINGS – STEEL GUIDE RAIL AND CHANNEL ANCHORAGE
OPSD 3950.100	JOINTS – CONCRETE EXPANSION AND CONSTRUCTION ON STRUCTURE
OPSD 3941.200	FIGURES IN COINCRETE – SITE NUMBER AND DATE LAYOUT

UMA | AECOM

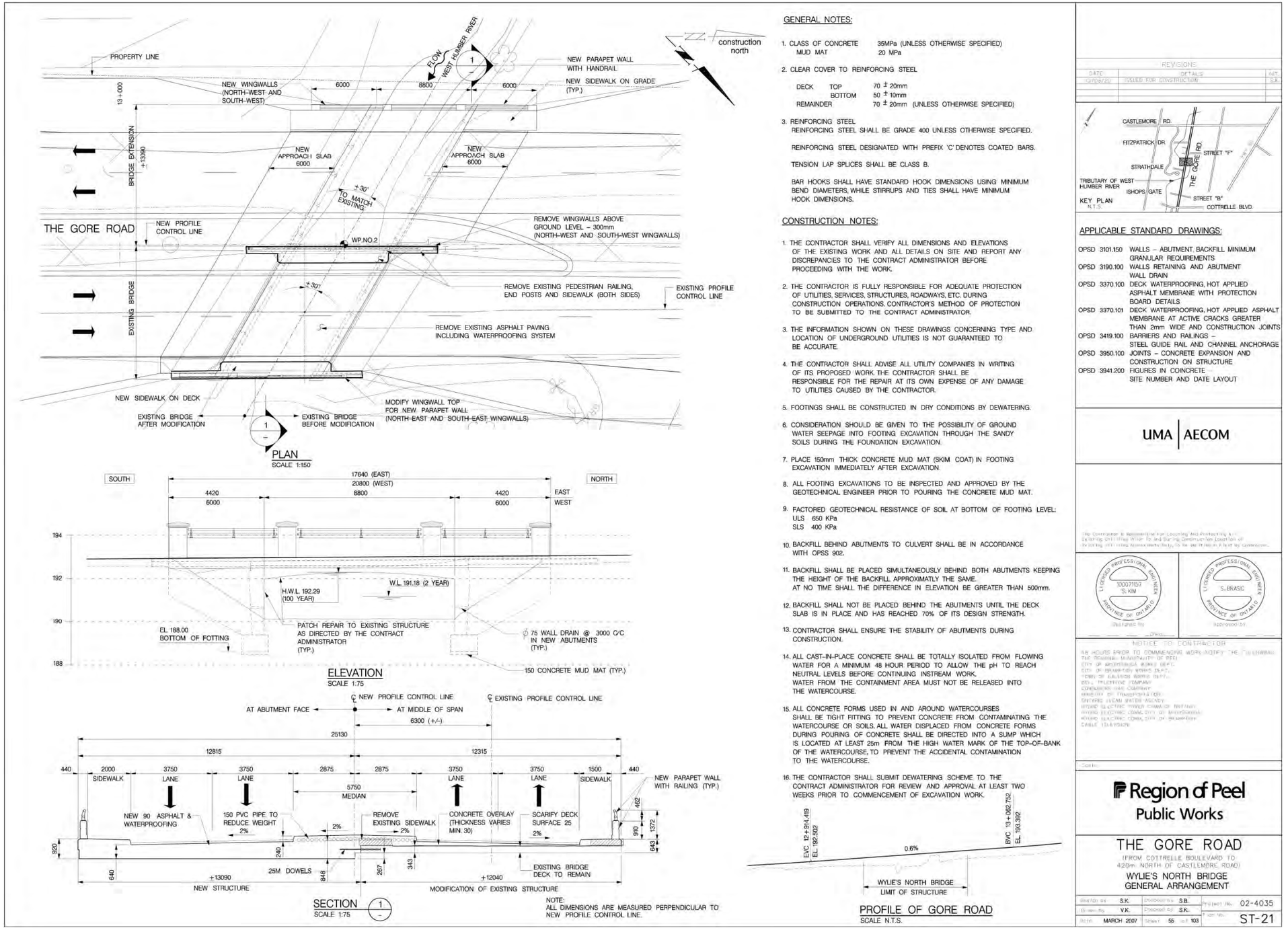
Region of Peel
Public Works

THE GORE ROAD
(FROM COTTRELLE BOULEVARD TO 420m NORTH OF CASTLEMORE ROAD)
WYLIE'S SOUTH BRIDGE
GENERAL ARRANGEMENT

Design by:	S.K.	Checked by:	S.B.
Drawn by:	V.K.	Checked by:	S.K.
Date:	MARCH 2007	Sheet:	44 of 103

Project No. 02-4035
Drawing No. ST-01

Figure 18 Wylie's Creek North Structure



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PROFILE OF GORE ROAD
SCALE N.T.S.

REVISIONS

DATE	DETAILS	INIT.
10/26/2010	ISSUED FOR CONSTRUCTION	S.K.

APPLICABLE STANDARD DRAWINGS:

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OPSD 3370.100	DECK WATERPROOFING, HOT APPLIED ASPHALT MEMBRANE WITH PROTECTION BOARD DETAILS
OPSD 3370.101	DECK WATERPROOFING, HOT APPLIED ASPHALT MEMBRANE AT ACTIVE CRACKS GREATER THAN 2mm WIDE AND CONSTRUCTION JOINTS
OPSD 3419.100	BARRIERS AND RAILINGS – STEEL GUIDE RAIL AND CHANNEL ANCHORAGE
OPSD 3950.100	JOINTS – CONCRETE EXPANSION AND CONSTRUCTION ON STRUCTURE
OPSD 3941.200	FIGURES IN COINCRETE SITE NUMBER AND DATE LAYOUT

UMA | AECOM

LICENCED PROFESSIONAL ENGINEER 10071157 S. KIM PROVINCE OF ONTARIO
Designed by

LICENCED PROFESSIONAL ENGINEER S. BRASIC PROVINCE OF ONTARIO
Approved by

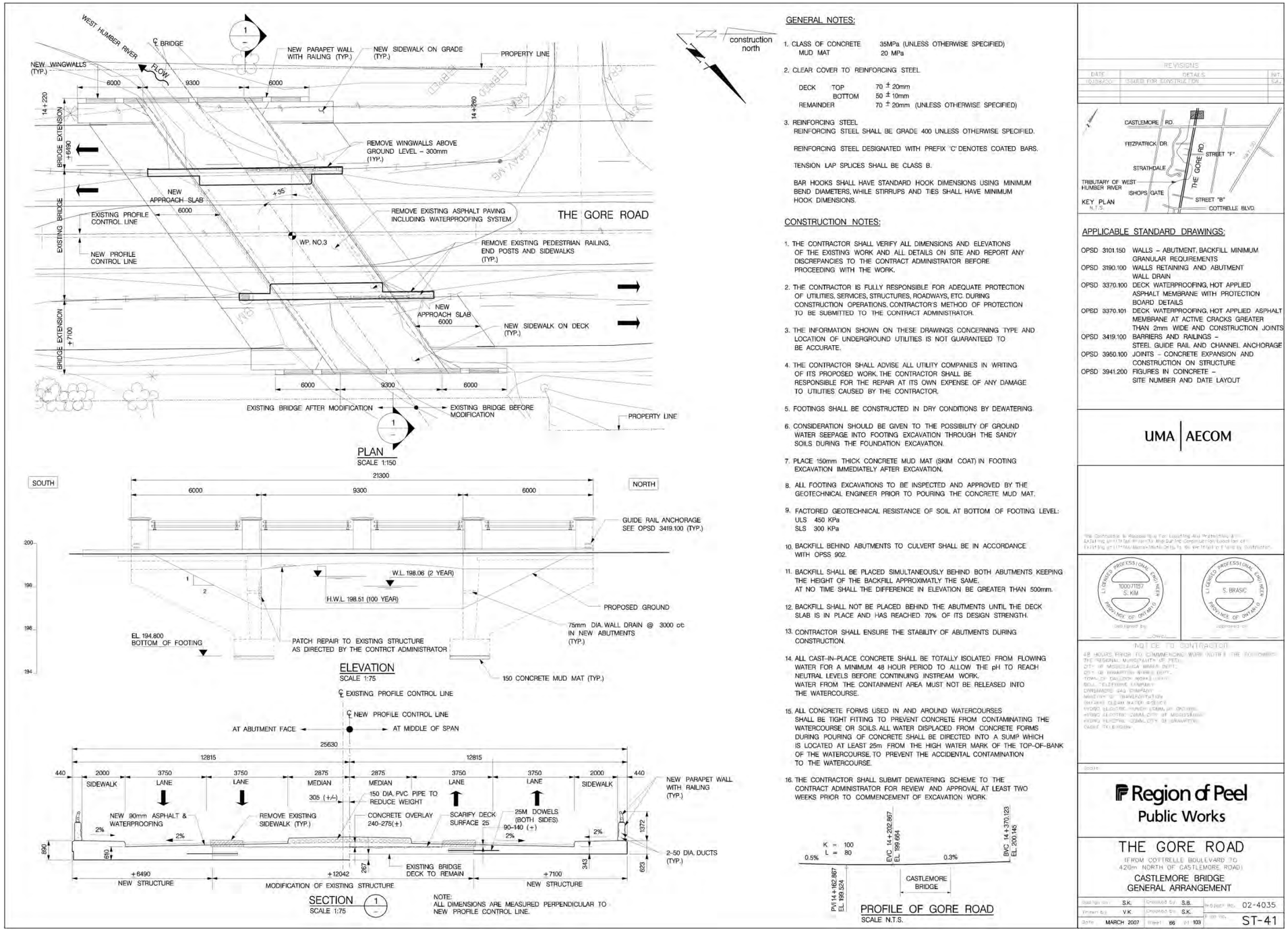
NOTICE TO CONTRACTOR
48 HOURS PRIOR TO COMMENCING WORK NOTIFY THE FOLLOWING:
THE REGIONAL MUNICIPALITY OF PEEL
CITY OF MISSISSAUGA WORKS DEPT.
CITY OF BRAMPTON WORKS DEPT.
TOWN OF CALEDON WORKS DEPT.
BELL TELEPHONE COMPANY
CONSUMERS GAS COMPANY
MINISTRY OF TRANSPORTATION
ONTARIO CLEAN WATER AGENCY
HYDRO ELECTRIC POWER COMM. OF BRAMPTON
HYDRO ELECTRIC COMM. CITY OF MISSISSAUGA
HYDRO ELECTRIC COMM. TOWN OF CALEDON
CABLE TELEVISION

Region of Peel
Public Works

THE GORE ROAD
(FROM COTTRELLE BOULEVARD TO 420m NORTH OF CASTLEMORE ROAD)
WYLIE'S NORTH BRIDGE
GENERAL ARRANGEMENT

Designed by	S.K.	Checked by	S.B.	Project No.	02-4035
Drawn by	V.K.	Checked by	S.K.		
Date	MARCH 2007	Sheet	55 of 103	Drawing No.	ST-21

Figure 19 Humber Tributary Structure North of Castlemore Road



4.11 Soils, Geotechnical, and Pavement Conditions

4.11.1 Geotechnical Conditions

Geotechnical investigations were completed in 2003 for the widening of the Wylie's bridges and the bridge north of Castlemore Road. At the Wylie's south bridge till/shale complex was found between the depths of 0.9m and 1.8m below ground surface. Below the till/shale complex is shale bedrock, which can be found at depths of 2.0m to 2.1m. At the Wylie's north bridge till/shale complex was found between the depths of 1.4m to 2.4m below ground. Below the till/shale complex, the surface of shale bedrock was found at 3.4m to 4.7m below ground surface. For the bridge north of Castlemore Road, a major deposit of silty sand till was encountered at 2.9m to 4.4m below the ground surface under fill and native silty sand; fill, clayey silt till and silty sand; clayey silt till and silty sand

4.11.2 Pavement Conditions

A pavement design report was completed in 2003 for The Gore Road widening from Queen Street to 300m north of Castlemore Road project. The purpose of this report was to identify pavement structure and subgrade type along the lanes and shoulders of the road in addition to a soils assessment within the proposed widening area and provide recommendations for pavement rehabilitation and widening.

For the last widening, it was recommended that excavation from the existing edge of pavement was carried out to provide for: 40mm hot load (HL) surface course asphalt; 100 (50+50)mm HL binder course asphalt; 150mm Granular A base course; and minimum 500mm Granular B Type I subbase course. Match Granular B thickness with existing granular where thicker granular presents.

4.12 Stormwater Infrastructure

The Gore Road is a major north-south arterial road in the City of Brampton and recent improvements include:

- Widening from two to four lanes from Cottrelle Boulevard to Castlemore Road in 2011;
- Widening from two to four lanes from Queen Street to Cottrelle Boulevard in 2012;
- Extensions of three major crossing bridges: north of Castlemore Road, Wylie's Creek North and Wylie's Creek South;
- Extension of minor crossings/culverts;
- Storm sewer system;
- Drainage ditches; and
- Oil grit separators.

The following sections describe the existing drainage conditions of The Gore Road.

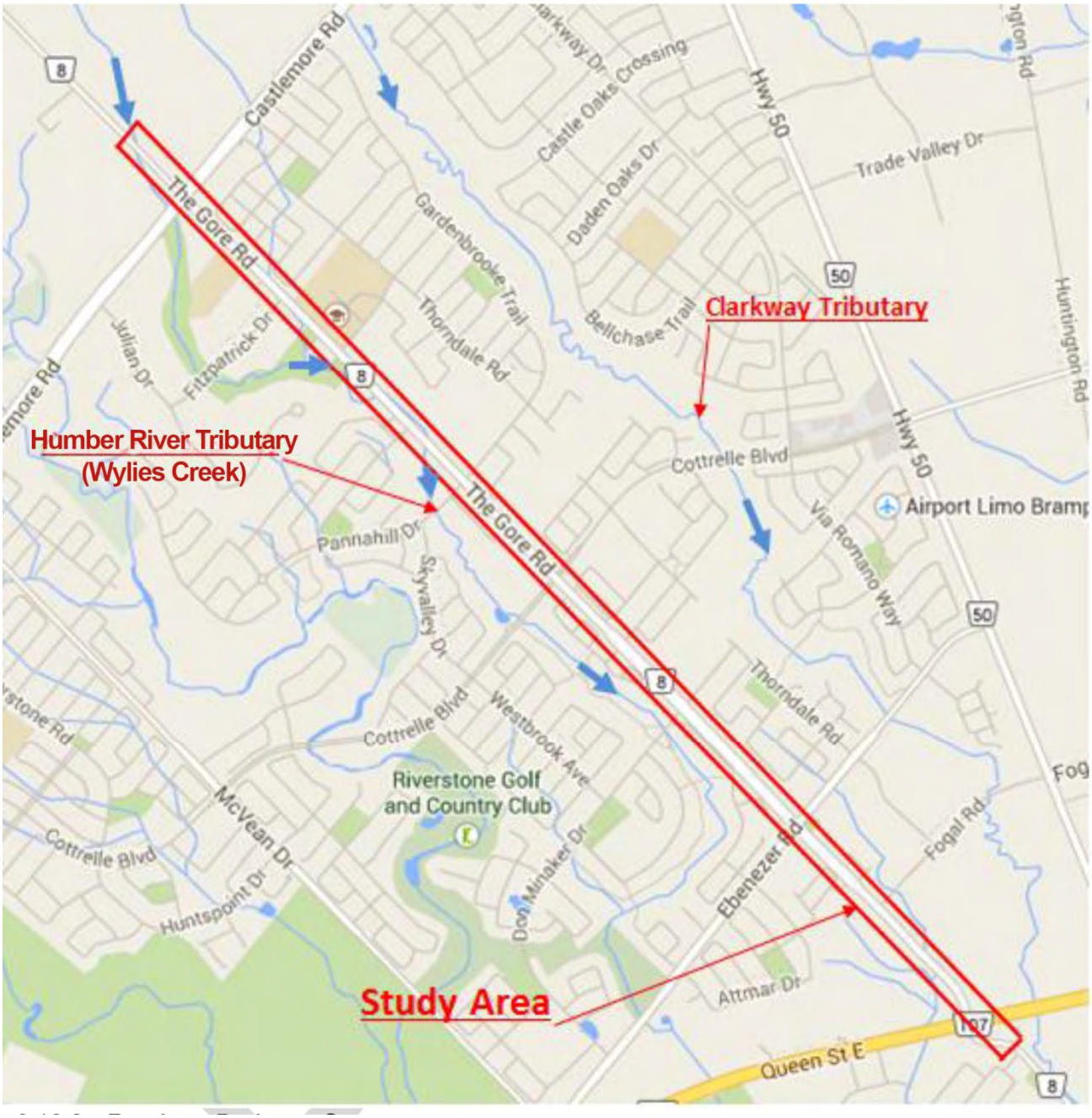
4.12.1 Watershed

The study area is located in The Gore Road Tributary of the West Humber River watershed as shown on **Figure 20**, and falls entirely within the jurisdiction of the Toronto and Region Conservation Authority (TRCA). The Gore Road Tributary starts northeast of Healey Road and Humber Station Road and crosses The Gore Road near north of Castlemore Road after travelling approximately 10 km. The tributary meanders back and forth and crossing The Gore Road two more times near Strathdale Road. Clarkway Tributary of Humber River is also located

on the east side of the study area as shown on **Figure 20**. Majority of the study area drains to The Gore Road Tributary while a portion of the study area also drains to the Clarkway Tributary after passing through a stormwater management facility.

TRCA provided previous hydrologic model developed for the Humber River watershed and simulated peak flow rates (from a recent hydrology update) at selected locations were also provided for the hydraulic analysis of The Gore Road Tributary. The flow rates as per this updated hydrologic model are used in the hydraulic analysis.

Figure 20 Drainage Study area



4.12.2 Roadway Drainage System

The existing road drainage system can be broadly divided into five catchments as illustrated on **Figures 21** and **22** and briefly described in the following sections.

North of Castlemore Road: Storm runoff in roadway area north of Castlemore Road is collected through a network of storm sewer system and road side drains on both sides of The Gore Road. The storm sewer is approximately 160 m long and 300-375 mm in diameter and discharges into The Gore Road Tributary after passing through oil grit separator (OGS) units (STC 2000) located on west side of The Gore Road.

Castlemore Road to Wylie's Creek North Bridge: This section of the road is approximately 900 m long and storm runoff is collected through a storm sewer system and road side drains on both sides of The Gore Road. The storm sewers are approximately 900 m long and 300 mm to 525 mm in diameter and drain an area of approximately 4.2 ha and discharged into a recently built SWM pond as shown on **Figure 21**. An OGS unit (STC 2000) is also provided before it discharges into the SWM pond. The SWM pond has been designed to provide quality, quantity and erosion controls as per TRCA stormwater management criteria. Outflows from the pond are discharged into The Gore Road Tributary.

Wylie's Creek North Bridge to Pannahill Drive: Runoff in this section of the road is collected through a 340 m long storm sewer network (300 mm to 450 mm in diameter) and discharged uncontrolled directly into The Gore Road Tributary as shown on **Figure 21**. Two oil grit separators (STC 2000) are installed at the end of the storm sewer before its discharge into the tributary to provide quality control.

Pannahill Drive to Cottrelle Boulevard: The storm sewer system in this section of The Gore Road is approximately 300 m long and collects runoff from an approximate area of 2.2 ha. The collected runoff is discharged into an existing storm sewer at Pannahill Drive which discharges into an existing SWM pond and ultimately into The Gore Road Tributary.

Cottrelle Blvd to Eastview Gate: Storm runoff in this section of the road is collected and conveyed into the existing storm sewer network at Pompano Place and Eastview Gate roads which ultimately discharges into an existing SWM pond and into The Gore Road Tributary.

Eastview Gate to Ebenezer Road: The area in this section of The Gore Road is drained through a storm sewer network which discharges into the existing storm sewer at Gallview Lane which discharges into an existing SWM pond and ultimately into The Gore Road Tributary.

Ebenezer Road to Queen Street: The storm sewer in this section of the road is approximately 1 km long and ranges in diameter from 300 mm to 900 mm and flows southward toward Queen Street and ultimately discharges into an existing SWM pond and ultimately into The Gore Road Tributary.

The storm sewer infrastructure in the study area is summarized in **Table 6** below.

Table 6 Existing Stormwater Sewer Infrastructure

Section	Drainage Area (ha)	Storm Sewer Length (m)	Pipe Diameter (mm)	Water Quality Control	Outlet
North of Castlemore Road	1.19	160	300 - 375	OGS Units	The Gore Road Tributary
Castlemore Road to Wylie North Bridge	4.17	910	300 - 600	SWM Pond	SWM Pond 1 – The Gore Road Tributary
Wylie North Bridge to Pannahill Drive	1.68	340	300 - 450	OGS Units	The Gore Road Tributary
Pannahill Drive to Cottrelle Blvd	2.17	300	300 - 450	OGS+SWM Pond	SWM Pond – The Gore Road Tributary
Cottrelle Blvd to Eastview Gate	1.73	610	300 - 450	SWM Pond	SWM Pond – The Gore Road Tributary
Eastview Gate to Ebenezer Road	4.08	530	300 - 525	SWM Pond	SWM Pond – The Gore Road Tributary
Ebenezer Road to Queen Street	3.17	675	300 - 600	-	The Gore Road Tributary

Figure 21 Existing Road Drainage System – North Half

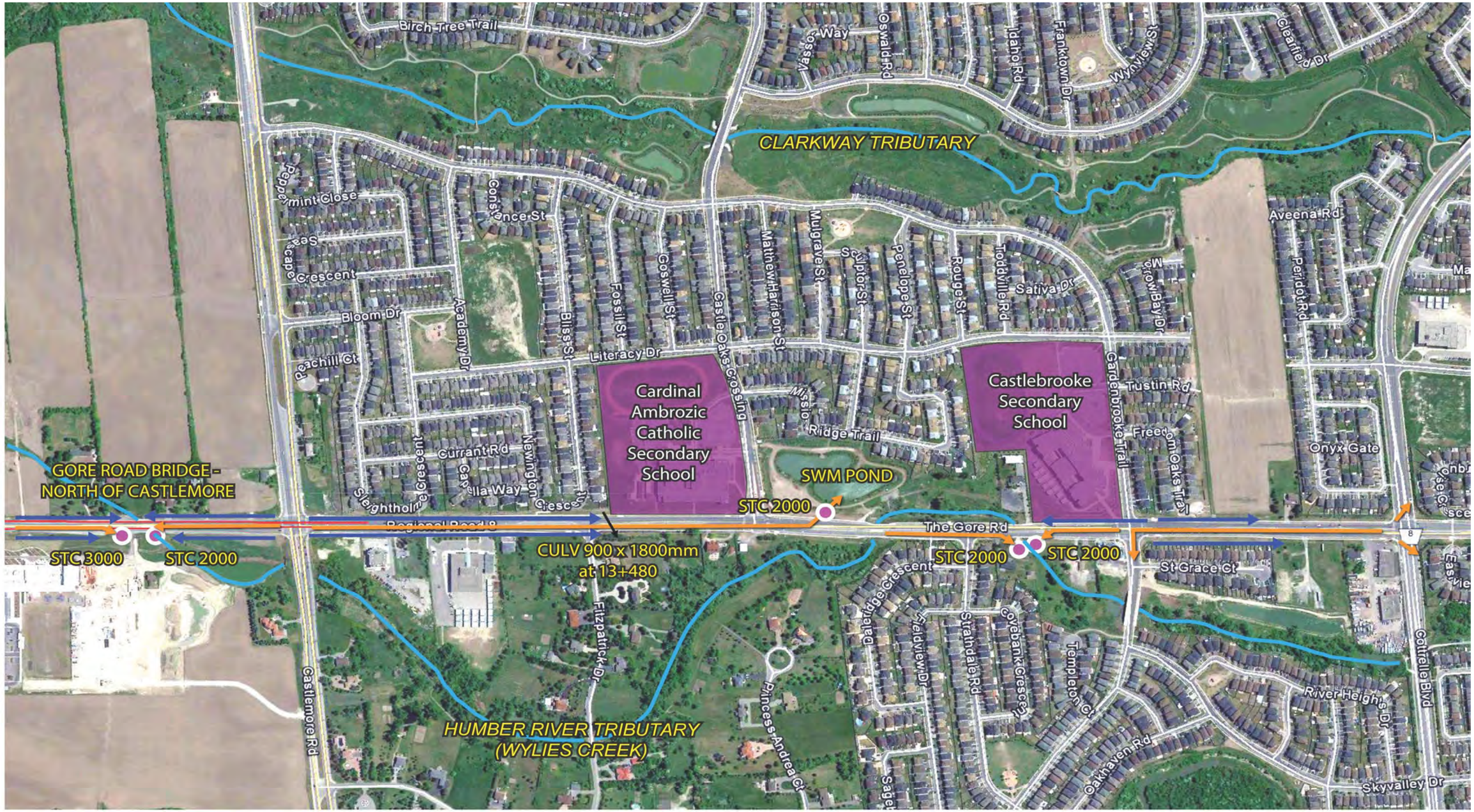


Figure 22 Existing Road Drainage System – South Half

4.12.3 Watercourse Crossings

Within the study area, The Gore Road Tributary is crossed at three locations along with other minor watercourse crossings. The three bridges were expanded as part of the recent 4-lane widening works and the physical features of the existing bridges are summarized in **Table 7** below.

Table 7 Existing Bridge Features

Bridge/Culvert Name	Approximate Chainage	Structural Span	Skew Angle	Waterway Length
		(m)	(°)	(m)
North of Castlemore Bridge	14+243	9.3	35	27.0
Wylie North Bridge	13+020	8.8	30	26.3
Wylie South Bridge	12+818	8.8	30	26.7

4.13 Utilities

The following utilities are located in or crossing The Gore Road corridor.

- Water: Owner – Region of Peel
- Sanitary Sewer: Owner – Region of Peel
- Storm Sewer: Owner – Region of Peel
- Electricity: Owner – Brampton Hydro
- Gas: Owner – Enbridge
- Phone: Owner – Bell
- Cable: Owner - Rogers

All utilities requiring replacements or upgrades have been addressed during the recent widening of The Gore Road from 2 to 4 lanes.

5. Problem/Opportunity Statement

A key step in the Municipal Class EA process is to develop a Problem/Opportunity Statement that defines the opportunities and challenges being addressed in the study. Based on the existing conditions and policies as outlined above, the problems, needs, and opportunities to be addressed in The Gore Road Municipal Class EA are:

- Approved and planned growth within and outside the study area will contribute to an increase in travel demand in The Gore Road corridor over the next 10 to 25 years;
- The need is to optimize the vehicle carrying capacity of The Gore Road so as to accommodate traffic growth, in balance with its functions as a community facility and Active Transportation corridor;
- As part of a regional-scale problem, there is a general need to improve the ability of the corridor to promote or contribute to an increase in the mode share of transit, walking, and cycling modes in the study area;
- The opportunity exists to enhance the comfort, safety, enjoyment, attractiveness, and functionality of The Gore Road for all its current and future users; and
- The opportunity exists to develop The Gore Road as a showcase for Complete Streets, Low Impact drainage design, cycling infrastructure, streetscaping, and other state-of-the-art road corridor features in Peel Region.

In order to address the above, the Region initiated this planning process.

6. Alternatives Development, Analysis, and Evaluation

6.1 Design Criteria

The Gore Road right-of-way is limited in width (generally 45 m), which places constraints on its ability to accommodate all possible combinations of road elements. The minimum (standard) widths of the various geometric components of the road corridor are:

Lanes	
General Traffic	3.3 m (existing 3.65 m)
Curb Lane (General Traffic)	3.5 m
Left Turn Lane	3.25 m
Auxiliary Right Turn Lane	3.25 m
Median	
Raised Planted	5.75 m
Flush (Paved)	5.0 m (Transportation Association of Canada)
Two Way Left Turn Lane	5.0 m (Transportation Association of Canada)
Island at Signalized Intersection	2.5 m
Active Transportation	
Shared Curb Lane	4.0 m – 4.5 m
Bicycle Lane On Street	1.5 m (60 km/h zone); 1.8 m (70+ km/h zone)
Bicycle Lane - Physically Separated	add 0.5 m for buffer/barrier
Bicycle Lane (Raised) At Curb	2.1 m (can incorporate 1.0 m splash zone)
Off-Road Multi-Use Path (Two Way)	3.0 m (1.5 m min. offset from travelled lane; 1.0 m clear zone)
Sidewalk	1.5 m (1.8 m desirable or if adjacent to travelled lane)
Transit	
Curb Lane for Buses – Shared	
Curb Lane for Buses – Dedicated	
Indented Bus Bay	3.5 m
Boulevard	**6.0 m**
Splash Zone/Snow Storage	1.0 m
Landscaping/Street Furniture/Utility Zone	4.0 m

The criteria are drawn largely from the York Region Pedestrian and Cycling Planning and Design Guidelines (Mar. 2008), and checked against the provisions of the *Accessibility for Ontarians with Disabilities Act* (*AODA*) (2005). These minima can be enlarged where there is space, and site-specific reviews may permit minor reductions in certain dimensions if needed to fit into a constrained situation.

While it is recognized that some of these widths may be altered slightly in detail design, they are used here as the baseline measurements for the development of alternative design concepts.

6.2 Alternative Design Concepts

6.2.1 “Long List” of Alternative Design Concepts

The following alternatives were identified over the course of the study as a means of improving the transportation functionality of The Gore Road:

Active Transportation

- Leave vehicular capacity and operations as is, but improve infrastructure (including connections) for walking and cycling in parts or all of the corridor:
  - Bicycle lanes on street;
  - Bicycle lanes (Cycle Tracks) off street;
  - Multi-Use Paths (MUPs) off street; and
  - or combinations of the above (i.e. one type in one direction, a different type in the other direction).

Improve Transit Accommodation

- Bus bays; and
- Transit signal priority.

Intersection Improvements

- Provide vehicular capacity increases at major intersections (e.g. double left turn lanes); and
- Restrict vehicle turns and/or pedestrian crossings to reduce conflicts which affect vehicular capacity.

Widening

- Add a fifth (reversible or permanent) lane to increase vehicular capacity in the southbound direction (permanently) or in the peak direction (reversible);
- Widen to six through lanes between Cottrelle Boulevard and Queen Street; and
- Widen to six through lanes between Castlemore Road and Queen Street.

Managing corridor operations

- Reducing the number of signalized and unsignalized intersections and driveways;
- Positioning and designing bus stops to avoid conflict with through traffic;
- Restricting, managing, and/or relocating left turns;
- Coordinating signal timing for uninterrupted peak direction traffic flow;
- Increasing the speed limit; and
- Ensuring directional signage is clear and positioned so as to reduce motorist confusion and last-minute manoeuvers.

The above strategies are not necessarily alternatives *to* one another; many of them can be part of a package of measures that collectively contribute to increasing corridor capacity.

Note that The Gore Road already has full sidewalks on both sides, so no changes are proposed in that regard, other than potentially replacing them with wider multi-use paths.

Some reference may be made to the **Do Nothing** approach as the definition of a base case against which the other alternatives may be compared, but “Do Nothing” per se is not considered a feasible alternative because it fails to address the needs and opportunities present. Furthermore, if Do Nothing were to turn out to be the preferred solution, the whole point of the study would be moot because there would be no need to create an Environmental Study Report or seek approval under the *EA Act* for that alternative. It will therefore not be considered further in this analysis.

Similarly, **Transportation Demand Management** programs such as providing trip planning and real-time traffic operational information to influence motorists' decisions to use The Gore Road (affecting time, mode, route of travel) may contribute to a solution but do not form a viable standalone alternative and do not require approval under the EA Act. Demand Management. They are therefore treated as an assumed set of background measures and programs being undertaken by the Region and other agencies, and their impact is already embedded in the travel demand forecasting models being used for The Gore Road.

It may be noted that the **Widening** alternatives are the only ones that require completion of the full Schedule C process under the *Municipal Class EA*. All of the other alternatives identified above fall under the Schedule A or A+ (pre-approved) categories and do not require completion or filing of an Environmental Study Report. However, since the study does consider some alternatives that follow Schedule C, the full Schedule C process and documentation is followed.

6.2.2 Screening of "Long List" of Alternatives

Given the above, the screening process focuses on the Widening alternatives, because if they are screened out then the rest of the study becomes a more straightforward design exercise. In the case of The Gore Road, consideration of widening issues is largely related to traffic analysis.

The need for additional vehicular capacity on The Gore Road has been established in the LRTP. The traffic modelling investigation carried out for the current study confirmed that, at the east-west screenline level (Goreway Drive to Highway 50), volume-to-capacity ratios directly extracted from the EMME model for 2031 suggest that there is a potential need for additional north-south screenline capacity (at the link level of analysis), between Cottrelle Boulevard and Queen Street (especially to the south in the vicinity of Queen Street).

However, this level of analysis does not consider intersection operations (i.e. that several of the moves – particularly southbound left turns - which would accommodate such growth are already at capacity) and the model has only been validated to screenlines that span the entire length of the Region (the "Mississauga North" and "Brampton North" screenlines - see Figure 4.2 of the LRTP for details). Furthermore, the screenline analysis conducted as part of this study reveals that the majority of the peak demand (AM southbound direction) across Goreway Drive to Highway 50 screenline is focused to the west of The Gore Road along Goreway Drive and McVean Drive. For example, sensitivity testing has determined that Goreway Drive is forecast to carry 30% more southbound traffic than The Gore Road at Queen Street even if The Gore Road is widened to 6 lanes.

At the more detailed intersection level analysis (using EMME model screenline growth rates that are applied to observed counts), it does not suggest the need for additional through lane capacity improvements along The Gore Road (beyond four lanes) between Castlemore Road and Queen Street by 2031. To the south of Queen Street the Claireville Conservation Area serves as a natural barrier and The Gore Road only continues a short distance to connect to Highway 50. As a result, turns represent a significant portion of the overall flow along The Gore Road (particularly at the approach to Queen Street).

AM peak hour capacity deficiencies along The Gore Road are generally focused around key intersections with major east-west roads that link to the existing/future Highway 427 interchanges:

- **Castlemore Road:** Southbound Left is at capacity in 2031 in the AM peak hour, which suggests the potential need for dual-left turn lanes. Eastbound through movement is also expected to operate above capacity with the existing 2 through lanes in 2031. However,

Castlemore Road is planned to be widened to 6 lanes (3 lanes in each direction) and the additional through lane was found to address this issue.

- **Cottrelle Boulevard:** Southbound Left is at or approaching capacity in 2031 in the AM peak hour, which suggests the potential need for dual-left turn lanes.
- **Queen Street:** Existing dual Southbound Left is expected to continue to operate near capacity in the 2031 AM peak hour with similar delays and performance to existing conditions. There may also be an opportunity to further relieve the critical Southbound Left movement in the future through improvements to the left turn capacity at Castlemore Road and Cottrelle Boulevard (as outlined above), which may draw additional traffic away from Queen Street.

PM peak hour capacity deficiencies were less significant:

- Potential capacity issues with Southbound left at **Fogal Road** (260 veh/h), Northbound left at **Ebenezer Road** (400 veh/h), and Eastbound left at **Castlemore Road** (140 veh/h) can be addressed through signal optimization (split optimization and phasing) to stay under the volume/capacity thresholds: 0.85 for through and 0.9 for turns.
- Issues remain at The Gore Road and **Queen Street** however but none related to Southbound or Northbound through movements.

Overall, the modelled traffic demand to 2031 indicates heavy left turn volumes at selected intersections (ones linked with Highway 427) but the link volumes between those intersections are within the capacity of a four-lane roadway.

It is therefore apparent that lack of through capacity is not the problem with The Gore Road in 2021 or 2031; whether it is four or six lanes, **the issue will always be the peak period left turn conditions at the major intersections** with Castlemore Road, Cottrelle Boulevard, and Queen Street. This is the result of the road network configuration in the study area, in which The Gore Road forms a naturally attractive “direct line” desire path for radially oriented trips between eastern Brampton/southern Caledon, Highway 427, and existing and future employment areas between Major Mackenzie and Highway 7 in Western Vaughan. However, since The Gore Road doesn’t actually connect with Highway 427 or continue further south beyond the vicinity of Queen Street, the majority of the southbound AM Peak trips must eventually turn (mostly left) to a cross road to continue their journey.

Widening The Gore Road south of Castlemore Road to six lanes could actually be counterproductive, since it could attract additional demand from parallel routes and feed into intersections that will already have left turn issues. All those Highway 427-oriented trips do have alternate routes, either on east-west roads or on parallel arterials. It is also worth noting that, since commercial vehicles are banned from The Gore Road, any growth in truck traffic to 2031 will not be directed to The Gore Road.

Traffic generated within the study area immediately surrounding The Gore Road south of Castlemore Road would be expected to grow relatively little over the next two decades; the area is nearly built out, and with improved transit, cycling, and walking opportunities being developed per approved Brampton and Peel multi-modal transportation plans, modal shifts away from auto use will likely offset any growth that does occur. The growth forecast for the corridor is largely trips generated by development lands to the north and west, which (a) has alternate routes available, (b) is just “passing through” the study area rather than being destined to it (there is minimal employment or peak period retail frontage on The Gore Road), and (c) conflicts with other corridor

uses – walking/cycling to/from school, locally-generated commuting travel, and access to local retail.

In this situation, there is little technical rationale for six laning all of The Gore Road prior to 2031; the existing four lanes south of Castlemore Road can accommodate forecast demand, and midblock widening would do nothing to improve operations at the three cited critical intersections, with the Queen Street intersection already approaching capacity (SB dual left currently at capacity). Designing the road to attract additional volume would be likely to make intersection operations worse, not better. A wider road would also conflict with Regional objectives related to improving conditions for pedestrians, cyclists, and transit users within or crossing the corridor.

Widening would also have significant cost and environmental implications, particularly given the location and alignment of Wylie's Creek within the study area and the investment required to mitigate impacts of road and structural widening on it. The heritage features on either side of the right-of-way at Ebenezer Road place further constraints on the ability to widen to six (seven) lanes in that critical location, and both built and approved development which goes to the property line in certain locations also limit the potential to widen while retaining other right-of-way elements.

As a consequence, the "Widening" alternative is screened out, and the study moves forward with a focus on the other alternatives: operational/capacity improvements at the three cited intersections (e.g. double turn lanes, signal optimizations, etc.) and applying Complete Street principles to upgrade conditions for all multimodal roadway users over the whole of the study area. This is consistent with the Regional LRTP intent: "In order for the Region to maintain the high quality of life enjoyed by its residents, it must shift away from a culture of auto-dependency and auto-oriented development to one of sustainable, transit-oriented development."

Of the remaining alternatives, the only one to be set aside at this point is "increase speed limits" under the "Manage Operations" alternative; increasing the speed of vehicular traffic on The Gore Road is contrary to the intent of all of the other alternatives and to objectives related to comfort, safety, and pedestrian and cyclist functionality. It will not be considered further.

Table 8 illustrates the text above.

Table 8 Long List of Alternative Ideas

"Long List" of Alternative Ideas	Screening Result
1. Increase Intersection Capacity	
a. More green time for North-South traffic	Carry Forward (Group 1) (for testing and refinement)
b. Longer traffic signal cycle length	Carry Forward (Group 1)
c. Double left turn lanes	Carry Forward (Group 2)
d. High-capacity intersection designs to reduce turning traffic conflicts	Carry Forward (Group 2) (at grade options)
e. Pedestrian bridges or tunnels across The Gore Road	Set Aside, not appropriate in this context
f. Wide median for two-stage pedestrian crossings	Set Aside, excessive penalties to pedestrians
2. Increase Roadway Capacity	
a. Adding one through lane in each direction throughout the corridor	No Further Action, Through Capacity is not the problem
b. Use reversible lanes to increase peak direction capacity without widening in both directions	No Further Action, Through Capacity is not the problem
c. Operational/capacity improvements select intersections	Carry Forward (Group 2)
3. Manage Gore Road Operations	
a. Reduce the number of intersections and driveways	Carry Forward (Group 3)
b. Implement bus bays	Carry Forward (Group 2)
c. Restrict left turns (in peak periods, or all day)	Carry Forward (Group 2)
d. Restrict truck traffic	No Further Action, trucks already restricted from using The Gore Road
e. Coordinate signal timing	Carry Forward (Group 1)
f. Increase the speed limit	Set Aside, not desirable
g. Ensure road signs are clear and properly located	Carry Forward (Group 1)
h. Restrict advertising and other motorist distractions	No Further Action, By-Laws in place
i. Providing trip planning and real-time traffic information to influence motorists' decisions to use The Gore Road (time, mode, route of travel)	No Further Action, GTA-wide activity, not specific to The Gore Road

Alternative Groups for Further Study

Alternative Group 1: Operational Improvements (No Infrastructure)
- 1a) More green time for N-S traffic
- 1b) Increase cycle length
- 1c) Coordinate signal timing
- 1d) Signage review/ improvement

Alternative Group 2: Localized Site Specific Infrastructure Changes
- 2a) Double left turn lanes
- 2b) High-Capacity intersection designs
- 2c) Reduce driveway left turns
- 2d) Implement bus bays

Alternative Group 3: "Whole of Corridor" Infrastructure Changes
- 3a) Adding one lane in each direction in part or all of the corridor
- 3b) Five-lane configuration with Tidal Flow operation (reversible median lane)
- 3c) Eliminate midblock left turns

6.3 Design Development

Given the conclusions of the screening of alternatives (Section 5.2.2), the focus for the design development shifts to creating a “Complete Street” accommodating all modes of travel. In so doing, the opportunity to apply Best Practices and new design strategies to create a Showcase project becomes a guiding principle.

The design questions are therefore:

a. What is the appropriate treatment for Active Transportation in the study area?

b. What infrastructure provisions should be made for transit along The Gore Road?

c. At what intersections on The Gore Road are specific capacity, operational, and/or safety improvements required, and what should those be?

d. What changes are required at the Wylie’s Creek crossings?

e. What additional infrastructure requirements are there in the study area to assist in meeting the study objectives?

In response, the design development is done as an integrated and coordinated whole, considering all the constraints in the corridor and all aspects of the environment as indicated by the Evaluation Criteria in the preceding Section.

6.3.1 Active Transportation

The analysis of Active Transportation alternatives is based on the procedure of the Ontario Traffic Manual (OTM) Book 18, which is the current standard as used by Peel Region. However, Book 18 criteria are more helpful in choosing shared space vs. bike lane vs. separated facility rather than in selecting from among different types of separated facilities. To compensate, the detail in the criteria that affect the bike lane vs. separated decision is limited and added detail is used to areas that would affect which separated facility to choose (e.g., land use, connectivity, turning volumes, conflict points).

For analysis purposes, the corridor is divided at Ebenezer Road, since the land uses change at Ebenezer Road and there is a nearby pathway parallel to The Gore Road north of Ebenezer Road but not south.

The base conditions for the analysis are:

- AADT (2031): 30,000 (may vary between 25,000 and 35,000, depending on location and growth rate);
- No. Lanes: 4;
- "Estimated equivalent for 2-lane road”: 15,000 vehicles/day (vpd);
- "85th Percentile Operating Speed: 79 km/h; and
- "Desirable Cycling Facility”: Separated Facility;
  - Active transportation pathway;
  - Separated bike lanes; and
  - Cycle tracks.

    OR Alternate Road.

The first step in OTM Book 18 is to use the pre-selection nomograph (below).

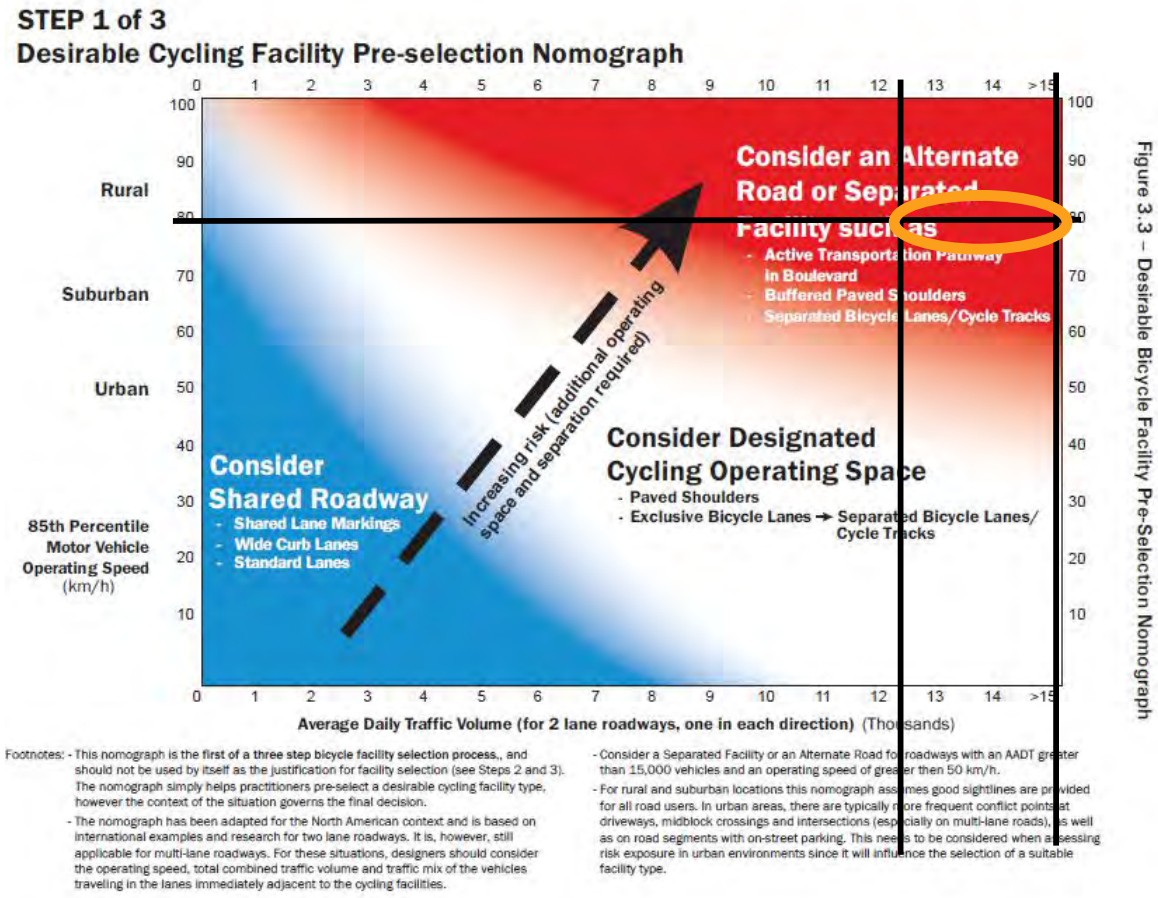


Figure 3.3 – Desirable Bicycle Facility Pre-Selection Nomograph

The nomograph determines that The Gore Road's combination of speed and traffic volume triggers consideration of an alternate route or facility separation for cyclists in the corridor. Lowering traffic speed (say to 50 or 60 km/h) would move the corridor into considering dedicated cycling operating space.

Step 2 of the OTM process takes the form of a three-stage analytic table:

a. Inventory Site Specific Conditions;
b. Review Key Design Considerations and Application; and
c. Select Appropriate and Feasible Bicycle Facility Type.

Table 9 Cycling Facility Selection Step 2A – Inventory Site Specific Conditions

Condition	Queen Street to Ebenezer Road	Ebenezer Road to Castlemore Road
Existing cross-section	• 5-lane road (4 travel lanes and median TWLTL) + turn lanes • ROW along most of the corridor is 45 m, though road is not always centred in ROW • Boulevard behind curb generally ranges from 8.5 m (where right-turn lane is present) to 12 m midblock - Most ROW pinch points are between 41 m and 45 m, except next to cemetery at Ebenezer Road, which is 32 m	
Land uses: East side	• Low-density commercial and vacant land planned for commercial development, in OP as Major Transit Node • Historic church and cemetery at southeast corner of Ebenezer Road: ROW constraint (limited to 32 m)	• Low-density residential • Large Hindu temple • Two secondary schools
Land uses: West side	• Low-density commercial and low-density residential	• Low-density residential • One primary school
Connectivity: East side	• Active transportation pathway on Queen Street • Sidewalks on all intersecting streets	• Active transportation pathways on Castlemore Road and Cottrelle Boulevard • Bicycle lanes on Castle Oaks Crossing • Sidewalks on all intersecting streets, plus 5 midblock sidewalks into adjacent neighbourhoods
Connectivity: West side	• Active transportation pathway on Queen Street • Sidewalks on all intersecting streets, plus 1 midblock sidewalk into adjacent neighbourhood	• Active transportation pathways on Castlemore Road and Cottrelle Boulevard • Sidewalks on all intersecting streets (except Fitzpatrick Drive), plus 5 midblock sidewalks into adjacent neighbourhoods • Trail along watercourse parallel to The Gore Road behind development: part of Major Pathway Network

Table 10 Cycling Facility Selection Step 2B – Review Key Design Considerations and Application

	Queen Street to Ebenezer Road	Ebenezer Road to Castlemore Road
SITE CHARACTERISTIC	**DESIGN CONSIDERATION AND APPLICATION OF HEURISTICS**	
PRIMARY CRITERIA		
85TH PERCENTILE MOTOR VEHICLE OPERATING SPEED		
High (70 to 89 km/h)	• Existing 85th-percentile speed varies between 76 and 79 km/h between Queen Street and Castlemore Road • Physical separation of bicycles and motor vehicles is most appropriate (such as buffered paved shoulders)	
MOTOR VEHICLE VOLUMES		
High volume (greater than 10,000 AADT on a two-lane road)	• 30,000 to 35,000 AADT by 2031 (Queen Street to Cottrelle Boulevard) • Physical separation of bicycles and motor vehicles may be most appropriate	• 25,000 to 30,000 AADT by 2031 (Cottrelle Boulevard to Castlemore Road) • 30,000 to 35,000 AADT by 2031 (Queen Street to Cottrelle Boulevard) • Physical separation of bicycles and motor vehicles may be most appropriate
Turning volumes	• Existing: Highest turning volumes at Queen Street, moderate turning volumes at Ebenezer Road	• Existing: Moderate turning volumes at Ebenezer Road and Cottrelle Boulevard • 2031: Largest increases expected at Cottrelle Boulevard and Castlemore Road, particularly southbound left and westbound right due to Highway 427 extension
FUNCTION OF THE STREET OR ROAD		
Mobility road such as arterial and major collector	• Major Road as per Region of Peel Official Plan (2012) Schedule E: Major Road Network • Suburban Connector as per Region of Peel Road Characterization Study (2013) • Some level of formal bicycle facility such as bicycle lanes or separated facility is appropriate	
VEHICLE MIX		

More than 30 trucks or buses per hour are present in a single curb lane.	• Up to 41 southbound trucks/buses in AM peak and 42 northbound trucks/buses in AM peak (existing volume) • Trucks are prohibited, so most heavy vehicles are buses, which are likely to use curb lane • Bus volumes planned to increase in future with increased transit service levels	• Up to 47 southbound trucks/buses in AM peak and 50 northbound trucks/buses in AM peak (existing volume) • Trucks are prohibited, so most heavy vehicles are buses, which are likely to use curb lane • Bus volumes planned to increase in future with increased transit service levels
	Separated bicycle facilities may be preferred by many cyclists. If wide curb lanes or bicycle lanes are considered, additional width should be provided as a buffer.	
Bus stops are located along the route	• Served by Routes 50, 31 (southbound), 23 (northbound), 35 (northbound), and YRT 77 (northbound) • Three stops on each side • Designated as Primary Transit Corridor with future service at 5–7.5-minute headways in peak	• Served by Route 50 and 31 (southbound south of Cottrelle Boulenvard) • Seven stops on west side; ten stops on east side • Designated as Primary Transit Corridor with future service at 5–7.5-minute headways in peak
	Facilities should be designed to minimize and clearly mark conflict areas with buses or pedestrians at stop locations	
COLLISION HISTORY		
Collision frequency	- No recorded bicycle collisions (likely due to very low bicycle volumes)	
Conflict areas exist between bicyclist and motor vehicles	• Conflict areas exist between cyclists and motor vehicles midblock (rear-end or side-swipe) and at intersections and driveways (turning vehicles and through cyclists) • Facilities and crossings should be designed to minimize conflict between different types of users and the conflict area should be clearly marked • Unidirectional facilities would have fewer conflict points than bidirectional facilities; bidirectional facilities may need additional design treatments, such as protected-only left turn phasing	

Conflict areas exist between bicyclist and pedestrians	• Conflict areas exist with pedestrians midblock if cyclists ride on sidewalks, at bus stops, and at intersections where travel paths intersect • Conflict potential concentrated at intersections due to higher pedestrian volumes there (due to bus stops) • Facilities and crossings should be designed to minimize conflict between different types of users and the conflict area should be clearly marked
AVAILABLE SPACE	
Sufficient curb-to-curb width exists, but pinch points are created where turn lanes are developed at intersections.	• 20.8 m pavement width (excluding gutters) exists on midblock segments, sufficient for five 3.5-m lanes and two 1.5-m bike lanes • Width is insufficient near intersections and where there are raised medians adjacent to turn lanes • Localized widening should be undertaken to provide continuous bicycle facilities of constant width entering through, and exiting the intersection. • Alternately, provide separated facilities adjacent to the roadway or within an independent ROW.
SECONDARY CRITERIA	
ANTICIPATED USERS IN TERMS OF SKILL AND TRIP PURPOSE	
Experienced cyclists (commuter or other utilitarian)	• Some existing cyclists observed cycling on-street • The Gore Road is a straight arterial providing connections to east-west routes that connect to employment areas; the nearest continuously parallel route is 1.4 km away in both directions • Provides connections toward northwest Toronto (via Hwy 50), unlike McVean Drive (next parallel route to west) • Prefer on-street bike lanes, or separated facilities where warranted
Novice cyclists (recreational / beginners)	• Some existing cyclists observed cycling on sidewalk • Nearby residential streets connect within blocks, but routes are indirect compared to using The Gore Road • Bike lanes (with or without buffer) or separated facilities should be considered.
Child cyclists	• Three schools fronting The Gore Road within study area • Separated facilities should be considered near schools, parks and neighbourhoods
COSTS	

More than one type of bicycle facility appears appropriate	• Cost dependent on type of construction project • Road widening provides opportunity for continuous on-street facility to be installed along with widening • Retention of 5-lane cross section increases cost for on-street facility due to need for curb and drainage relocation • Sidewalk relocation or replacement may be required for boulevard facility • Benefit/cost analysis of alternatives is recommended during functional or preliminary design	
LEVEL OF BICYCLE USE		
Low bicycle volumes (< 10 cyclists per hour)	• Low bicycle volumes currently observed along length of corridor • Presence of residential, schools, and commercial along corridor likely indicates inadequacy of existing facilities (riding in mixed traffic or on sidewalks)	
Significant bicycle traffic generators nearby	• Several major bicycle traffic generators are along The Gore Road, including three schools (two are secondary), a major Hindu temple, neighbourhood retail, and a future Major Transit Node at Queen Street • Bicycle lanes or separated facilities should be considered to accommodate the anticipated volume of cyclists	
FUNCTION OF THE ROUTE WITHIN BIKE NETWORK		
Parallel bicycle routes already exist with bicycle facilities present	No parallel routes	• Pathway along creek parallel to west side of The Gore Road • Redundancy of routes may provide opportunity to provide different types of bicycle facilities within same corridor
New route provides a connection between adjacent existing facilities	• Existing pathways along Castlemore Road, Cottrelle Boulevard, and Queen Street; existing bicycle lanes along Castle Oaks Crossing • Facility selection should provide continuity with adjacent bicycle facilities to the extent possible	
New route provides access to a neighbourhood, suburb or other locality	• Provides connection between neighbourhoods, commercial areas near Queen Street, Züm rapid transit, and employment areas (via Castlemore Road or Queen Street) • Bicycle lanes or separated facilities should be considered to encourage cycling for all users	
TYPE OF ROADWAY IMPROVEMENT		

Reconstruction	• Reconstruction may occur in portions of the corridor, particularly at intersections, to resolve identified deficiencies • Major construction provides an opportunity to improve provisions for cyclists through redistribution of existing road space, increased road width, or increased off-road space
ON-STREET PARKING	
Parallel on-street parking is permitted but demand is low	• No explicit parking restrictions along The Gore Road, though no on-street parking observed due to few fronting land uses and abundant parking in adjacent developments or on side streets • Opportunities to remove, restrict or relocate parking in favour of providing bicycle lanes should be considered
FREQUENCY OF INTERSECTIONS	
Limited intersection and driveway crossings are present along the route	• Most intersections are signalized; spaced approximately 500 m apart • Limited number of unsignalized residential side streets and commercial driveways between signalized intersections • Controlled crossing points limited to signalized intersections • Separated facilities or bicycle lanes are well suited to routes with few driveways and intersections
Major intersection with high speed and traffic volumes encountered	• Major signalized intersections at Castlemore Road, Cottrelle Boulevard, Ebenezer Road, and Queen Street have higher turning volumes, higher cross-street volumes, and higher speeds • Consider provision of bicycle lanes, bike boxes, intersection and conflict zone markings as well as special bicycle signal phases at major intersections. Consider indirect left-turn treatments is there is significant bicycle left turn demand conflicting with through motor vehicle traffic. If a separated facility is being considered, crossings should have bicycle traffic signals with exclusive phases, and conflicts should be clearly marked.

Table 11 Cycling Facility Selection Step 2C – Select Appropriate and Feasible Bicycle Facility Type

ALTERNATIVE	CONCLUSION
Widen for bike lanes	NOT PREFERRED – High traffic volume and motor vehicle speeds creates need for horizontal and potentially vertical separation • Reconstruction of both curbs (or one curb + median) required at every intersection to increase width • High transit bus volumes creates bus/bike weaving conflicts at stops
Widen for buffered bike lanes	NOT PREFERRED – Horizontal separation provided alongside high traffic volume and motor vehicle speeds • May not attract less confident cyclists due to lack of vertical separation adjacent to high-speed traffic • Reconstruction required along full length of corridor; current width is insufficient to include buffer • High transit bus volumes creates bus/bike weaving conflicts at stops
Add unidirectional cycle tracks (raised or in-boulevard) alongside existing sidewalks	MODERATELY PREFERRED – Horizontal and vertical separation provided alongside high traffic volume and motor vehicle speeds • Boulevard can generally accommodate 2.0–2.5 m cycle track, 1.5–2.0 m sidewalk, cycle track buffers (if separate from green space) and 4.0+ m green space (may be less near intersections); review of pinch points required • Low potential for conflict between people walking and cycling except at intersections or turn-offs to adjacent development • Relocation of existing sidewalks required along portions of the corridor • Minimized conflicts at intersections due to unidirectional travel; bus-bike weaving replaced with pedestrian crossovers at bus stops • Access to midblock pathways and attractions on opposite side from direction of travel requires several hundred extra metres of travel and additional signal cycles or wrong-way riding
Replace sidewalk on one side with an active transportation pathway	MODERATELY PREFERRED – Horizontal and vertical separation provided alongside high traffic volume and motor vehicle speeds • Boulevard can generally accommodate 4.0 m active transportation pathway and 4.0+ m green space (may be less near intersections); review of pinch points required • Moderate potential for conflict between people walking and cycling along length of corridor • Replacement or widening of one sidewalk for full length of corridor • Moderate conflict at intersections due to bidirectional bicycle traffic;

ALTERNATIVE	CONCLUSION
	intersection treatments (e.g., protected-only left turns for southbound vehicles) may be required • Access to attractions on side opposite of pathway would require sidewalk riding or dismounting • East side facility preferred due to proximity of creek pathway to west side, plus east side has more commercial, the temple, and 2 of 3 schools, though it would have greater impact on motor vehicle traffic (southbound left turns)
Add bidirectional cycle track alongside existing sidewalk on one side	MODERATELY PREFERRED – Horizontal and vertical separation provided alongside high traffic volume and motor vehicle speeds • Boulevard can generally accommodate 3.0 m cycle track, 1.5–2.0 m sidewalk, cycle track buffers (if separate from green space) and 4.0+ m green space (less near intersections); review of pinch points required • Low potential for conflict between people walking and cycling (on one side) except at intersections or turn-offs to adjacent development • Relocation of one sidewalk along portions of the corridor • Moderate conflict at intersections due to bidirectional bicycle traffic; intersection treatments (e.g., protected-only left turns for southbound vehicles) may be required • Access to attractions on side opposite of pathway would require sidewalk riding or dismounting • East side facility preferred due to proximity of creek pathway to west side, plus east side has more commercial, the temple, and 2 of 3 schools, though it would have greater impact on motor vehicle traffic (southbound left turns)
Replace sidewalks on both sides with active transportation pathways	**HIGHLY PREFERRED** – Horizontal and vertical separation provided alongside high traffic volume and motor vehicle speeds • Boulevard can generally accommodate 4.0 m active transportation pathway and 4.0+ m green space (may be less near intersections) • Provides full bicycle access to trip generators and streets on both sides of The Gore Road • Moderate potential for conflict between people walking and cycling along length of corridor • Replacement or widening of both sidewalks for full length of corridor • Moderate-high conflict at intersections due to bidirectional bicycle traffic on both sides; intersection treatments (e.g., protected-only left turns for both directions of vehicles) may be required

ALTERNATIVE	CONCLUSION
Add uni-directional (one way) cycle tracks alongside existing sidewalks on both sides	**HIGHLY PREFERRED** – Horizontal and vertical separation provided alongside high traffic volume and motor vehicle speeds • Boulevard can generally accommodate 3.0 m cycle track, 1.5–2.0 m sidewalk, cycle track buffers (if separate from green space) and 4.0+ m green space (less near intersections); review of pinch points required • Provides full bicycle access to trip generators and streets on both sides of The Gore Road • Low potential for conflict between people walking and cycling except at intersections or turn-offs to adjacent development • Relocation of one or both sidewalks along portions of the corridor • Moderate-high conflict at intersections due to bidirectional bicycle traffic; intersection treatments (e.g., protected-only left turns for both directions of vehicles) may be required
Add uni-directional (one way) cycle track alongside existing sidewalks on both sides	**HIGHLY PREFERRED –** Horizontal and vertical separation provided alongside high traffic volume and motor vehicle speeds • Boulevard can accommodate 2.0 m cycle track, 1.5-2.0 m sidewalk, cycle track buffers (if separate from green space) and 4.0+ m green space (less near intersections); review of pinch points required • Provides full bicycle access to trip generators and streets on both sides of The Gore Road • Low potential for conflict between people walking and cycling except at intersections or turn-offs to adjacent development • Relocation of one or both sidewalks along portions of the corridor • Low to moderate conflict at intersections due to bi-directional bicycle traffic intersection treatments (e.g. protected-only left turns for both directions of vehicles) may be required
RECOMMENDED FACILITY TYPE	Replace sidewalks on both sides with active transportation pathways or add uni-directional cycle tracks alongside existing or new sidewalks on both sides • Provides safe cycling access to both sides of the corridor: best serves trip generators on both sides • Research shows that uni-directional tracks are typically safer than bi-directional • However, largest conflicts are with east side facility due to southbound left and westbound right turns (especially after Highway 427 extension) • Further review of projected turning volumes required to determine need for conflict mitigation and resulting effect on vehicle movement • Further review of corridor required to determine feasibility of each concept through pinch points and required extent of sidewalk replacement/relocation for each option

Given the above analysis, and drawing from the conclusion that either of the recommended alternative facility types is adequate and appropriate, the preference would then fall to the option that best accommodates all users and provides the highest level of safety. The cycle track-plus-sidewalk option is carried forward as the preferred Active Transportation Facility Type.

6.3.2 Transit Infrastructure

In the planning process for the widening of The Gore Road from two to four lanes, the City of Brampton (Brampton Transit) documented their preference for far side bus bays in a letter to AECOM (Sept. 7, 2010), recognizing that there were certain locations that could be considered "interim" pending the further widening to six lanes. Now that further study has deferred widening indefinitely, the existing bus stops can be reviewed in consideration of their being made permanent and provided with shelters and other amenities. Consideration is also given to transit operational efficiency, in recognition of the corridor's role as a Primary Transit Corridor featuring fast, frequent, reliable two-way service; this is supported by elimination of closely-spaced stops and the use of far-side stops.

The principles considered in determining the recommended location for bus stops on The Gore Road include:

- Reflect current practice and operational experience;
- Far side stops preferred, in conjunction with a queue jump lane and/or transit signal priority (per letter from Brampton Transit to AECOM, Sept. 7, 2010);
- Eliminate stops which require crossing The Gore Road at an uncontrolled (midblock) location;
- Maintain acceptable spacing between stops; and
- Provide bus bays where feasible.

Note that bus bays allow buses to stop out of the way of through traffic, although they require bus operators to merge back in to a moving traffic lane once boarding is completed. With The Gore Road limited to two lanes of traffic in each direction and increasing frequency of bus service, the use of bus bays minimize traffic disruption and reduce collision risk. Far side bus stop locations provide gaps in traffic flow for buses to safely move back in to the through lane. In Ontario, through traffic is required to yield to a bus re-entering a lane from a bus bay.

In terms of design, Brampton Transit's requirements include a 9.0m x 1.5m minimum concrete landing pad flush between the curb and sidewalk and a 5.0m x 2.5m minimum concrete shelter pad behind the sidewalk. Where there is a multi-use pathway, the bus pad shall be 9.0m x 4.0m and located between the curb and multi-use pathway. If there is property constraint the multi-use path shall be reduced to 1.5m wide and diverted behind the landing / shelter pad.

The provision of shelters, real time passenger information systems, maps, and other bus stop features is a City of Brampton responsibility. The following table summarizes the bus stop recommendations for The Gore Road, with new or altered provisions highlighted in red.

Table 12 Bus Stop Recommendations

No. / Dir.	Existing Stop Type	Proposed Stop Type	Summary of Proposed Changes
1	**Queen Street**		
NB	Far side / Curb	Far side / Bus bay	This is a transfer point between Züm service on Queen Street and The Gore Road; boulevard space to be reserved for potential future extension of bay to allow it to serve multiple operators and as a time point.
SB	Near side / Curb	Near side / island (queue jump lane)	Shift existing stop to intersection, to improve transfers between The Gore Road services and the Queen Street Züm rapid transit operation.
2	**Fogal Road**		
NB	Near side / Curb	Far side / Bus bay	Shift stop to far side bus bay; use near side right turn lane as queue jump
SB	Far side / Curb	Far side / Bus bay	Recommend adding a bus bay on the far side (SW corner) of the Tee intersection.
3	**Royston Street**		
SB	Near side / Curb	Eliminate	Accommodate demand at Fogal or Ebenezer stops, where service in both directions and a signalized crosswalk is provided.
4	**Ebenezer Road**		
NB	Far side / Curb	Far side / Bus bay	Shift stop closer to intersection, in combined bus bay / right turn lane.
SB	Near side / Curb	Far side / Bus bay	Shift stop closer to intersection.
5	**Tyler Avenue (E) / Don Minaker Drive (W)**		
NB	Near side / Curb	Far side / Bus bay	Shift stop to far side
SB	Near side / Curb	Far side / Bus bay	Shift stop to far side, using right turn lane as a queue jump
6	**Eastbrook Way (E) / Eastview Gate (W)**		
NB	Near side / Curb	Far side / Bus bay	Shift stop to far side, using right turn lane as a queue jump
SB	Near side / Curb	Far side / Bus bay	Shift stop to far side, using right turn lane as a queue jump
7	**Cottrelle Boulevard**		
NB	Near side / Right turn lane	Far side / Bus bay	Shift stop to far side, using right turn lane as a queue jump
SB	Near side / Curb	Eliminate	Combine with far side stop.
SB	Far side / Curb	Far side / Bus bay	Create bus bay, using right turn lane as a queue jump
8	**Gardenbrooke Trail (E) / Pannahill Drive (W)**		
NB	Near side / Curb	Far side / Bus bay	Shift stop to far side, using right turn lane as a queue jump
SB	Far side / Curb	Far side / Bus bay	Shift stop to far side, using right turn lane as a queue jump

No. / Dir.	Existing Stop Type	Proposed Stop Type	Summary of Proposed Changes
9	**Strathdale Road**		
SB	Far side / Curb	Eliminate	Accommodate demand at Pannahill or Castle Oaks stops, where service in both directions and a signalized crosswalk is provided.
NB	Far side / Curb	Eliminate	Midblock stop encourages users to cross The Gore Road in an unsafe manner; accommodate demand at Fogal or Ebenezer stops, where service in both directions and a signalized crosswalk is provided.
10	**Castle Oaks Crossing**		
NB	Far side / Curb	Far side / Bus bay	Recommend bus bay at existing stop location.
SB	Far side / Curb	Far side / Bus bay	Recommend bus bay at existing stop location.
11	**Fitzpatrick Drive**		
NB	Near side / Curb	Eliminate	Accommodate demand at Castle Oaks, where service in both directions and a signalized crosswalk is provided.
SB	Near side / Right turn lane	Eliminate	Midblock stop encourages users to cross The Gore Road in an unsafe manner; accommodate demand at Castle Oaks, where service in both directions and a signalized crosswalk is provided.
12	**Castlemore Public School**		
NB	Near side / Curb	Far side / Curb	Shift bus stop to far side of intersection, for safety
SB	Near side / Curb	Near side / Bus bay	Stop to remain on near side due to driveway conflicts on far side; add bus bay since school / traffic conflict only occurs in AM peak
13	**Castlemore Road**		
SB	Far side / Curb	Far side / Bus bay	Create bus bay, using right turn lane as a queue jump
NB	Near side / Right turn lane	Far side / Bus bay	Create bus bay, using right turn lane as a queue jump

As outlined in Section 6.2, continuous Reserved Bus Lanes or High Occupancy Vehicle lanes are not recommended for The Gore Road in favour of leaving it at four lanes of general traffic operations.

6.3.3 Intersection

Intersection Improvements alternatives are:

- Provide vehicular capacity increases at major intersections (e.g., double left turn lanes); and
- Restrict vehicle turns and/or pedestrian crossings to reduce conflicts which affect vehicular capacity.

Given the Complete Streets principles being applied to The Gore Road, turn and crossing restrictions are inappropriate and undesirable. As a result, the first alternative is carried forward.

6.3.4 Wylie's Creek Crossings

For pedestrian and cycling activities at the Wylie's Creek crossings, a multi-use trail and a cycle track with sidewalk were considered. Based on discussion with the Region and feeback from the general public at POH # 2, a uni-directional cycle track and sidewalk is proposed on the west side of The Gore Road, while a multi-use trail is being proposed on the east side of the West Humber River Tributary. The multi-use trail would transition back to cycle track and sisdewalk once past the crossings.

6.3.5 Castlemore Public School Pedestrian Crossing

The Castlemore Public School parking lot exit is served by a Tee intersection, adjacent to a pedestrian crosswalk of The Gore Road. The crosswalk is 290m south of Castlemore Road and 440m north of the Castle Oaks Crossing signalized intersection.

Four alternatives were considered, to enhance safety and utility at the crossing:

- Status quo;
- Enhance pedestrian crossing (add crossride for bicycles; realign);
- Create median island refuge, to function as two-stage crossing; and
- Pedestrian / bike bridge or tunnel.

It should be noted that a very high proportion of the school's students come from the east side of The Gore Road. The speed limit on The Gore Road is currently reduced to 40 km/h from 60 km/h during school periods ("when flashing") in the vicinity of the crossing.

Concerns have been expressed by the school about the capacity of the waiting area on the west approach, when a high volume of students can accumulate and impede the sight line for exiting vehicles using the adjacent driveway.

A grade separation can be discounted for the following reasons:

- High cost (for accessibility reasons, a long ramp or elevator would be required at both ends of the bridge or tunnel);
- Limited usage (serving a single small school twice a day for the 210 school days per year, rather than a busy commercial centre with high volumes of all-day two-way demand);
- Physical feasibility (the right-of-way, particularly on the east side, is not designed to accommodate the staircase and lengthy ramp or elevator required for an accessible crossing);
- Provision of a separate pedestrian crossing would not eliminate the need for the signalized intersection which serves exiting vehicles; pedestrians would be tempted to use the signal in any case rather than climb up and down stairs to cross;
- Personal security (a level crossing is perceived as safer and more visible than a tunnel or a bridge; the latter would need to be enclosed to prevent people throwing things onto the roadway or vehicles below);
- Precedent (Peel Region might be obliged to provide a grade separation at all schools along Regional Roads); and
- Need (there is no history of collisions or demonstrated insoluble problem with the current level crossing).

A two-stage crossing utilizing a median island would reduce the crossing distance to only two lanes rather than today's five-lane expanse. However, given the nature of the crossing users, it would be expected that students would be reluctant to wait for a "walk" signal and be tempted instead to walk or run across the 7 m of two-lane pavement. Keeping the crossing longer and "more difficult" would in fact contribute to its safer usage. Due to the need to serve school exiting traffic, a two-stage crossing would not eliminate the need for a traffic signal at this location.

Shifting the crosswalk 20 m to the north was considered; the intent would be to align it with the school's main entrance and to shift the students away from the driveway exit. However, the current location does align with a school entry door, and a shifted walk would take students through the middle of the school's auto/bus dropoff zone. A shift would also have the effect of reducing the northbound left turn lane into the school by 20 m (from 70 m to 50 m) which would increase the risk of left turning vehicles queuing into the through lane. A shifted crossing would also extend the intersection area to almost 40 m from its current 20 m; the more compact area reduces the risk of vehicles on The Gore Road stopping at an inappropriate location (i.e. partially within the intersection) due to the visual disconnect between the driveway and the pedestrian crosswalk.

This design review therefore recommends that the following improvements be made at the Castlemore School crossing:

- Add a marked crossride alongside the pedestrian crosswalk to recognize connectivity between the multi-use paths on both sides of The Gore Road;
- Add a median island on The Gore Road on the south approach to the intersection, to protect against northbound vehicles turning left into the exiting school roadway;
- Retain the crossing at its current location; and
- Increase the size of the pedestrian waiting zone on the west crosswalk approach, and design it so as to minimize the visual intrusion on the sight line of an exiting right turning motorist.

6.4 Public, Stakeholder and Review Agency Consultation (Alternatives)

6.4.1 Design Workshop

A design workshop was held on June 2, 2015 at the Region of Peel offices. Attendees included representatives from the Region (Transportation; Public Health; Traffic; Sustainable Transportation; Real Estate; and Roads, Design and Construction Departments), Parsons Brinckerhoff (facilitator), City of Brampton (Planning and Development Department as well as Transit), TRCA and AECOM.

The workshop started off with AECOM and the Region presenting an overview of the project and the purpose of the workshop (agree to a set of design principles that meet the needs of The Gore Road today and tomorrow). Following the overview, representatives from each Regional department, City Department and TRCA gave an overview of what is important to their respective department. Following this, tables broke out into groups and tasked with "designing" a zone (zones were broken out and decided prior to the workshop and included 1) Commercial; 2) Residential; 3) Eco-Learning; and 4) Institutional).

The general consensus was to separate cyclists from pedestrians, reduce lane widths, reduce speed limits; multi-use trails on both sides of The Gore Road (if feasible), and enhance stormwater management through the use of plantings and planting centre medians.

6.5 Selection of the Preferred Design Concept

Following the screening of alternative design concepts and discussions with the Region, agencies and stakeholders, the following is the preferred design concept:

- Maintain the existing 4 lanes;
- Modify intersections for transit, active transportation and turning;
- Addition of bus stops/bus bays including a new bus shelter (in large island) at redesigned Queen Street/The Gore Road intersection
- Narrow lane widths;
- Improve safety with signalized bike/pedestrian crossing (location(s) to be confirmed during detailed design);
- Signal timing improvements at The Gore Road and Queen Street intersection;
- Provide the opportunity for a healthy lifestyle through connections to multi-use trails;
- Sidewalks and raised cycle tracks on both sides of The Gore Road
- On east side of road at the 2 Wylie Bridges, multi-use trail around Wylies Creek
- Cross ride treatments at intersections;
- Pedestrian/cyclist crossings at school locations;
- LID to manage stormwater at various locations throughout The Gore Road corridor; and
- Streetscaping (to be confirmed during design).

7. Selected Design

7.1 Refinements to Preferred Design Concept

The Class EA commenced in 2013 with the goal of widening The Gore Road to six lanes as identified in the Region's 2012 Long Range Transportation Plan Update. Following discussions with the Region, a working meeting with the Region, TRCA and the City of Brampton, and a review of traffic modelling and forecast conditions, it was determined that maintaining The Gore Road at four lanes is adequate and widening to six lanes is not necessary. As such, The Gore Road Class EA preferred design concept became a "Complete Streets" approach exercise and focused on the addition of active transportation components (e.g., cycle track and sidewalk or multi-use trail), improving public transit, stormwater management using LID principles and streetscaping.

7.2 Description of Recommended Plan

7.2.1 Roadway

The preferred design for roadway improvements to The Gore Road is to maintain the existing four lane cross section. Turning lanes will be provided within The Gore Road corridor between Queen Street and Castlemore Road. Double left turn lanes are proposed at Queen Street (north and south bound); Cottrelle Boulevard (southbound); and Castlemore Road (southbound). Dedicated right turn lanes will be provided into the commercial plaza at the northeast corner of Fogal Road; and the plaza at the southeast corner of Ebenezer Road. Dedicated left turn lanes (southbound) will be provided into the Hindu Sabha Temple.

The existing lane widths along the corridor are 3.65 m. Since the corridor is so wide open, the lanes will be narrowed to 3.3 m to act as a traffic calming feature to get traffic to slow down. Narrowing of the curbs will either be done by widening the medians or moving the curbs in.

7.2.2 Queen Street Intersection

Improvements to the Queen Street Intersection include:

- Realignment of The Gore Road to allow southbound and northbound double left turns to occur simultaneously, thereby reducing delays while retaining pedestrian crosswalks on all approaches;
- Realignment would also permit elimination of two of the four free-flow channelized right turns, to create a safer pedestrian and cyclist environment; and
- A carefully-designed larger island in the northwest quadrant would allow the southbound bus stop to be moved close to the intersection, to better serve transferring bus passengers; a "Smart Channel" design brings right turning vehicles to a stop before turning, rather than providing a free-flow move that challenges pedestrians to cross the roadway safely.

Refer to **Figure 23** below for an illustration of the proposed Queen Street and The Gore Road intersection design. It should be noted that the Region is (2016) widening The Gore Road from two to four lanes in the segment immediately south of the intersection shown in Figure 24. The plans in this document are to align and be functionally consistent with the detail design plans to the south.

Figure 23 Proposed Queen Street/The Gore Road Intersection Design

7.2.3 Traffic Signals and Road Operations

Traffic signals are being maintained at all intersections with the exception of Strathdale Road and Fitzpatrick where there are no traffic signals. At this time, it is not envisioned that these two intersections will become signalized. The current speed limit along The Gore Road is 70km/hr from Queen Street to Castle Oaks Crossing then decreases to 60km/hr from Castle Oaks Crossing to Castlemore Road. The Region is reviewing the need to make The Gore Road a uniform speed of 60km/h (posted).

During peak periods, the majority of traffic on The Gore Road is coming southbound and using the double left turn lanes at Queen Street to access Highway 427. The southbound double left turn lanes are at capacity during peak hours.

7.2.4 Pedestrian and Cycling Provisions

Cycle Track and Sidewalk

A 2.0m wide paved uni-directional (one way) cycle track and approximate 1.8m wide concrete sidewalk will be installed on both sides of The Gore Road. On the west side of The Gore Road, the cycle track and sidewalk will combine to cross the Wylie's bridges and the bridge north of Castlemore Road. On the east side of The Gore Road, the cycle track will cross the bridges while the sidewalk

Example of Raised Cycle Track

will transition to a 3.0m multi-use trail and detour around Wylies Creek (Tributary of the West Humber River). It is envisioned that the area on the east side of the tributary will become an ecological learning zone for nearby schools with informative plaques along the sidewalks. It is also noted that sidewalks will connect to the existing sidewalks on intersecting east and west roads.

The MUT and cycle track and sidewalk will be constructed per Regional standards and will interface with bus stops and bus bays along The Gore Road. The need for appropriate lighting along the MUT portion will also be reviewed during detailed design.

The existing flashing pedestrian crossing at Castlemore Public School is proposed to be changed to a full signalized crossing. It is noted that the crosswalk will be shifted to align with the schools internal sidewalk.

7.2.5 Transit Provisions

Bus stops / bus bays will be located at all intersections along The Gore Road with the exception of Strathdale Road and Fitzpartick Drive. Final locations of the bus stops / bus bays will be determined during detailed design.

At the Queen Street / The Gore Road intersection, a large island including a bus shelter is proposed at the northwest corner with a right turn lane behind the island to accommodate bus queue jump and bus stop.

7.2.6 Structures

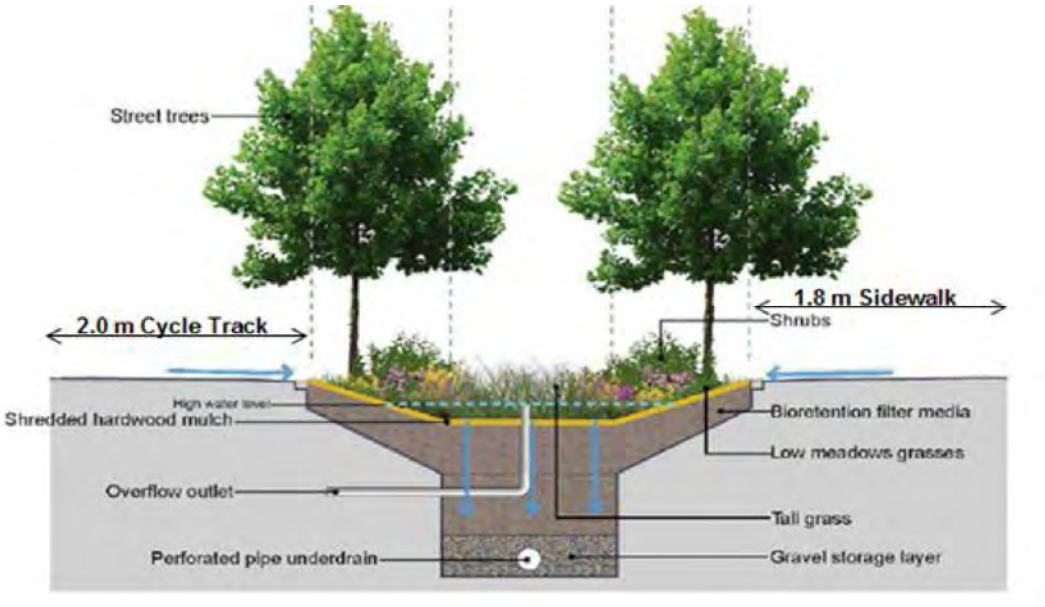
A 1.8m sidewalk is proposed on the west sides of the Wylie's bridges as well as the bridge north of Castlemore Road. No other works are anticipated for these structures at this time.

7.2.7 Stormwater Management

Low impact development (LID) measures are proposed as part of The Gore Road corridor improvements to avoid or mitigate the negative imapcts of stormwater runoff and stormwater pollutants by managing runoff as close to its source as possible.

The preferred LID Best Management Practice is Bioretention. Bioretention is a stormwater filter and infiltration practice which temporarily stores, treats and infiltrates runoff. The bioretention facilities may be designed for full infiltration (without an underdrain), partial infiltration (with an underdrain) and for filtration only (with an impermeable liner and underdrain). The bioretention facilities are designed to capture small storm events to meet the water quality storage requirement and an overflow or bypass flow paths are provided to pass large storm events (CVC, TRCA, 2010). Bioretention may be provided in the form of Bioretention Cells, Rain Gardens, Stormwater Planters, Extended Tree Pits and Curb Extensions.

Typical Cross-Section for Bioretention area between Cycle Track and Sidewalk along The Gore Road (Source: CVC, TRCA LID Guidelines – Figure 13 modified for road corridor)



Based on the analysis, the following conclusions and recommendations can be drawn:

- Under existing conditions, runoff from road corridor is collected through a network of catchbasins and storm sewers and conveyed to the adjacent SWM facilities/The Gore Road Tributary;
- The proposed improvement works consists of existing 4-lanes (with reduced lane widths), 2 m wide cycle track and 1.8 m wide sidewalk on both sides of The Gore Road;
- The proposed improvement works will reduce the overall imperviousness of the road corridor from 67% to 66%. This results a decrease in runoff volumes and therefore no additional stormwater quality and quantity controls are required;
- The proposed bioretention cells will retain approximately 90% of the total annual rain falling on the area draining into the bioretention area;
- The existing drainage pattern will be maintained by bringing in the gutter/curb and existing catchbasins or providing additional gratings connected with existing catchbasins. No changes are required to the existing storm sewers;
- The existing bridges can accommodate the proposed improvement works and do not need any expansion/modifications;
- Under existing conditions, the three bridges do not meet the required hydraulic criteria for freeboard and clearance;
- The hydraulic analysis results indicate that during the Regional storm, the ponding depth over the bridges will be in the range of 0.6 m and as such cannot be used for safe egress and regress. However, alternate routes are available adjacent to the bridges which can be used for safe egress and regress;
- Low Impact Development BMPs in the form of bioretention areas are proposed between the proposed cycle tracks and sidewalks on both side of The Gore Road to further enhance water quality and water balance of the road corridor; and
- Site specific geotechnical investigations will be required for the detailed design of bioretention cells.

Additional information on Bioretention can be found in the Stormwater Management Report in **Appendix M**.

7.2.8 Noise Mitigation

It is anticipated that there will not be a significant increase in noise during construction. For construction mitigation measures, refer to **Table 23** in Section 8. This will be confirmed during detailed design.

7.3 Utilities

Existing overhead utilities will be maintained with the exception of those that that are in conflict. Co-ordination during detailed design will be required with the following utilities:

- Hydro One Brampton;
- Hydro One;
- MTS Allstream;
- Ontario Power Generation;
- Enbridge Gas;
- Rogers; and
- Bell Canada.

7.4 Property Requirements

As The Gore Road is not being widened and all work is within the existing road right-of-way, property will not be required. Property will be required in the area of the Wylie's bridges for the MUT or sidewalk that detours around the Tributary of the West Humber River-Wylie's Creek on the east side of The Gore Road. Property is required from the City of Brampton and a small triangle of private property at 9601 The Gore Road. The limits of property acquisition will be finalized during detailed design.

This study does not affect the Regional designation of The Gore Road as an ultimate 50.5 m wide right-of-way

7.5 Natural Environmental Impact and Mitigation

The preferred design concept essentially avoids negatively impacting the natural environment by having the majority of the improvements take place in the existing road corridor that has already been disturbed. The area around the Wylie's bridges where the proposed sidewalk or multi-use trail is to be located, some vegetation and tree removal will be required. Where possible mature or mid-aged trees will be protected and a tree preservation and replanting plan will be undertaken during detailed design.

7.6 Landscaping Plan

Streetscaping enhancements could include a gateway feature on the north side of The Gore Road at the intersection of Queen Street, LID features (e.g., plantings, rain garden, bioswales), meandering sidewalks and trees, median plantings, sodded areas as well as large and small deciduous trees. Streetscape enhancement concept plans can be found in **Appendix K**.

7.7 Cost Estimate

The project cost estimate is $21.7 M. The project estimate includes:

- Roadwork;
- Cycle track and sidewalk and/or multi-use Trail;
- Streetlighting;
- Utility relocations (if required);
- Allowance for construction adjustments and contingency; and
- Improvements to the west side of Wylie's bridges and the bridge north of Castlemore Road.
- Realignment and reconstruction of the Queen Street intersection

Item	Capital Cost Estimate ($000) (2016)	
	Queen Street Intersection	**Fogal Road to north of Castlemore Road**
A. Removals and Adjustments	$610	$2,810
B. New Construction	$2,650	$10,460
C. Provisional Items	-	$420
Miscellaneous (10 %)	$330	1,370
Utility Relocation (8 %)	$260	1,100
Contract Administration (4 %)	$130	550
Contingency (6 %)	$200	820
Total	**$4,180**	**$17,520**

7.8 Construction Timing and Staging

The Gore Road is identified for roadway improvements under the following schedule:

- Fall 2016 - 2020 – Detailed design, approvals and tendering; and
- 2020/2021 – Construction and post construction monitoring.

The Queen Street intersection improvements (extending up to Fogal Road) will be done in 2016-17 as an extension of the contract for widening The Gore Road to the south of the study area.

The sequence and timing of construction for the remainder of the project will be defined through the detailed design process. Whether the entire works will be funded and built as one contract, or if it will be broken up into two or more geographic zones, has yet to be determined. An appropriate traffic management and environmental mitigation plan will be part of any design and construction process.

8. Commitments, Mitigation, Monitoring and Implementation

8.1 Commitment Highlights

As the project moves into the design and construction phase, the construction project team will ensure:

Natural Environment:

- All regulatory requirements to protect the environment are followed;
- A tree protection and replanting plan is prepared;
- Construction occurs outside of the nesting bird window; and
- A visual reptile survey is prepared.

Social Environment:

Traffic management plan is developed to minimize disruption during construction;

- Access to existing properties, business, institutions and commercial areas are maintained during and after construction; and
- The implementation of infrastructure to support healthy lifestyle activities (e.g. walking, biking, etc.).

Cultural Heritage and Archaeology:

- The completion of the Stage 2 archaeological assessment in detailed design; and
- No impacts to existing archaeological and cultural heritage resources.

8.2 Permits and Approvals

8.2.1 Ministry of the Environment and Climate Change

MOECC approvals may include a PTTW should there be groundwater taking of more than 50,000 litres per day. Based on anticipated construction the need for a PTTW is not anticipated. An Environmental Compliance Approval (ECA), during detailed design will be required for the stormwater management works.

8.2.2 Toronto and Region Conservation Authority

In accordance with Ontario Regulation 166/06 (Regulation Made under the *Conservation Authorities Act* – Development Interference with Wetlands and Alteration to Watercourse and Shoreline Regulation), a permit will be required from TRCA prior to construction of the multi-use paths within the regulated area. The following ESR sections and appendices will be used by TRCA during detailed design review:

- Section 1 Figure 2 – Study Area and Section 8.2.2 Figure 24 –TRCA Regulated Area
- Sections 6.5 and 7.0 – Selected Design
- Section 6.2 – Alternative Design Concepts
- Section 8 – Commitments and TRCA Permits and Approvals
- Appendix F – Terrestrial Investigations

- Appendix G – Tree Assessment Report
- Appendix H – Aquatic Investigations
- Appendix I – Fluvial Geomorphology Report
- Appendix J – Species at Risk Habitat Assessment
- Appendix M – Stormwater Management Report
- Appendix N – Streetscape Enhancement Concept

8.2.3 Ministry of Natural Resources and Forestry

Ecological investigations determined that there is potential habitat along The Gore Road for six Species at Risk which include *Barn Swallow* (Threatened), *Chimney swift* (Threatened), *Eastern Meadowlark* (Threatened), *Eastern Ribbonsnake* (Special Concern), *Milksnake* (Special Concern) and *Snapping Turtle* (Special Concern). It is recommended that correspondence with MNRF during detailed design be undertaken to confirm if the completion of MNRF's Information Gathering Form (to determine if authorization under the Endangered Species Act is necessary) is required. A permit under the *Species at Risk Ac*t from the Department of Fisheries and Oceans Canada (DFO) will also be confirmed during detailed design.

8.2.4 Ministry of Tourism, Culture and Sport

Acceptance of the recommended Stage 2 archaeological assessment will be required from the Ministry.

8.2.5 First Nations

Copies of environmental and archaeological reports will be made available to the Mississaugas of the New Credit First Nation and Alderville First Nation.

8.3 Construction Mitigation

Based on the preferred design concept (Optimize 4 Lane Cross Section with Multi-Use Path Bridges on Both Sides Road), it is recognized that The Gore Road improvements will result in some impact on the existing environment. In order to address the effects, the following approach was taken:

- **Avoidance:** The first priority is to prevent the occurrence of negative effects (i.e., adverse environmental effects) associated with the implementation of an alternative;
- **Mitigation:** Where adverse environmental effects cannot be avoided, it will be necessary to develop the appropriate mitigation measures to eliminate or reduce to some degree, the negative effects associated with implementing the alternative; and
- **Enhancement/Compensation:** In situations where appropriate mitigation measures are not available, or significant net adverse effects will remain following the application of mitigation, enhancement or compensation measures may be required to counterbalance the negative effect through replacement in kind, or provision of a substitute or reimbursement.

The following mitigation measures are recommended to ensure that any disturbances are managed by the best available methods. These measures will be further confirmed and developed during detailed design. **Table 13** provides a detailed assessment of the potential impacts associated with the project and the recommended mitigative measures required to reduce these effects.

Legend

- Places of Worship
- Watercourse
- Trails
- Woodland
- Waterbody
- Cemeteries
- TRCA Regulation Limit

Region of Peel
The Gore Road from
Queen Street to Castlemore Road
Municipal Class EA

Figure 24

Metres
0 125 250 375

Basemapping Provided by: Aerial Photography: Peel Region, 2009

AECOM

Table 13 Mitigation Measures

Potential Impact	Mitigation Measures
Natural Environment	
West Humber River Tributary	• Construction does not involve any changes to bridge abutments or in water work. Construction areas around watercourses will be promptly restored to natural or better conditions and proper and secure materials storage. • Develop comprehensive erosion/sedimentation control strategy including regular inspections. • Obtain TRCA Ontario Regulation 166/06 Permit for construction within the floodplain (improvements do not require in water work).
Removal/replacement of trees	• Where possible, protect mature and mid-aged trees. • Any tree removal should be done in accordance with the City of Brampton's Tree Preservation By-Law 317-2012. • Prepare a tree protection plan and replanting plan, if required.
Vegetation Removal	• Vegetation replacement in consultation with Region of Peel, City of Brampton and TRCA. • Recommendations as per the "Seed Mix Guidelines" by TRCA should be applied for re-vegetation plans, where feasible. •
Areas of potential environmental concern (APEC)	• Follow Phase 1 Environmental Site Assessment (ESA) recommendations (Section 8 of Phase 1 ESA report) with respect to additional site investigations. • Ensure proper disposal of excavated materials as per Part XV.1 of the Environmental Protection Act and Ontario Regulation 153/04, Records of Site Condition, as required. • Any soil encountered during excavation that has visual staining or odours, or contains rubble, debris, cinders, or other visual evidence if impacts will be analyzed to determine its quality in order to identify the appropriate disposal method.
Species at Risk Barn Swallow/Reptiles	• Complete at detailed design MNRF Information Gathering Form and DFO review to confirm if SAR authorizations and permits are required. • Should construction take place during the breeding bird timing window (April 15th to August 15th), it is recommended that an ecologist conduct a site assessment prior to the construction and to breeding bird season. • Should nests/breeding pairs be discovered within the clearing area, the location should be clearly marked/flagged and a 10 metre buffer surrounding the nest be implemented. • An ecologist with ornithological experience should conduct the surveys and monitor the nests (should they be discovered) periodically. • Clearing can only be undertaken if the ecologist is satisfied there are no breeding/nesting pairs within the affected area. • Complete visual surveys to ensure there are no reptile species within the construction area.

Potential Impact	Mitigation Measures
	• Protective fencing should be installed to prevent any species from entering the construction area.
Social/Cultural	
Noise, dust and vibration	• Construction operations will be restricted to the day time (wherever possible). • Contractor will be required to adhere to local noise by-laws. • Use of low noise equipment during construction, where possible. • Dust control by spraying water/street sweeping. • Vibration monitoring will be provided, if necessary.
Traffic and access to businesses during construction	• Minimize construction duration (working days). • Traffic Management Plans for The Gore Road will be developed as part of the design process to mitigate impacts to travelling public and property access will be maintained. • Minimize impacts to public transit through temporary relocation of bus stops. • Minimize temporary displacement of existing sidewalks. • Minimize access disruption to businesses, institutions and commercial areas. • Affected road users and property owners will be notified in advance (e.g. signage, notices), as to construction schedule/duration.
Archaeology and Built Heritage	• Stage 2 archaeological assessment is recommended for areas not previously disturbed (outlined in Stage 1 archaeological report). • If any archaeological and/or historical resources are discovered during the performance of construction work, the performance of the work in the area of the discovery is to halt. The Ministry of Tourism, Culture and Sport will be notified for an assessment of the discovery. Work in the area of the discovery would not resume until cleared to do so by the Ministry.

8.4 Proposed Construction Monitoring

Contract tender documents will address mitigation in an explicit manner to ensure that compliance is maintained. The provision of an experienced field representative to review construction will ensure that the project follows contract specifications and does not unnecessarily impact vegetation, the community or aquatic environment.

8.5 Post Construction Monitoring

Following construction, the reconstructed roadway and operation of the storm sewer is not expected to result in any negative impacts.

Post construction monitoring will be required following construction to ensure that any disturbances have been properly restored (e.g. grading, seeding and planting). All outlets and culverts will be regularly inspected and maintained.

9. Revisions and Addenda to the ESR

There may be circumstances under which this final ESR needs to be reviewed and its validity reconfirmed. The Municipal Class EA provides for such a process.

9.1 Change in Project or Environment

There may be a need to amend the EA due to unforeseen circumstances that arise during the detailed design stage, such as changes in the environmental conditions, development of new design standards or technologies or mitigation measures or the identification of previously unknown concerns.

Subsequent to the filing of the ESR, any modification to the project or change in the environmental setting for the project will be reviewed by the Region. Should the change be considered significant and have a potentially negative impact on some aspect of the environment, it will be documented as an addendum to the ESR detailing the circumstances necessitating the change, the environmental implications of the change, and any associated mitigation measures. A change resulting in an improvement in the project and a positive environmental impact will not be considered to require an Addendum. A minor change to the EA undertaking could proceed without an addendum.

If an ESR addendum is determined to be appropriate, it will be filed (along with the ESR) and the Notice of Filing of Addendum will be given immediately to all potentially affected members of the public and review agencies as well as those who were notified in the preparation of the original ESR. The ESR addendum will be placed on the public record with the Region of Peel for a 30-day review period. A person or party with concern regarding the addendum may make a written request to the MOE for a Part II Order within this 30-day review period. The Part II Order is a request that the project be subject to a formal governmental review and approval under the *Environmental Assessment Act*.

If no Part II Order request is received, or if it is received and addressed to the satisfaction of the Minister of the Environment, the Region will be free to proceed with implementation.

9.2 Lapse of Time

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

In the event of such a delay, the Region will place a Notice of Filing of Addendum on the public record (along with the ESR), and the public and review agencies will be notified of the opportunity for a 30-day public review period. The notice will include the public’s right to request a Part II Order during the 30-day review period. If no Part II Order request is received, or if it is received and addressed to the satisfaction of the Minister of the Environment, the Region will be free to proceed with implementation.