

# 6

## Transportation Development Strategy

### 6.1. OVERVIEW

Within the GTA West preliminary study area, there is a mosaic of community, industry and natural features with a complex transportation network, including transit, rail and road infrastructure, woven through it. A well-balanced and comprehensive transportation network is key in supporting future growth in the Greater Golden Horseshoe (GGH) and providing the necessary connections for commuting, goods movement and tourism / recreation activities.

A suite of transportation alternatives was developed through the review of firstly - existing transportation, economic and environmental conditions, secondly - a determination of the area transportation system problems and opportunities, and thirdly - future traffic demand analysis. This suite used the “building block” approach and the alternatives were analyzed based on consideration of the social environment, natural environment, economic environment, transportation and cost and constructability factors. The final outcome is a comprehensive Transportation Development Strategy (Strategy) that represents a new generation of transportation planning for people and goods movement while respecting the area land uses and environment, and accommodating future growth.

The recommended Strategy is shown in **Exhibit 6-1** and emphasizes optimizing existing transportation infrastructure and increasing transit ridership through new / expanded non-road infrastructure prior to considering widening existing highway facilities beyond the planned program and a new transportation corridor.

The recommended approach to addressing current and future transportation problems and opportunities features the following:

- A “transit first” approach – supporting existing long-range transit plans with the need to explore further enhancements;

- Making better use of transportation infrastructure that is already in place – through optimization including use of advanced technologies;
- Providing more and better choices for people and shippers in making trip decisions – with more effective transit and rail infrastructure and service;
- Pursuing means to reduce travel demands – through building on current Transportation Demand Management programs such as Smart Commute, and increased community self-containment (jobs and homes in the same community);
- Introducing timely transportation improvements – to influence decisions on mode choice and to accommodate projected growth; and
- Shaping growth through provision of transportation services – thereby meeting government objectives.

Through assessment carried out as part of the study (as documented in **Chapter 4**), it was demonstrated that optimizing existing transportation infrastructure and increasing transit ridership through new / expanded non-road infrastructure alone would offer some improvements out of the six features mentioned above. However, these options would not fully address the future transportation problems and opportunities. In order to fully realize the vision of a functional and efficient multi-modal transportation network that provides user choice and balance, planning for additional roadway capacity is required in the long-term. This could be achieved through widening existing highways beyond the planned program at several locations, as well as introducing a new transportation corridor.

The high level evaluation of new corridor alternatives, outlined in **Chapter 4**, and the two levels of additional assessment carried out in the Halton area, outlined in **Chapter 5**, recommends that a new transportation corridor be provided from Highway 400 westerly and then southerly

to connect to Highway 401/407 ETR. The resulting draft Transportation Development Strategy is shown in **Exhibit 6-1**.

In general, elements of the Transportation Development Strategy to 2031 include:

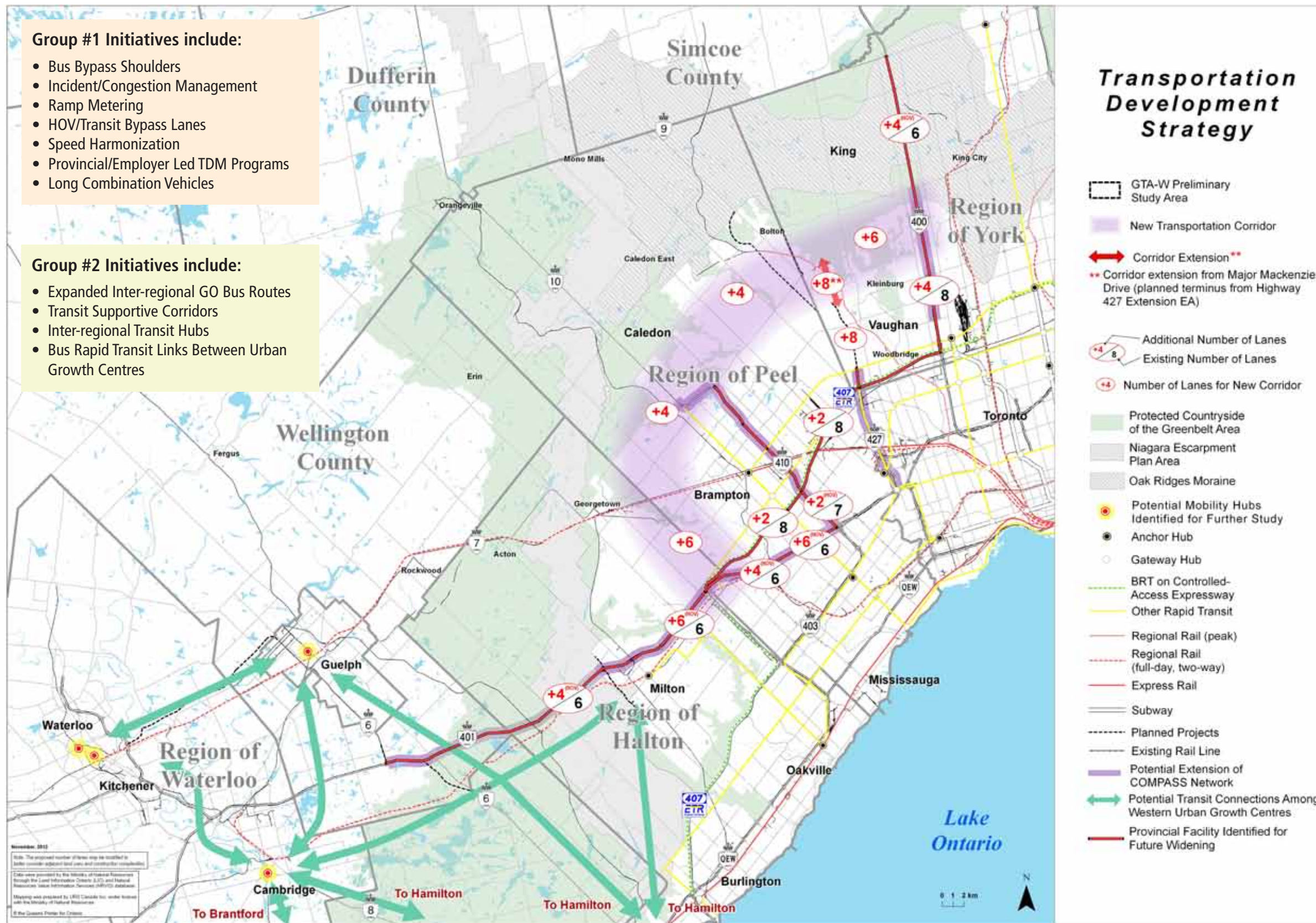
- Supporting transit initiatives that are consistent with Metrolinx RTP and GO 2020;
- Optimize use of existing transportation infrastructure through Transportation Demand Management (TDM) and Transportation System Management (TSM) measures in cooperation with Metrolinx;
- Initiate a region-wide Active Traffic Management Study;
- Widen selected highways to provide additional capacity including High Occupancy Vehicles (HOV - uses or 2+ occupancy) and multi-modal uses;
- Initiate a multi-modal area-wide study in the Waterloo/Wellington/Brantford area to explore potential for inter-regional transit service improvements west of the GTA;
- New transportation corridor from Highway 400 west to connect to Highway 401/407ETR at the Halton-Peel boundary.

It is anticipated that transportation needs beyond 2031 may be better known in the future and so there are other elements of the strategy that are recommended:

- Future study will be required to determine and address future transportation needs; and
- Future study will be closely linked with, and influenced by updates to the (*Growth Plan for the Greater Golden Horseshoe*), Metrolinx’s Regional Transportation Plan and municipal transportation and land use plans.

The Transportation Development Strategy provides for the important modal shift to transit to occur over time, and

Exhibit 6-1: Transportation Development Strategy



encourages a shift to rail and marine for goods movement. It also places the highest priority on optimizing the use of existing infrastructure and increasing transit ridership, while planning for additional highway capacity in the longer term. This is essential, as good transportation planning must consider a long planning horizon (20 years and beyond). It is worth noting that the traffic forecasts carried out as part of the GTA West study show that in the long-term, even with extensive investment in transit, congestion will build to very inefficient levels unless other improvements are provided.

Sections 6.2 to 6.4 describe the various elements of the Transportation Development Strategy:

- **Section 6.2:** Group #1 – Optimize Existing Transportation Networks
- **Section 6.3:** Group #2 – New / Expanded Non-Road Infrastructure
- **Section 6.4:** New / Expanded Roadway Infrastructure

### 6.2. GROUP #1 – OPTIMIZE EXISTING TRANSPORTATION NETWORKS

This group of alternatives includes transportation initiatives that focus on improving the performance of the existing transportation system for all modes of travel and freight transport through strategies designed to reduce auto and truck demand and improve system operating efficiency.

The optimization measures discussed in this section are most effective when applied in a combined and coordinated manner.

One of the key outcomes of this study, and one of the founding elements of the Strategy will be the development of an Active Traffic Management Plan that encompasses many ways of optimizing existing transportation networks.

The Active Traffic Management Plan will include the following key elements:

- The expanded use of bus bypass shoulders along sections of the provincial highway network forecast to experience recurring congestion;

- The implementation of transit / HOV bypass lanes at existing highway entrance ramp locations to provide expedited access for transit and HOV vehicles to and from commuter parking lots as well as efficient access to highways where ramp metering is present;
- The development of an enhanced incident management and congestion management system, which builds on the existing Ontario Ministry of Transportation (MTO) COMPASS system;
- The expanded use of ramp metering at key interchange locations within the preliminary study area and consideration of ramp metering installations as part of the planning and design of all future interchanges.
- Further study of the potential to introduce speed harmonization along applicable sections of the provincial highway network; and
- Identification of mechanisms to support MTO, Metrolinx and the Smart Commute program in expanding TDM opportunities.

This Active Traffic Management Plan will serve as the basis for integrating strong TDM and TSM principles in many future transportation planning initiatives. MTO will undertake an Active Traffic Management Study in the near-term to identify locations where all of the above initiatives can be provided along existing provincial facilities to improve the performance of the existing transportation system by reducing demand and improving system efficiency. These initiatives are described in further detail below.

The timeframes indicated below are defined as follows:

- Near Term – 0-5 years
- Medium Term – 5-15 years
- Long Term – 15+ years

#### Expanded Use of Ramp Metering

Ramp metering (**Exhibit 6-2**) works by regulating vehicle access to the freeway through the use of traffic signals on interchange entrance ramps. These computer-controlled signals allow vehicles onto the freeway at a specified rate to maintain optimum highway traffic flows. At the same

time, end-of-queue detectors prevent excessive backups on the access ramps. Ramp metering is already operating on portions of the Queen Elizabeth Way (QEW) in the City of Mississauga and Town of Oakville.

It is recommended that the feasibility of ramp metering on Highway 401 and other interchanges be explored by MTO in the near term.

Timeframe			Jurisdiction	Recommended Action
Near	Medium	Long		
✓			MTO	Active Traffic Management Study to identify areas where ramp metering could be installed at interchanges along existing provincial facilities.



Exhibit 6-2: Examples of Ramp Metering

**High Occupancy Vehicle (HOV) / Transit Bypass at Key Locations**

This concept involves providing bypass lanes on metered highway entrance ramps, ramps accessing transit stations and ramps in the vicinity of carpool lots for HOV and transit vehicles. These ramps would allow HOV and transit vehicles to bypass traffic queues and provide more efficient access (Exhibit 6-3).

As shown in Exhibit 6-3, bus bypass shoulders offer transit improvements by providing extra-wide paved outside shoulders to enable buses to bypass queues during times of heavy congestion. It is recommended that the application of bus bypass shoulders be expanded to include sections of Highways 400, 410, 427 and 401, where recurring congestion is anticipated to continue and worsen. Bus bypass shoulders already operate along part of Highway 403 in the City of Mississauga. It is proposed that this initiative be further pursued by MTO and be implemented in the near term.



Exhibit 6-3: Examples of Highway Entrance Ramp and Bus Bypass Shoulders

Timeframe			Jurisdiction	Recommended Action
Near	Medium	Long		
✓			MTO	Active Traffic Management Study to identify locations where bus bypass ramp provisions should be provided along existing and planned provincial facilities.

**Transit Supportive Highway Corridors**

This concept involves introducing reserved bus lanes, HOV lanes, bus bypass shoulders and other transit supportive

measures within provincial facilities including Highways 400, 410, 427 and 401 that would serve to make bus transit a more reliable and viable service. These would integrate with the above-noted HOV / Transit Bypass provisions.

Timeframe			Jurisdiction	Recommended Action
Near	Medium	Long		
✓			MTO	Active Traffic Management Study to identify locations where transit supportive highway corridors could be provided along existing and planned provincial facilities.

**Enhanced Incident / Congestion Management**

MTO’s COMPASS system (Exhibit 6-4) uses sensors along a highway to transmit traffic data to the MTO Traffic Operations Centre. The COMPASS system performs both incident and congestion management functions.

For incident management, the system reviews the traffic data and sends a warning to the traffic operator requesting confirmation of an incident when one is detected. The traffic operator at the operations centre uses COMPASS closed-circuit television cameras to confirm the system warning. MTO is also working with the Ontario Provincial Police (OPP) to improve incident management through development of improved emergency response procedures. For congestion management, the COMPASS signs provide real time information about prevailing traffic operations. On core / collector highway systems, these signs help to improve the balance of traffic and improve the overall efficiency of the traffic flow.

As shown in Exhibit 6-5, the Highway 401 COMPASS System currently extends from the Highway 403 / 410 interchange easterly to Westney Road for a distance of approximately 60 kilometres, as well as Highway 400 from Langstaff Road to Highway 401, covering part of the GTA West preliminary study area.

The Strategy recommends that the Active Traffic Management Study by MTO include an assessment of the potential for further expansion of the COMPASS system beyond the

current service area. Potential extensions of the COMPASS program include:

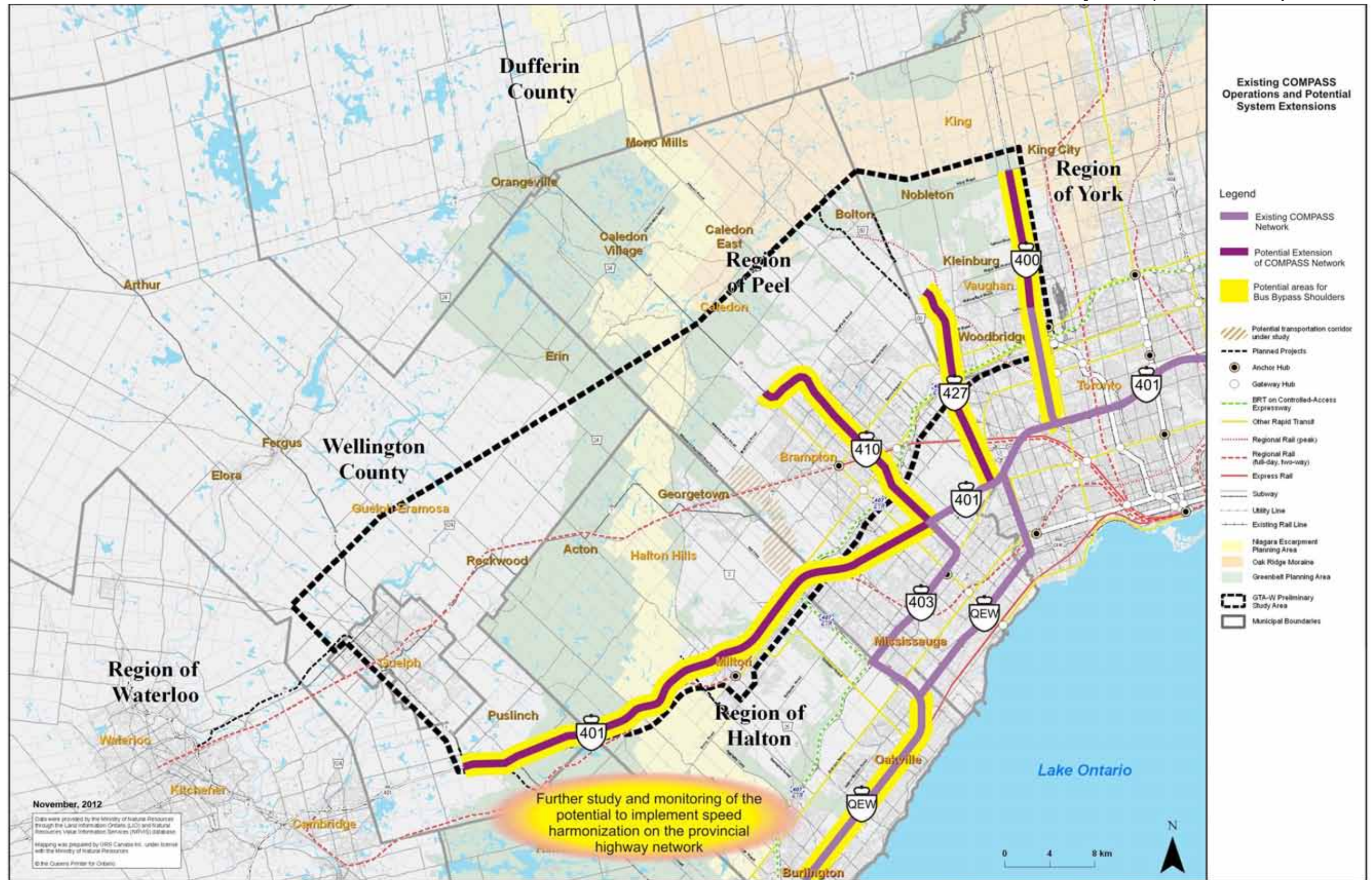
- Highway 400, north from Langstaff Road to King Road;
- Highway 427, north from Highway 401 to the proposed terminus at Major Mackenzie Drive;
- Highway 410, north from the Highway 401 to the junction at Highway 10; and
- Highway 401, west from the Highway 403 / 410 interchange west to Highway 6.

It is proposed that this initiative be further pursued by MTO in the near term.



Exhibit 6-4: Examples of Application of COMPASS System

Timeframe			Jurisdiction	Recommended Action
Near	Medium	Long		
✓			MTO	Active Traffic Management Study to assess the potential for further expansion of the COMPASS System beyond the current service area.



**Use of Speed Harmonization**

Speed harmonization (**Exhibit 6-6**) requires the use of a traffic management technique similar to the MTO COMPASS system that currently monitors travel data. Cameras or sensors in the roadway are used to sense vehicle presence to measure traffic flow. Posted speed limits are automatically adjusted when congestion thresholds are exceeded. This is accomplished using variable speed limit signs mounted above each travel lane and shoulders at regular intervals along the highway. Throughput is therefore maximized by maintaining a constant flow (versus typically stop and go conditions). Speed harmonization is a common practice in many European countries, e.g. Germany, Denmark, the United Kingdom, etc. It is currently being tested in several US states and has been studied for application in Canada.

It is proposed that speed harmonization be further pursued by MTO in the near term through monitoring of experience in the US to determine if this initiative is feasible in the Greater Golden Horseshoe.



**Exhibit 6-6: Examples of Application of Speed Harmonization**

Timeframe			Jurisdiction	Recommended Action
Near	Medium	Long		
✓			MTO	Active Traffic Management Study monitoring experience elsewhere to determine viability of speed harmonization in the study area.

**Provincial / Employer Led Transportation Demand Management (TDM) Programs**

Currently operating TDM programs could be improved by expanding the Metrolinx Smart Commute program beyond the Greater Toronto and Hamilton Area (GTHA) into the Guelph and Wellington County area and into Waterloo Region.

In addition to providing broader coverage, this concept would also involve introducing a regional organization that would provide strategic direction and / or potentially reach out to employers. The program could be managed on a regional level.

Experience in other jurisdictions has shown that regional organization of TDM initiatives leads to operational and economic efficiencies that translate into increased awareness of programs, a greater variety of services, and higher utilization. This concept would also involve providing additional carpool parking lots at key locations. This initiative is to be further pursued by Metrolinx, and MTO will explore opportunities to provide additional support to Metrolinx, as well as the potential for legislative changes to address current policy barriers in the near term.

Timeframe			Jurisdiction	Recommended Action
Near	Medium	Long		
✓			MTO/ Metrolinx	MTO and Metrolinx will explore opportunities to provide additional support as well as the potential for legislative changes to address current jurisdictional policy barriers.

**Long Combination Vehicles**

Long Combination Vehicles (LCVs) feature a single tractor with two 16 m (53 ft) trailers. MTO initiated a pilot project to allow up to 100 LCVs on the provincial highway network. This program improves fuel efficiency and traffic operations for goods movement. According to MTO, in 2011, LCVs eliminated 3.9 million tonnes of greenhouse gas emissions compared to the two-tractor trailers they replaced ([www.mto.gov.on.ca](http://www.mto.gov.on.ca)).

Timeframe			Jurisdiction	Recommended Action
Near	Medium	Long		
✓			MTO	MTO will continue to monitor the LCV program based on the review of recent experience.

**6.3. GROUP #2 – NEW / EXPANDED NON-ROAD INFRASTRUCTURE**

**6.3.1. Current Plans and Initiatives**

This group of alternatives builds upon the comprehensive suite of transit initiatives included in the Metrolinx Regional Transportation Plan - The Big Move (RTP) and includes initiatives to develop a comprehensive transit network.

The 15-Year Plan from the RTP included the following projects with components in the GTA West preliminary study area:

- Rapid transit line on Highway 10 from Mayfield West to Downtown Brampton;
- Hurontario Street / Main Street Rapid Transit from Downtown Brampton to 407 ETR (Brampton’s Züm service);
- Hurontario Street Rapid Transit Port Credit to Mayfield Road;
- Brampton’s Queen Street Züm from Downtown Brampton to the Peel-York boundary;
- VIVA BRT Highway 7 from the Peel-York boundary to Locust Hill in Markham;
- Spadina Subway extension from Downsview Station to Vaughan Corporate Centre (known as Vaughan Metropolitan Centre);

- BRT on 407 ETR from Halton to Durham;
- Jane Street Rapid Transit from Vaughan Metropolitan Centre to Bloor Street;
- Rail service between Union Station and Lester Pearson International Airport;
- Expansion on Milton and Georgetown corridors to all-day bi-directional rail service;
- Possible rail service extensions to Cambridge;
- Peak period rail service to Bolton from Union Station;
- Express Rail from Union Station to Downtown Brampton; and
- Numerous improvements to GO Transit service.

The 25-Year Plan from the RTP included the following projects in the GTA West preliminary study area:

- Additional Rapid Transit services in Halton connecting Downtown Milton to the Rapid Transit service on Dundas Street, and 407 ETR;
- Brampton's Züm Rapid Transit service on Steeles Avenue connecting the Lisgar GO Station to Highway 427;
- Rapid Transit along Highway 427 connecting Toronto Pearson International Airport to Queen Street;
- The first component of the dedicated 407 ETR Transitway providing Rapid Transit service through York Region, continuing as high speed bus service to the east and west along the 407 ETR, and connecting to Toronto Pearson International Airport via Highway 427;
- Necessary transit improvements along arterial road networks to service new growth that will continue to take place in accordance with municipal transportation master plans;
- Walking and cycling infrastructure; and
- Opportunities for upgrading Bus Rapid Transit services to Light Rail Transit.

On an ongoing basis, Metrolinx continues to provide transit improvements along the arterial road network, as well as pedestrian and cycling improvements.

### 6.3.2. New Plans and Initiatives

In addition to the strategies identified above, the Strategy has

identified a number of complementary strategies, which may be further supplemented and refined. These strategies are described in the following sections. The timeframes indicated below are defined as follows:

- Near Term – 0-5 years
- Medium Term – 5-15 years
- Long Term – 15+ years

#### Expanded Inter-regional GO Bus Routes

GO Transit has recently begun operating bus services in the western part of the GTA West study area. The services have been well received and ridership has grown significantly since the services have been introduced. This suggests that there are opportunities to attract riders to regional travel routes in this area. GO Transit has provided rail services between Kitchener-Waterloo and Union Station during AM and PM peak periods since late 2011.

Improvements to the current inter-regional GO Bus service are being seamlessly integrated with the Toronto-centric services to provide expanded coverage from Toronto to areas west of Georgetown such as Guelph, Hamilton and Kitchener-Waterloo. Existing bus services to these areas would be improved by more frequent buses and better coordination with local services.

#### Transit Supportive Highway Corridors

This concept involves introducing reserved bus lanes, HOV lanes, bus bypass shoulders and other transit supportive measures within existing provincial facilities including Highways 400, 410, 427 and 401 that would serve to make bus transit a more reliable and viable service. While these types of improvements could result in some level of impact to properties that abut these corridors, it is envisioned that these impacts would be relatively minor in nature and could be mitigated to a significant extent.

#### Inter-regional Transit Hubs Where Local Transit and GO Transit Connect

This concept involves the introduction of transit hubs in Downtown Guelph, Vaughan Metropolitan Centre, Toronto

Pearson International Airport, Downtown Milton and Downtown Brampton. Transit hubs can result in land use intensification, as they tend to attract development patterns that encourage use of transit, cycling and walking. This would be consistent with the intent of Urban Growth Centres.

#### New Bus Rapid Transit Links Between Urban Growth Centres

This concept involves providing better transit connections between Urban Growth Centres in the GTA West preliminary study area including the Downtown Brampton, Downtown Milton, Vaughan Metropolitan Centre and Downtown Guelph. Given that these are smaller growth centres and the potential ridership may not be significant, a potential would be to use Bus Rapid Transit (BRT), Light Rail Transit (LRT) or in the longer term small train systems such as self-propelled railcars (individual or clustered). Stations would be multi-modal facilities to provide for a well-connected and integrated transportation system.

#### Connection Beyond the GTA West Study Area

The Metrolinx RTP plans to implement inter-regional transit across the GTHA with strategically-located "mobility hubs". Similarly, the GTA West Transportation Development Strategy envisages better inter-regional transit services connecting the westerly Urban Growth Centres (UGCs) identified in the Growth Plan for the Greater Golden Horseshoe (*Growth Plan*): Downtown Kitchener, Uptown Waterloo, and Downtowns Cambridge, Guelph, Milton, Brampton, Hamilton, and Brantford. The recommended strategy recognizes three elements of a future transit network connecting urban and rural centres west of the GTHA with one another and with the City of Toronto:

- 1st Element – Inter-regional transit links to Toronto;
- 2nd Element – Linking Urban Growth Centres by transit; and
- 3rd Element – Urban Growth Centres and Transit Gateways

#### *1st Element – Inter-regional Transit Links to Toronto:*

Currently, the GTHA inter-regional rail network is primarily Toronto-centric. GO Rail lines from Union Station connect to some outlying communities directly with Toronto's city

centre, for example, Guelph and Kitchener. However, not all communities in the western part of the study area are connected to Toronto through rail services. It will be important in the future to enhance this “spoke” transit network in order to connect the UGCs located in the west with goods, services and employment opportunities in the rest of the GTHA, as shown in **Exhibit 6-7**. GO bus services are filling some of this immediate need for inter-regional travel. Consideration should be given to further study.

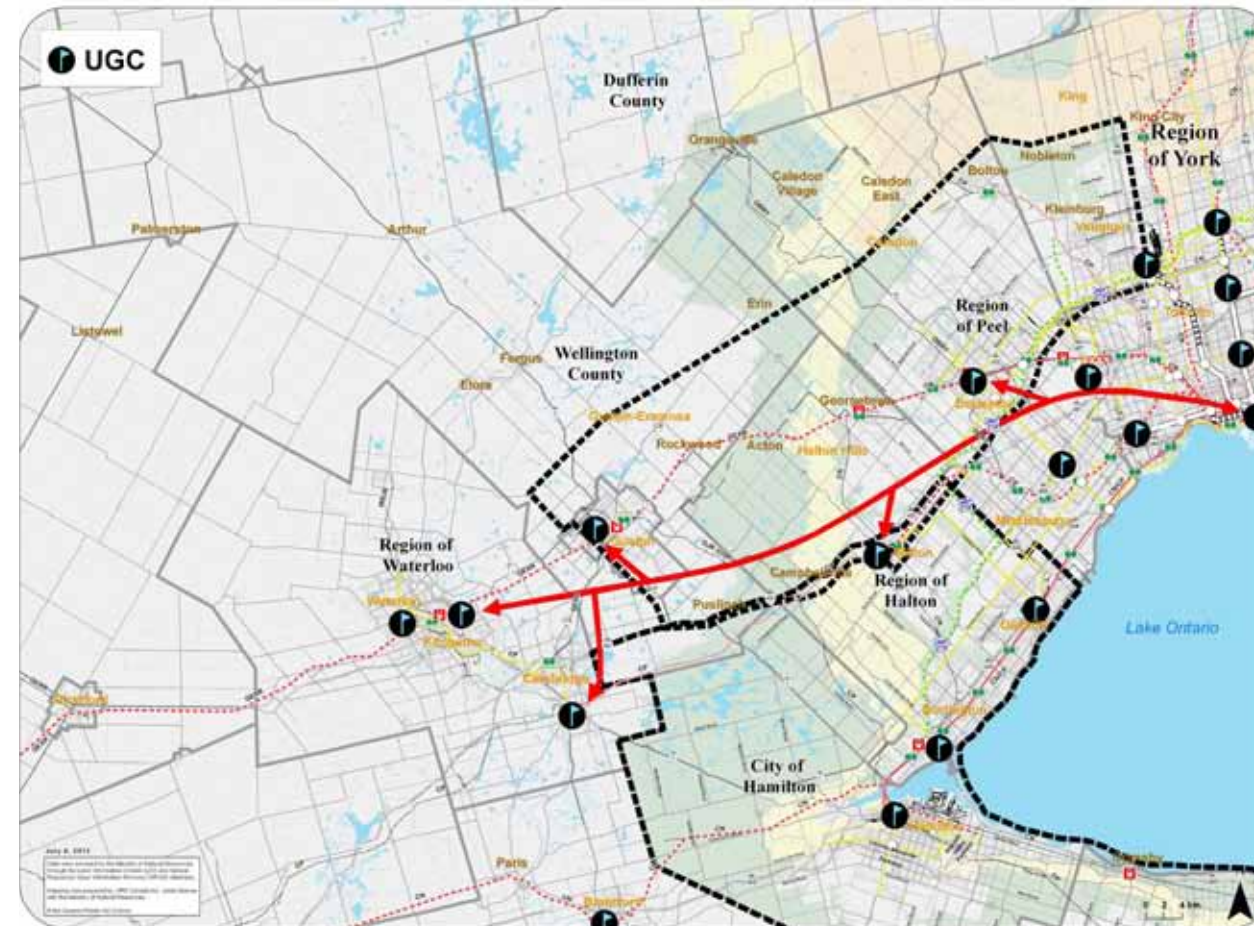
*Current Initiatives*

There are already service improvements by Metrolinx / GO Transit to enhance the spine network by creating extensions to pre-existing regional rail lines extending from Toronto. The Georgetown to Kitchener Rail service began in 2011, with eastbound trains during the AM peak period and westbound trains during the PM peak period.

As part of this rail expansion, two new stations were recommended, along with the refurbishing of three existing stations to accommodate GO trains. The Georgetown GO Station, Guelph VIA Station, and Kitchener VIA Station would all receive upgrades and / or expansions. Additionally, the Kitchener VIA Station would eventually be replaced with a new multi-modal station on King Street West (three blocks west of the existing station).

The preferred alternatives for new station locations were in Acton (at Hide House on Eastern Avenue) and Breslau (on Greenhouse Road east of Fountain Street North). In addition, there would be a new layover site on Nafziger Road in Wilmot Township.

A second rail expansion (the first being the Georgetown to Kitchener/Waterloo expansion) has been investigated for a potential extension of the Milton GO line westward to Cambridge. This expansion has only gone as far as a feasibility study led by the Region of Waterloo, although GO Transit could potentially undertake an Environmental Assessment in the future. The Cambridge to GTA Rail Passenger Feasibility Study recommends the implementation of four new passenger transfers, with stations possible in Campbellville (at Guelph Line), Puslinch (at Highway 6), and



Note: Connection as shown is representative only.

Exhibit 6-7: Connecting Urban Growth Centres to Toronto

in Cambridge (a park-and-ride at Franklin Boulevard, and a full station on Water Street near Galt Collegiate Institute).

*Future Initiatives*

The GO Transit 2020 Service Plan from the GO 2020 Long Range Strategic Plan has identified the Hamilton-to-Brantford corridor as a “service extension”, stating that “service will be considered to Urban Growth Centres currently beyond GO’s service area”, including Brantford. The rail infrastructure is already in place, with no less than two tracks at any location on CN’s Dundas Subdivision for the entire stretch from Aldershot GO Station to Brantford VIA Station. GO Transit could potentially run service to Brantford by way of a Lakeshore West line service expansion, with the potential to greatly enhance the Toronto-centric spoke transit network.

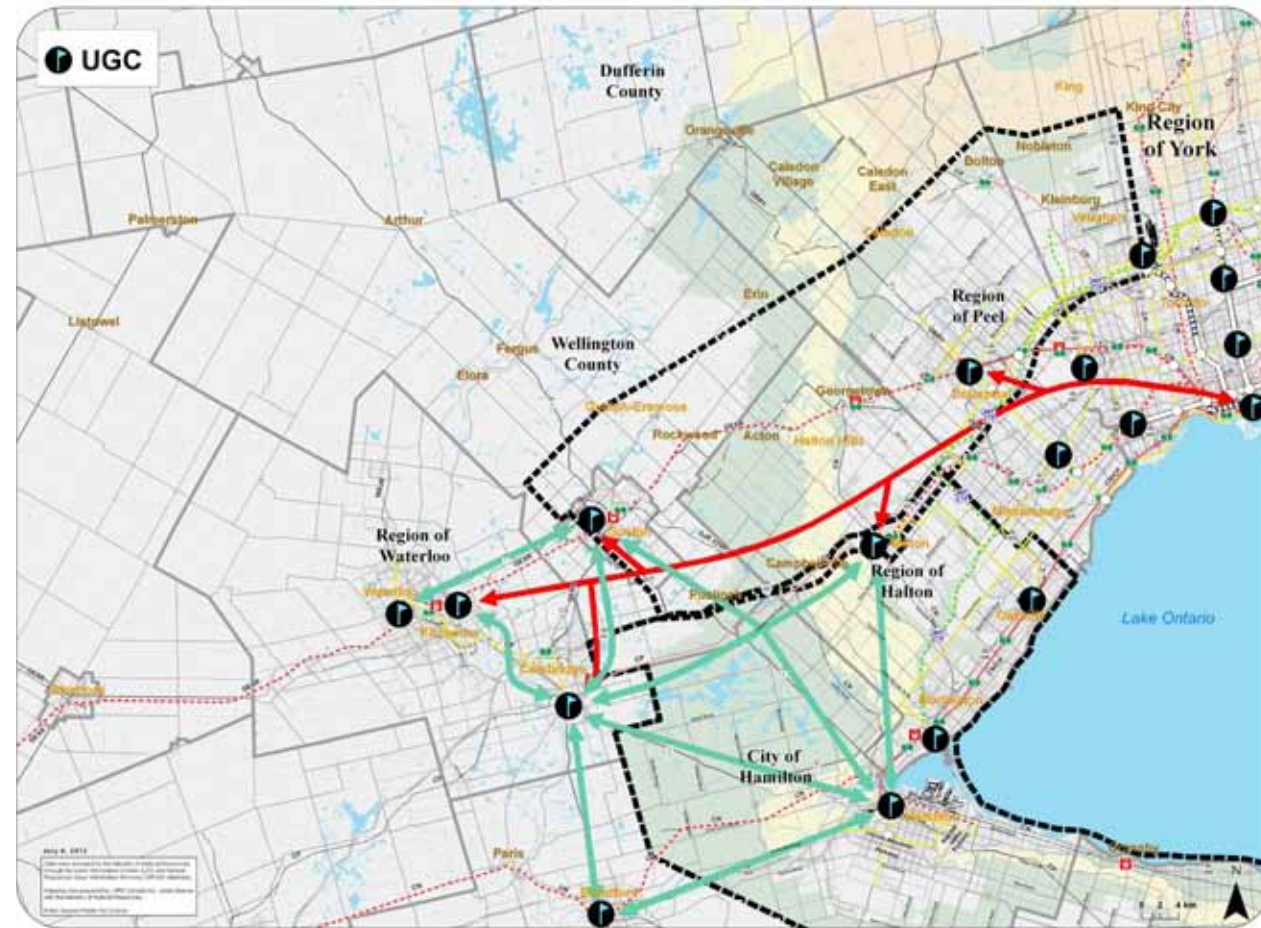
*2nd Element – Linking Urban Growth Centres by Transit*

Connecting the western UGCs with one another is vital to building a comprehensive transit network that extends to the west of the GTHA. Thousands of trips are generated between those UGCs on a daily basis. To understand what the transit network connecting these UGCs will look like in the future, it is important to understand transit infrastructure upgrades that are in progress and that are programmed for the future. These upgrades are illustrated in **Exhibit 6-8**.

*Current Initiatives*

The Region of Waterloo has taken steps towards the implementation of an LRT system that would run from Conestoga Mall in Waterloo to Ainslie Street Terminal in Cambridge, effectively linking the UGCs of Uptown Waterloo,





Note: Connections as shown are representative only

Exhibit 6-8: Linking Urban Growth Centres with a Web Network

Downtown Kitchener, and Downtown Cambridge, as well as the proposed GO rail line extension from Georgetown to Kitchener and the contemplated GO rail line from Milton to Cambridge. The project was approved by Waterloo Regional Council on June 24, 2009 and will include LRT from Conestoga Mall to Fairview Park Mall in southern Kitchener, and adapted Bus Rapid Transit (aBRT) preferred from Fairview Park Mall southward to Ainslie Street Terminal. In 2010 and 2011, planning for the LRT / BRT was undertaken by the Region of Waterloo and the recommended rapid transit implementation option was presented to council in June 2011. The Transit Project Assessment Process was formally initiated in November 2011 and in March 2012, the study was completed. It is anticipated that full implementation of stage 1 “aBRT” and construction of stage 1 LRT would begin in 2014.

Furthermore, an EA process is already underway concerning

the realignment and widening of the current Highway 24 connecting Cambridge and Brantford that explores the possibility of a new transportation corridor. The realization of the Brantford-to-Cambridge Corridor would create an opportunity to implement rapid transit between the UGCs in Cambridge and in Brantford, further enhancing the web network west of the GTHA.

It should be noted that the urban areas of Waterloo, Kitchener, Cambridge, and Milton are all currently connected with a single GO Transit regional bus route, although only the UGCs in Kitchener and Milton are directly serviced by this route. Additionally, GO bus service connects Guelph and Hamilton, although only the connection in Hamilton is located within its UGC boundaries. These routes help to further enhance the western web transit network.

*Future Initiatives*

As part of the GTA West Corridor Planning and EA Study, the Study Team has considered the possibility of implementing regional rail or bus options connecting the Urban Growth Centres (UGC) west of the GTHA, including a preliminary rail investigation on the condition of the existing rail tracks connecting the UGCs. A future study is recommended to examine the feasibility for such transit facilities.

**3rd Element – Urban Growth Centres as Transit Gateways**

In order to complete a comprehensive transit web network to the west of the GTA West preliminary study area, the smaller outlying rural communities must have connectivity to Toronto and other centres by way of transit links to nearby urban areas, as shown in Exhibit 6-9.

*Current Initiatives*

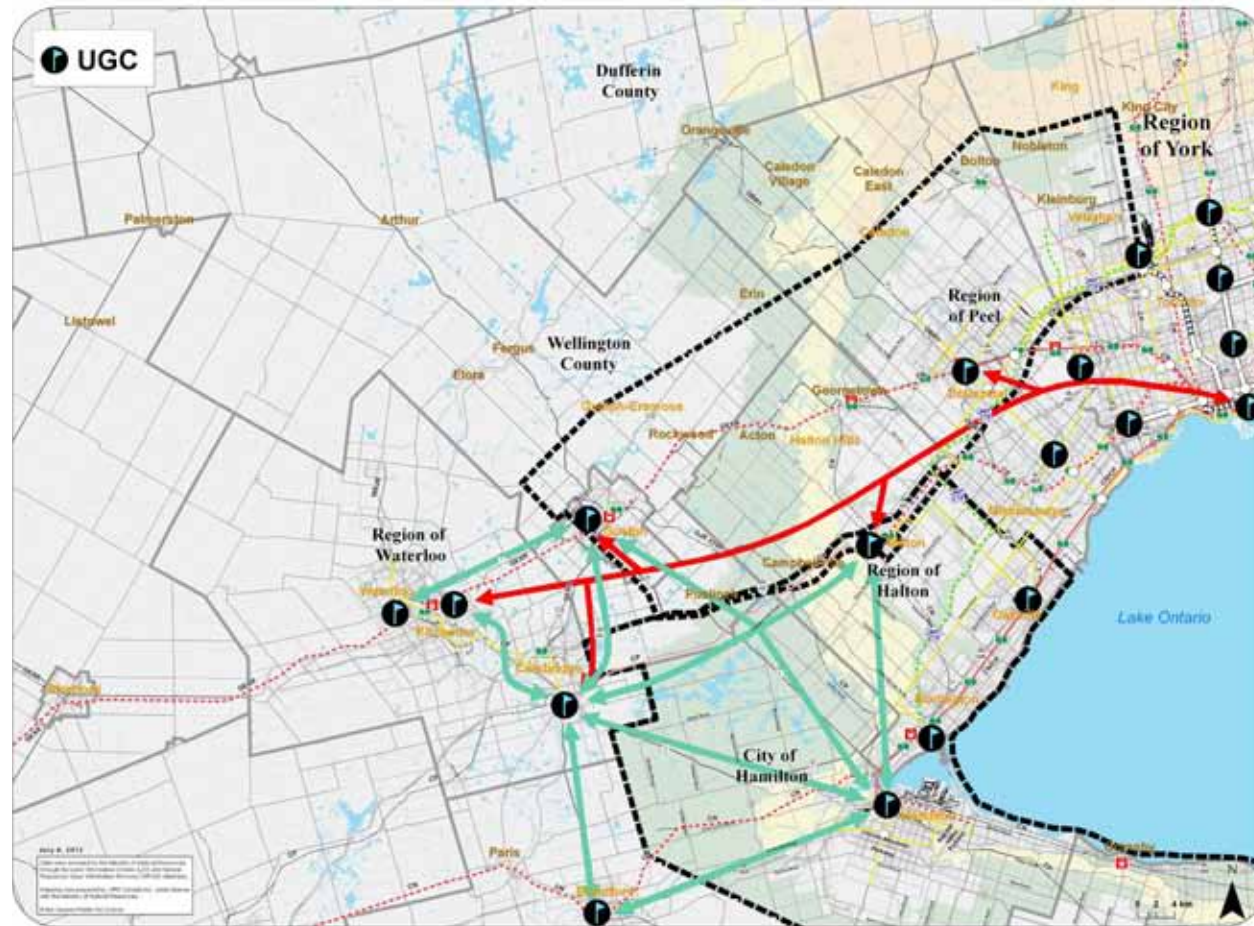
Inter-regional transit providers have shown some initiative to connect western urban areas with the smaller rural communities locally. GO Transit already runs buses from Guelph to Mississauga with a stop in the small town of Aberfoyle (in Puslinch) along the way. As previously noted, GO’s service expansions to Kitchener and to Cambridge is placing new stations in smaller communities. The Georgetown expansion to Kitchener would have stops in the towns of Acton (now GO bus stop only) and Breslau, while the Milton expansion to Cambridge could potentially have stations in Campbellville and Puslinch. Also, Grand River Transit (GRT), which runs bus service primarily in Kitchener, Waterloo and Cambridge, runs a route northward to St. Jacobs and Elmira.

*Future Initiatives*

Outside of the previously discussed potential GO service extensions that would place new stations in Acton, Breslau, Campbellville and Puslinch, there are currently no future transit initiatives that would help service outlying rural communities.

**Mobility Hubs**

The Metrolinx RTP differentiates between two types of mobility hubs: Gateway Hubs and Anchor Hubs. Gateway Hubs are located at the interchange between two or more



Note: Connections as shown are representative only

Exhibit 6-9: Urban Growth Centres as Transit Gateways

in Guelph, Kitchener and Cambridge where potential new GO stations will be located. Additionally, since the UGC in Waterloo will be connected to this network pending the implementation of the Waterloo LRT, it should also have a new mobility hub. Finally, since GO 2020 reflects a potential rail service extension from Hamilton to Brantford, its UGC should have a mobility hub. Thus, five new mobility hubs should be considered in the following locations, all of which contain an UGC as defined in the *Growth Plan*:

- Brantford – The UGC in Brantford is located downtown. The Brantford VIA Rail Station is located in the immediate vicinity and has potential to accommodate GO Transit service in the future (similar to plans to use existing VIA stations in Guelph and Kitchener to facilitate the Georgetown line extension). Also, several bus routes service the UGC and surrounding area;
- Cambridge – The Cambridge to GTA Rail Passenger Feasibility Study recommended a new GO Station be built near Galt Collegiate Institute. This area is located adjacent to Cambridge’s UGC and as such may be a desirable mobility hub. The Ainslie Street Bus Terminal is located in the centre of the UGC and is the major hub for GRT in Cambridge. Additionally, it is to be the southern terminus of the pending Waterloo LRT (although it is to be initially serviced by a BRT). Galt Collegiate Institute is programmed as the next stop to the north on the Waterloo LRT, and is already serviced by GRT, making the UGC in Cambridge a potentially strong location for inter-regional transit links;
- Guelph – The Georgetown to Kitchener Rail Expansion Environmental Study Report recommended that the existing VIA Guelph Station be upgraded to accommodate the potential GO service running through this corridor. This station is located within the UGC boundary in Guelph. Also located within the UGC boundary is the Guelph Bus Terminal, providing a direct link to Guelph Transit buses. Therefore, the UGC in Guelph is a strong candidate to be designated as a mobility hub;
- Kitchener – The Georgetown to Kitchener Rail Expansion Environmental Study Report also recommends that the VIA Kitchener Station be used as a GO train passenger transfer location. The station is located within the Kitchener UGC, approximately 0.6 kilometres northwest of Charles Street Terminal, which serves GRT and Coach Canada buses. However, it should be noted that there are

current or planned regional rapid transit lines, while Anchor Hubs are the primary major transit station areas in an UGC. This ideology must be expanded to the west of the RTP study area (which encompassed only the GTHA) in order to identify areas where it is especially important to promote community self-containment. It is vital to implement transit-supportive land use practices (i.e. transit-oriented development (TOD)) and adopt policies consistent with improving transit (commuter parking, TDM, HOV lanes, transit priority, etc.) in these areas. (See [www.metrolinx.com/mobilityhubs](http://www.metrolinx.com/mobilityhubs)).

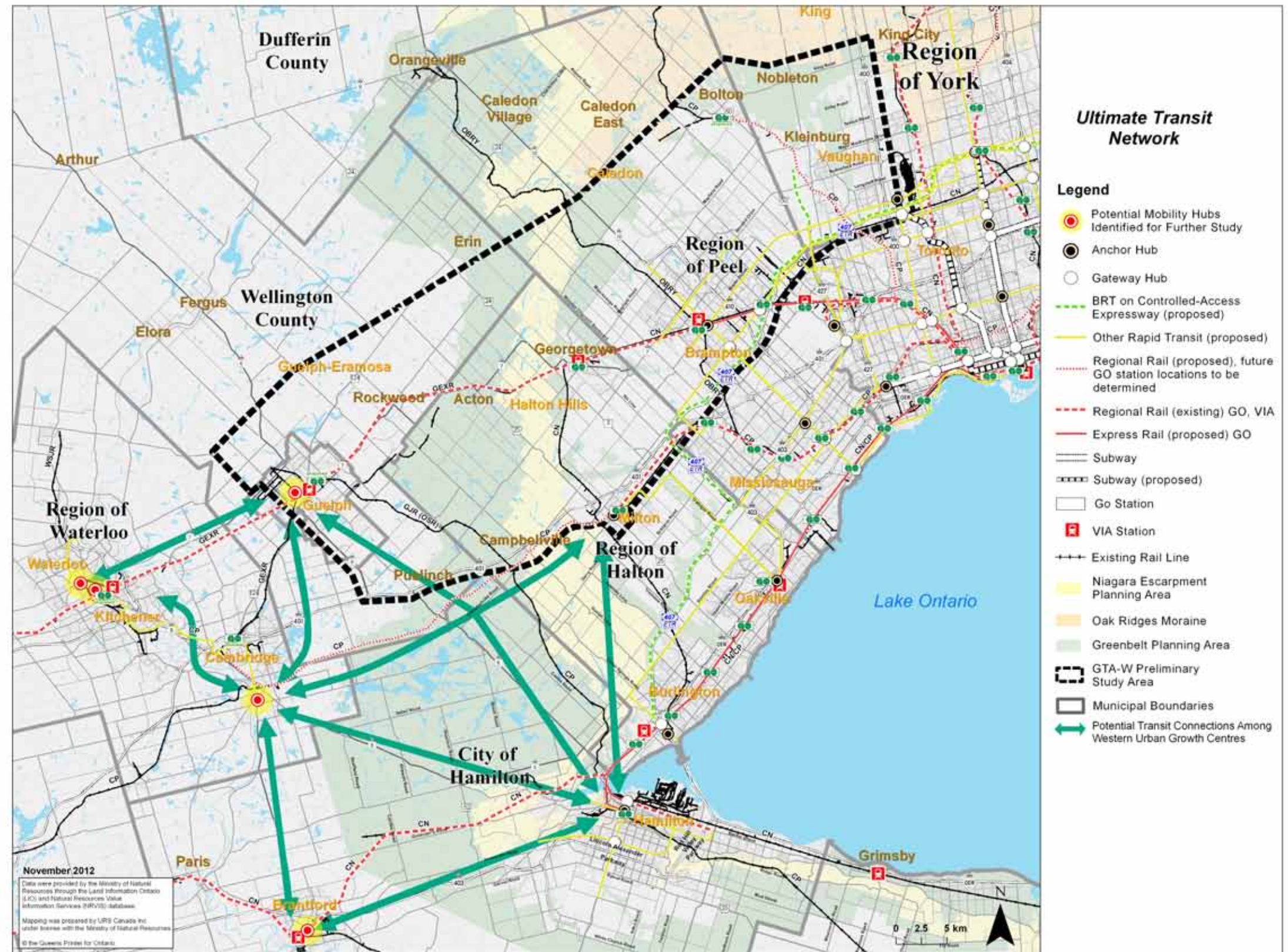
Therefore, new mobility hubs have been identified in the western web area. However, these mobility hubs were not sub-classified as anchor or gateway hubs. **Exhibit 6-10** identifies locations of all potential mobility hubs for further study.

#### *Building on Existing Mobility Hubs*

There are two existing mobility hubs located in the western stretches of the GTHA, in Milton and in Hamilton. Each has strong inter-regional transit links to Toronto including efficient regional rail services.

Both the Metrolinx RTP and *GO Transit Strategic Plan* illustrate potential future rail corridors extending regional rail service from Milton to Cambridge and the most recent expansion of GO services from Georgetown to Kitchener. These new corridors will serve as the spine of a comprehensive transit network extending west through the GTA into the Region of Waterloo, the City of Hamilton, Brant County and Wellington County.

Therefore, new mobility hubs should be placed in UGCs



plans to move the station three blocks west and relocate it on King Street West. This location is also a planned Waterloo LRT passenger transfer location. The “potential inter-modal station” on King Street West could facilitate GO, VIA, and Waterloo LRT services in the future, with GRT likely to follow and service the new station also. Therefore, the Kitchener UGC is a worthy candidate for an anchor hub; and

- Waterloo – Identifying an anchor hub location in the UGC of Uptown Waterloo is much more difficult due to the fact there is no regional rail servicing the area nor is there any planned for the immediate future. There is, however, frequent GRT bus routes as well as a planned Waterloo LRT transfer platform in the vicinity of King Street South and Willis Way. This location is only one block south of a rail corridor that connects with the proposed Georgetown to Kitchener Rail Expansion, presenting future opportunity for GO service expansion to this area. Therefore, it is recommended that a new anchor hub be considered in Uptown Waterloo.

The urban areas containing UGCs to the west of the GTA West preliminary study area are not as populated as those in the GTHA, making it much harder to identify suitable locations for multiple mobility hubs. Therefore, since each of the major urban areas described above contains a UGC with a new mobility hub recommended for further investigation in the future, additional mobility hubs will be recommended in smaller rural communities that present future transit opportunities due to their strategic location in the western web transit network. Examples are provided below of three locations that potentially warrant additional mobility hubs, where multiple transit services have the potential to meet in the future:

- Campbellville – Campbellville has been identified in the Cambridge to GTA Rail Passenger Feasibility Study as an area warranting a potential GO station in the event of a service extension from Milton to Cambridge. This potential station would be located on Guelph Line along the CP Galt Subdivision rail corridor. Campbellville is ideally situated to contain a mobility hub, due to strong positioning in the region’s rail network. It is located just east of Guelph Junction, and could facilitate the transfer of rail passengers looking to travel north to Guelph, south to Hamilton or west to Cambridge. It is also the beneficiary

of an interchange with Highway 401 (which runs directly through it) at Guelph Line, presenting opportunities to integrate with bus transit as well.

- Puslinch – Puslinch, a Township to the southeast of Guelph, has similar opportunities as Campbellville. It has been identified as a location suitable for a new station in the event of a GO service extension to Cambridge and is conveniently located near Highway 401 to the north. It is connected to Highway 401 via Highway 6 (where the potential station would be located), which runs north (as Brock Road) into Guelph and connects with Aberfoyle (a community serviced by GO buses at present time) en route.
- Paris – Paris is one of the larger outlying communities located within the western web area. It qualifies as a good location for a mobility hub due to Highway 403 being located just slightly to the south. It also contains two abandoned rail links, one of which leads southeast into Brantford and the other of which leads north into Cambridge. Both links appear to be reconstitutable and could be implemented as regional rail corridors at some point in the future. VIA Rail passenger trains currently run through Paris (although there is no stop in the town) on the CN Dundas Subdivision.

It is recommended that a study be initiated in the near-term to explore the potential for inter-regional transit services that are focused on connections between Urban Centres. This study would involve forecasting the future commuter demands for travel to areas in the Region of Waterloo, Cities of Hamilton, Guelph, Brantford and beyond from the surrounding municipalities and assessing whether there is sufficient future demand to warrant these transit services. If the demand exists, the study would recommend a strategy to identify the appropriate service provider (i.e. GO Transit, municipal transit services, etc., as well as the mode of travel – e.g. bus or rail). It should be noted that within and in the proximity of the GTA West preliminary study area, there are several active and abandoned rail corridors, as shown in **Exhibit 6-11**. It may be worthwhile to consider the potential for commuter rail transit on active tracks or on reconstituted abandoned tracks as one possible form of rapid transit in the long-term future. This potential should be investigated as part of the recommended study to examine demand and reasonable transit solutions.

A comparison of area rail corridors is provided in **Exhibit 6-12**.

Timeframe			Jurisdiction	Recommended Action
Near	Medium	Long		
✓			MTO Metrolinx Municipalities	Initiate a multi-modal area-wide study in the Waterloo/Wellington/Brantford area to explore potential for inter-regional transit service improvements west of the GTA.

### Goods Movement and Freight Rail

While the existing freight rail network has sufficient capacity to address future growth in goods movement by rail, there are numerous locations where conflicts exist between passenger rail and freight rail services. These conflicts occur when both services use the same tracks at the same time, as well as at-grade road / rail crossings. These locations have an adverse effect on current rail operations.

Removal of these constraints will have an overall positive effect on freight and passenger rail operations, allowing people and goods to be moved more efficiently, which may result in a higher efficiency of this mode to attract commuters and shippers.

To support increased utilization of freight rail, MTO will coordinate with Canadian National Railway, Canadian Pacific Railway and Metrolinx in the near-term to identify the conflict points, and will support potential future initiatives, such as the Ontario Goods Movement Strategy, aimed at removing freight rail / passenger rail conflicts and providing grade separations at road / rail crossings. Opportunities for transit and high-speed rail on separate tracks will also be considered.

Timeframe			Jurisdiction	Recommended Action
Near	Medium	Long		
✓			MTO CN/CP GO Transit Municipalities	Feasibility review of potential future initiatives aimed at removing freight rail/passenger rail conflicts and providing grade separations at road/rail crossings.



Exhibit 6-12: Rail Corridor Comparisons

Railway Operator	GEXR		CP (Waterloo Subdivision) / GEXR (Huron Park Spur)	GEXR (Fergus Spur)	OSR	CP (Galt Subdivision)	CP (Abandoned)	CN (Dundas Subdivision)	CP (Hamilton Subdivision)	CP (Galt Subdivision)	CN
Connecting Urban Areas/Junctions	Guelph	Kitchener / Waterloo	Cambridge	Guelph	Guelph Junction	Cambridge	Brantford	Hamilton	Guelph Junction	Milton	Hamilton
Role/Function	Freight (1-3 movements/day) Passenger (6 movements/day)	Freight (approx. 1-3 movement/week)	Freight (approx. 3 movements/week)	Weekdays - Freight (approx. 3 movements/week) Weekends - Tourist	Freight (20-25 movements/day)	Cycling Trail	Freight (20-25 movements/day) Passenger (11 movements/day)	Freight (5-10 movements/day)	Freight (20-25 movements/day)	N/A	
Design Parameters	Speed - 25-55 mph (freight) 45-70 mph (passenger)	Speed - 10 mph	Speed - 10-15 mph	Speed - 35 mph Weight - no limit	Speed - 35-60 mph	Majority of track salvaged	Speed - 40-60 mph (freight) 40-80 mph (passenger)	Speed - 15-25 mph	Speed - 35-60 mph	N/A	
Trackage	Majority 1 track 2 tracks in places	Majority 1 track 2 tracks in places	1 track	Majority 1 track 2 tracks in places	Majority 1 track 2 tracks in places	N/A	Majority 2 tracks 3 tracks in places	1 track	Majority 2 tracks 3 tracks in places	Varies from 1-4 tracks	

#### 6.4. NEW / EXPANDED ROADWAY INFRASTRUCTURE

Assessment carried out as part of the study (as documented in **Chapter 4 and Chapter 5**), has demonstrated that optimizing the existing transportation infrastructure and increasing transit ridership through new / expanded non-road infrastructure alone would provide some transportation improvement. However, it would not fully address the future transportation problems and opportunities. In order to fully realize the vision of a functional and efficient multi-modal transportation network that provides user choice and balance, planning for additional roadway capacity is required for the long term, including widening existing highways beyond the planned program at several locations, as well as a new transportation corridor.

Alternatives were developed for the widening of existing highways (beyond the planned program), and widening in combination with a proposed new transportation corridor. Analysis and evaluation were carried out to assess these alternatives based on consideration of socio-economic environment, natural environment, economic environment, transportation, as well as cost and constructability factors.

The proposed transportation corridor will consist of a highway corridor, and transitway and / or truckway. Future HOV lanes could be accommodated where warranted.

The right-of-way of the transportation corridor may range between 110 m (highway/truckway without transitway) and 170 m (with transitway). The new transportation corridor could accommodate a transitway and/or priority truck features; and will include a north-south connection to Highway 427 and connection to Highway 410.

The high level evaluation of new corridor alternatives, outlined in **Chapter 4**, and the additional analysis in Halton area, outlined in **Chapter 5**, recommended that a new transportation corridor be provided from Highway 400 westerly and then southerly to connect to Highway 401 / 407 ETR as a provincial facility.

Details related to the new transportation corridor and other widening of 400 series highway are outlined below:

##### New Transportation Corridor

The proposed new transportation corridor is shown in **Exhibit 6-13**, which follows the configuration of Alternative 4-2 as shown in **Exhibit 4-5**. Based on the anticipated 2031 traffic forecast and analysis, the new transportation corridor is proposed to include six lanes (three in each direction) between Highway 400 and the Highway 427 Extension, four lanes (two in each direction) between Highway 427 and the north-south portion of the corridor near the Halton / Peel

municipal boundary and six lanes as the corridor turns south and connects to the Highway 401 / 407 ETR interchange in the Town of Milton and Town of Halton Hills. HOV lanes could also be incorporated into the new corridor.

The Halton-Peel Boundary Area Transportation Study (HP BATS) included a Halton / Peel Freeway that would become part of the GTA West transportation corridor – i.e. the north-south portion of the transportation corridor along the Halton / Peel municipal boundary with a connection to the Highway 401 / 407 ETR interchange. The GTA West study has been coordinating with the HP BATS Study Team during Stage 1 of the EA Study and will continue to coordinate with municipal representatives during Stage 2 of the EA.

The proposed new transportation corridor would function in combination with widening of existing highway facilities beyond the planned program, as outlined in **Exhibit 6-14**. During Stage 2 of the EA Study connections to existing north-south provincial facilities (such as Highway 400, Highway 427, and Highway 410) will also be investigated.



Road Section	2031 Basic Number of Lanes (2-way)	
	Existing No. of Lanes	Ultimate No. of Lanes
<b>Highway 401</b>		
Highway 6 to Regional Road 25	6	10
Regional Road 25 to 407 ETR	6	12
407 ETR to Winston Churchill Boulevard	6	10
Winston Churchill Boulevard to Highway 410	6	12
<b>407 ETR</b>		
Highway 401 to Highway 410	8	10
Highway 410 to Highway 427	8	10
Highway 427 to Highway 400	10	10
<b>Highway 410*</b>		
Highway 401 to 407 ETR	7	9
407 ETR to Steeles Avenue	6	8
Steeles Avenue to Queen Street	8	10
Queen Street to Mayfield Road	8	8
<b>Highway 427*</b>		
407 ETR to Highway 7	6	8
Highway 7 to Major Mackenzie Drive (EA approved)	0	8
<b>Highway 400</b>		
407 ETR to Major Mackenzie Drive	8	12
Major Mackenzie Drive to King Road	6	10
King Road to Highway 9	6	10
<b>New Transportation Corridor</b>		
Highway 401/407 ETR to approximately Mayfield Road (north-south portion)	0	6
Approximately Mayfield Road (north-south portion) to Highway 427	0	4
Highway 427 to Highway 400	0	6

HOV lanes assumed as part of total lanes.

\* Number of lanes to New Transportation Corridor not included

\*\* It should be noted that while the analysis and evaluation documented in Chapter 4 of this report assumed Highway 401 between Winston Churchill Boulevard and Highway 410 to be 14 lanes, MTO has subsequently completed planning for this section of Highway 401 and determined that it will not be widened beyond the planned 12 lanes. Since this update would be applied to all alternatives, it would not change the outcome of the preferred improvement.

Exhibit 6-14: Proposed Highways Improvements

### Transportation Corridor Implementation

It should be noted that accommodation for a transitway may be provided in the proposed new transportation corridor and would be explored in further detail during Stage 2 of the GTA West EA Study.

Hydro One has indicated the potential need for a new hydro tower corridor. Hydro One representatives have been notified of milestones of the GTA West Study and have been invited to attending Regulatory Agency Advisory Group meetings. The GTA West Corridor Planning and EA Study Team have had a few meetings with Hydro One to discuss the planning timeline and planning process of the new hydro corridor, which may coincide with sections of the new transportation corridor and North-South Link to Highway 401 / 407 ETR, as well as opportunities to coordinate between the two studies. The two Study Teams will continue to coordinate as the two planning studies progress.

Some preliminary analysis was carried out in assessing the benefit of utilizing the new transportation corridor as a truck only route. This will be carried forward for further consideration and analysis during Stage 2 of the GTA West EA Study.

One component of the Transportation Development Strategy is the introduction of a new transportation corridor between Highway 400 and Highway 401/407 ETR. Given that this transportation corridor is likely to be over 50 km and will likely require some federal approvals, it is anticipated to trigger a Comprehensive Study under the Canadian Environmental Assessment Act. As the study progresses into Stage 2, MTO will continue to consult with the Canadian Environmental Assessment Agency to coordinate Federal and Provincial EA Requirements in accordance with the approach outlined in the EA Terms of Reference.

In terms of timing and implementation, it is proposed that right-of-way designation of the new transportation corridor will be provided by MTO in the near-term, as an outcome of Individual EA completion. The widening of existing highways is to be pursued by MTO in the medium-term following the implementation of strategies in the Active Traffic Management Plan by MTO and transit programs by Metrolinx and GO Transit. The extent of widening (i.e. exact

number of lanes) identified on the existing highways will be subject to MTO's Class Environmental Assessment and / or Feasibility Studies.

The timeframes indicated below are defined as follows:

- Near Term – 0-5 years
- Medium Term – 5-15 years
- Long Term – 15+ years

Timeframe			Jurisdiction	Recommended Action
Near	Medium	Long		
	✓		MTO/ 407 ETR	Widening of highways (EA studies, etc.)
✓			MTO	Route planning and preliminary design of new transportation corridor and connecting links (Stage 2 of EA Study) and protection of required lands.
		✓	MTO	Design and construction of new transportation corridor and connecting links.

### 6.5. MITIGATION MEASURES

There are several key natural environmental features within the GTA West preliminary study area, including the Humber River crossing, Credit River crossing, and designated areas such as the *Greenbelt Plan* area and the Niagara Escarpment. Mitigation measures will be explored during Stage 2 of the GTA West EA Study to minimize impact to natural environmental features, and MTO will work closely with Conservation Authorities, the Ontario Ministry of Natural Resources, the Department of Fisheries and Oceans and other regulatory agencies to ensure compliance with policies and guidelines. As part of the roadway design, consideration of drainage and stormwater management and other technical investigations will also occur.

Per the MTO Environmental Standards and Practices, the **Exhibit 6-15** lists the type of environmental work that is required to be carried out during route planning and preliminary design (i.e. Stage 2 EA).



RELEVANT SECTION OF MTO ENVIRONMENTAL STANDARDS AND PRACTICES	DATA/INVESTIGATION TYPICALLY CARRIED OUT DURING STAGE 2 OF AN EA (I.E., ROUTE PLANNING AND PRELIMINARY DESIGN)
Section 2	<p><i>Fish and Fish Habitat investigations</i></p> <ul style="list-style-type: none"> <li>• Field forms, photos, maps, Constraints and Opportunities map</li> <li>• Fish and Fish Habitat Existing Conditions Report</li> <li>• Fish and Fish Habitat Impact Assessment Report,</li> <li>• Project Notification Form “HADD” or “No HADD”</li> <li>• Project File for Fish and Fish Habitat</li> <li>• Compensation Strategy</li> </ul>
Section 3	<p><i>Wetlands (Terrestrial Ecosystems)</i></p> <ul style="list-style-type: none"> <li>• Terrestrial Ecosystems Report (includes field investigations, assessment of impacts, environmental protection, mitigation and/or compensation).               <ul style="list-style-type: none"> <li>o Determine and map wetland resources,</li> <li>o Determine Significance of wetland resources</li> <li>o Assess Impacts</li> <li>o Confirm Environmental Protection/Mitigation</li> </ul> </li> </ul>
Section 4	<p><i>Woodlands and Other Vegetated Areas (Terrestrial Ecosystems)</i></p> <ul style="list-style-type: none"> <li>• Terrestrial Ecosystems Report (includes field investigations, assessment of impacts, environmental protection, mitigation and/or compensation).               <ul style="list-style-type: none"> <li>o Determine and map vegetation communities and plant species</li> <li>o Determine Significance of woodlands and other vegetated areas</li> <li>o Assess Impacts</li> <li>o Confirm Environmental Protection/Mitigation</li> </ul> </li> </ul>
Section 5	<p><i>Wildlife habitats and Movements (Terrestrial Ecosystems)- see above</i></p> <ul style="list-style-type: none"> <li>• Terrestrial Ecosystems Report (includes field investigations, assessment of impacts, environmental protection, mitigation and/or compensation).               <ul style="list-style-type: none"> <li>o Wildlife habitat, significant wildlife habitat areas</li> <li>o Determine Significance of wildlife habitat</li> <li>o Assess Impacts</li> <li>o Confirm Environmental Protection/Mitigation</li> </ul> </li> </ul>
Section 6	<p><i>Groundwater</i></p> <ul style="list-style-type: none"> <li>• Groundwater Report addresses potential changes in groundwater hydraulic regime (decrease or increase in groundwater quantity) and reduced groundwater quality. Assessment includes:               <ul style="list-style-type: none"> <li>o Background Data and Field investigations</li> <li>o Determination of Significance</li> <li>o Assessment of Impacts</li> <li>o Confirmation of Environmental Protection/Mitigation</li> </ul> </li> </ul>

Exhibit 6-15: Environmental Works to be Carried Out in Stage 2 EA

RELEVANT SECTION OF MTO ENVIRONMENTAL STANDARDS AND PRACTICES	DATA/INVESTIGATION TYPICALLY CARRIED OUT DURING STAGE 2 OF AN EA (I.E., ROUTE PLANNING AND PRELIMINARY DESIGN)
Section 7	<p><i>Land Use study</i> Includes impacts to agricultural, residential communities and built up areas, recreational lands and natural areas of provincial significance, aggregates and mines and municipal services.</p> <ul style="list-style-type: none"> <li>• Land Use Factors Report (includes field investigations, assessment of impacts, environmental protection, mitigation and/or compensation)               <ul style="list-style-type: none"> <li>o Determine and map specialty crop and tender fruit areas, class 1-6 agricultural land, drainage, microclimate data, property boundary/assessment data soil class, topographic/demographic features, active farm locations and type of operation, farm buildings and other key permanent facilities</li> <li>o Determine and map – existing and future land uses, federal, provincial and municipal plans, policies and guidelines, local and regional resources, property boundary/assessment data, locations of residential neighborhoods, locations of rural communities, areas of vehicular and pedestrian access, heritage buildings and features</li> <li>o Verify background data for existing land uses</li> <li>o Determine and map commercial, industrial and tourism areas and verify data with site visit</li> <li>o Determine and map community facilities and vehicular and pedestrian access. Verify data with site visit</li> <li>o Determine and map passive and active parks, vehicular and pedestrian access, public recreational corridors, recreational and navigable river systems. Verify data with site visit</li> <li>o Determine and map data pertaining to aggregate and mines, recreational land uses and natural areas.</li> <li>o Determine and map data related to municipal services. Verify services.</li> <li>o Obtain property ownership for consultation purposes</li> </ul> </li> </ul>
Section 8	<p><i>Noise</i></p> <ul style="list-style-type: none"> <li>• Noise Report includes:               <ul style="list-style-type: none"> <li>o Collection of Background Data</li> <li>o Determine noise sensitive areas and complete acoustical analysis</li> <li>o Determine significance</li> <li>o Assess impacts</li> <li>o Confirm environmental protection/mitigation</li> </ul> </li> </ul>
Section 9	<p><i>Contaminated Property and Excess Materials Management</i></p> <ul style="list-style-type: none"> <li>• Contaminant report to identify past and present site activities, evaluate existing environmental liabilities, current environmental performance and environmental risk of a property and determine and undertake contamination management. Also addresses Management of Excess Materials during Construction.</li> <li>• Depending on findings, work may include Phase 1 or 2 Environmental Site Assessments</li> </ul>
Section 10	<p><i>Built Heritage and Cultural Landscape inventory of field data</i></p> <ul style="list-style-type: none"> <li>• Built Heritage and Cultural Heritage Landscape Report (includes background data, field investigations, determination of significance, assessment of impacts, mitigation strategy)               <ul style="list-style-type: none"> <li>o Determine and map cultural heritage resources – buildings, structures, or cultural heritage landscapes that are protected and/or designated under the Part IV or V of the Ontario Heritage Act (R.S.O. 1980), Ontario Foundation easements, municipal easements, provincially owned or leased heritage properties, buildings, structures, or sites and areas/cultural heritage landscapes listed on municipal inventories and/or recognized with Provincial historical plaques erected by the Ontario Heritage Foundation, heritage bridges, building structures or cultural heritage landscapes of recognized federal significance and cemeteries. Verified by site visit.</li> </ul> </li> </ul>

RELEVANT SECTION OF MTO ENVIRONMENTAL STANDARDS AND PRACTICES	DATA/INVESTIGATION TYPICALLY CARRIED OUT DURING STAGE 2 OF AN EA (I.E., ROUTE PLANNING AND PRELIMINARY DESIGN)
Section 11	<p><i>Archaeological Stage 1 investigation</i></p> <ul style="list-style-type: none"> <li>• Archaeological Technical Report (completed by licensed Archaeologist)                             <ul style="list-style-type: none"> <li>○ Stage 1 investigation for background information</li> <li>○ Stage 2 for property assessment</li> </ul> </li> </ul>
Section 12	<p><i>Surface Water</i></p> <ul style="list-style-type: none"> <li>○ Surface Water Report includes:                             <ul style="list-style-type: none"> <li>○ Determine and map –where surface water will be released from the highway right-of-way to external lands, data related to wetland hydrology and aquatic and terrestrial habitat data.</li> <li>○ Determine areas with evidence of historical flooding, areas with evidence of erosion and/or sedimentation, downstream surface water use and existing upstream and downstream channel characteristics.</li> <li>○ Determine significance</li> <li>○ Assess impacts</li> <li>○ Confirm environmental protection/mitigation</li> </ul> </li> </ul>
Section 13	<p><i>Air Quality</i></p> <ul style="list-style-type: none"> <li>• Background data and field investigations, determination of significance and assessment of impacts is to be determined on a project specific basis.</li> </ul>
Section 14	<p><i>Designated Areas</i></p> <ul style="list-style-type: none"> <li>• Includes Oak Ridges Moraine, Niagara Escarpment, <i>Greenbelt Plan</i> Area and Other areas (Bruce Trail, Trans Canada Trail, ESAs, Provincially significant ANSIs).</li> <li>• Transportation facilities shall comply with the Environmental Protection Requirements for Designated Areas.</li> </ul>

Mitigation measures will be reviewed to minimize impact and / or to enhance cultural and heritage features, including the development of a landscaping plan.

Several types of mitigation measures can be utilized to minimize adverse environmental effects to natural, community and cultural features associated with the widening of existing highways and the construction of new facilities, including:

- Underpasses for animals and agricultural equipment (**Exhibit 6-16**);
- Rural Road Cross-Sections (**Exhibit 6-17**).



Exhibit 6-16: Underpasses for Animals and Agricultural Equipment



Exhibit 6-17: Rural Cross-Section

- Stage 2 of the GTA West Corridor Planning and EA study presents an opportunity to evaluate the effectiveness of wildlife passages and mitigation fencing. In conjunction with the environmental work typically carried out during route planning and preliminary design, MTO will work with groups such as the Ontario Road Ecology Group (OREG), and the appropriate regulatory agencies, to assess the viability of a wildlife passage research project. This type of study may provide opportunities to improve the functionality of wildlife passages specifically for the GTA West Corridor as well as other provincial highway expansion projects.

Mitigation measures are related to implementation that will be examined during all subsequent planning of transportation improvements including Stage 2 of the study.

### 6.6. STUDY AREA REFINEMENTS AND LAND DEVELOPMENT PRESSURES

Given the high degree of development activity within the GTA West preliminary study area, there has been significant consideration given to reducing the amount of land required for the corridor protection process. In addition, the uncertainty caused by an extensive planning process can result in long standing anxiety about potential personal and property effects to local stakeholders.

In order to provide greater certainty to local stakeholders, the Study Team has developed a preliminary route planning study area, defined as a geographic area within which a reasonable range of route alternatives can be generated. This study area will be applied to Stage 2 of the EA process.

The Preliminary Route Planning Study Area was developed in consultation with affected municipalities, regulatory agencies and the public. The limits of the study area were determined using a combination of MTO Geometric Design Standards with consideration of the built-up, natural, and social environment. MTO Geometric Design Standards were also used to ensure the (engineering) feasibility at key locations including the potential interchanges at Highways 400, 427, 410 and 401; and the crossings at the Humber River and Credit River.

The Preliminary Route Planning Study Area is intended to be large enough to accommodate several route alternatives for new highway / transitway routes, including interchanges to connecting freeways and major arterials, sideroad connections or realignments, transit stops or rail connections, as well as other related facilities such as stormwater management ponds, areas for environmental mitigation, transit station parking, etc. It is recognized that this area is preliminary and will be refined during Stage 2 of the EA.

The principles for generating the Preliminary Route Planning Study Area are outlined in **Exhibit 6-18**. The overarching principle is to maximize the opportunities for route generation while attempting to achieve the rationale in **Exhibit 6-18**.

A Preliminary Route Planning Study Area was initially presented in the Draft Transportation Development Strategy (Strategy) Report (February 2011). The area was developed based on the new transportation corridor alternative recommended in the draft Strategy Report (February 2011) – i.e. a new transportation corridor from Highway 400 to Highway 401 west of the Milton urban area, and a north-south link to Highway 401 / 407 ETR, now superseded.

Since the release of the draft Strategy Report (February 2011), a number of comments from municipalities and stakeholders were received regarding their concerns about the recommended transportation corridor through

PRINCIPLE	RATIONALE
Meet desirable MTO Geometric Design Standards, including interchange and ramp distance spacing criteria, horizontal radius, and protect for a minimum right-of-way of 170m	MTO standards require a 120 kilometres per hour design speed to provide sufficient roadway capacity and reduce the potential for accidents.
Produce an efficient design which considers crossing angles of roads, railways, rivers, etc. and directness of route.	Minimizing route length reduces overall impacts and improves transportation service by reducing travel times. Large skew angles between two grade-separated roadways are not desirable and sometimes are not viable.
Minimize impacts to the Greenbelt, Oak Ridges Moraine and Niagara Escarpment wherever possible (this principle was used to identify northern edge of study area, where there are no other limitations).	These policy protected areas contain potentially more sensitive unique features that should be avoided if technically and economically feasible.
Provide maximum areas, based on MTO Geometrics and/ or other constraints, at locations where crossing of key natural features cannot be avoided (ie. major valleys and rivers) so that numerous crossing locations can be examined	It is recognized that not all features can be avoided, so it is important to ensure that sufficient space is available for a number of route alternatives to be generated in the next steps of the study, when more detailed environmental and engineering information will be obtained to evaluate route alternatives at a higher level of detail.
Avoid built up areas.	Avoiding existing residential and business areas will decrease the number of people and businesses displaced and reduce potential proximity effects (e.g. noise, air quality and aesthetics).
Minimize impacts to approved municipal urban expansion areas and approved secondary plans.	Minimizing impacts to future residential and business areas will decrease the number of people and businesses displaced and reduce potential proximity effects (e.g. noise, air quality and aesthetics)
Integrate with existing transportation infrastructure where possible, or be at an appropriate distance to it and to offer flexibility to connect to existing and planned transportation facilities in the study area.	It is important for the future facility to be compatible with, and not preclude, the future transportation network.

Exhibit 6-18: Principles for Defining the GTA West Preliminary Route Planning Study Area

Halton Region which resulted in additional analysis in the Halton area as documented in **Chapter 5**. Findings from the additional analysis indicated that further widening of Highway 401 through Halton area would provide the best balance of benefits and impacts amongst factors in social, natural and cultural environment, as well as transportation, cost and constructability. Therefore, as documented in **Section 6.4**, the proposed new transportation corridor would begin from Highway 400 westerly and then southerly to Highway 401 / 407 ETR.

In addition, area municipalities in Peel and York Regions, as well as stakeholders also provided comments regarding potential impact on future development opportunities and the completion of secondary plans within the Preliminary Route Planning Study Area as presented in the draft Strategy Report (February 2011). The Study Team investigated various focus areas and modified the boundary of the Preliminary Route Planning Study Area accordingly. In general, comments from municipalities and stakeholders were mainly related to potential development impacts and requests to refine the

Preliminary Route Planning Study Area to minimize impacts to future development and/or delay in moving forward in the planning process.

**Exhibit 6-19** provides a summary of modification to the Preliminary Route Planning Study Area. The updated Preliminary Route Planning Study Area is shown on **Exhibit 6-20**.

**Exhibit 6-19: Summary of Modifications to Preliminary Route Planning Study Area**

AREA	DESCRIPTION OF AREA	CONSTRAINTS / CONSIDERATIONS	PRELIMINARY ROUTE PLANNING STUDY AREA UPDATE
General Correction	<ul style="list-style-type: none"> <li>While this is not a request for change from municipalities or stakeholders, it should be noted that there was an unintended graphical shift in the Preliminary Route Planning Study Area boundary included in the Draft Strategy Report (February 2011). The boundary was not shown as intended and was shifted by as much as 300-500m farther north than intended at the east end (i.e. within York Region and the easterly area in Peel Region). The shift in the Preliminary Route Planning Study Area has been corrected as part of the update.</li> </ul>		
City of Vaughan – Highway 400 North Employment Area	<ul style="list-style-type: none"> <li>Lands located in the area are bounded by Teston Road, Vaughan-King boundary, Weston Road and Jane Street.</li> </ul>	<ul style="list-style-type: none"> <li>The key constraints to the new transportation corridor include: <ul style="list-style-type: none"> <li>Geometric constraints to connect future GTA West transportation corridor and Highway 400</li> <li>Interchanges at Teston Road and future King-Vaughan Road interchange</li> <li>Potential impact to directional service centres along Highway 400</li> <li>Potential expansion of urban area up to King-Vaughan Road</li> </ul> </li> <li>Consideration must be given to accommodate the freeway to freeway interchange between Highway 400 and the new transportation corridor and to ensure sufficient spacing between existing interchanges / crossings and service centre accesses / egresses.</li> </ul>	<ul style="list-style-type: none"> <li>South end of the Highway 400 connection updated to be the “triangular” shape.</li> <li>South boundary of the Preliminary Route Planning Study Area will remain in the same location (i.e. along Kirby Road) at this stage to ensure a reasonable range of route alternatives for Stage 2 EA.</li> </ul>
City of Vaughan – North Kleinburg- Nashville Area	<ul style="list-style-type: none"> <li>Lands located in the area are bounded by Kirby Road, Kipling Avenue, Major Mackenzie Drive and Huntington Road.</li> </ul>	<ul style="list-style-type: none"> <li>The key constraints to the new transportation corridor include: <ul style="list-style-type: none"> <li>Humber River valley lands and floodplains</li> <li>Geometric constraints to connect future GTA West transportation corridor and Highway 427 extension</li> <li>High voltage hydro tower corridor (500 kV) and</li> <li>CP Rail corridor</li> <li>Designated development land use plans as proposed</li> </ul> </li> <li>Consideration must be given to accommodate the freeway to freeway interchange between Highway 427 and the new transportation corridor, reasonable crossing of the Humber River and CP rail track, as well as avoiding impact to transmission towers.</li> </ul>	<ul style="list-style-type: none"> <li>Preliminary Route Planning Study Area expanded to accommodate more reasonable river crossing options where environmental features may be reduced.</li> </ul>
City of Vaughan – West Vaughan Employment Area	<ul style="list-style-type: none"> <li>Lands located in the area stretches between Langstaff Road and Nashville Road generally along the westerly boundary of the City of Vaughan.</li> </ul>	<ul style="list-style-type: none"> <li>See above – North Kleinburg-Nashville Area</li> </ul>	<ul style="list-style-type: none"> <li>Preliminary Route Planning Study Area will remain the same at this stage to ensure a reasonable range of route alternatives for Stage 2 EA.</li> </ul>
City of Brampton – Area 47	<ul style="list-style-type: none"> <li>Lands located in the area are bounded by Mayfield Road, Castlemore Road, Highway 50 and The Gore Road</li> </ul>	<ul style="list-style-type: none"> <li>See above – North Kleinburg-Nashville Area</li> <li>Consideration must also be given to provision of freeway interchange access at a crossing road in the area</li> </ul>	<ul style="list-style-type: none"> <li>Preliminary Route Planning Study Area will remain the same at this stage to ensure a reasonable range of route alternatives for Stage 2 EA.</li> </ul>

Exhibit 6-19: Summary of Review and Modifications to Preliminary Route Planning Study Area

AREA	DESCRIPTION OF AREA	CONSTRAINTS / CONSIDERATIONS	PRELIMINARY ROUTE PLANNING STUDY AREA UPDATE
Town of Caledon – South Albion/Bolton Area	<ul style="list-style-type: none"> <li>The area of concern is located north of Mayfield Road between Coleraine Drive and Humber Station Road.</li> </ul>	<ul style="list-style-type: none"> <li>See above – North Kleinburg-Nashville Area</li> </ul>	<ul style="list-style-type: none"> <li>Preliminary Route Planning Study Area will remain the same at this stage to ensure a reasonable range of route alternatives for Stage 2 EA.</li> </ul>
Town of Caledon – Mayfield West Phase 1 Area	<ul style="list-style-type: none"> <li>Lands located in the area are bounded by Dixie Road, Chinguacousy Road, Town of Caledon / City of Brampton municipal boundary and Old School Road</li> <li>Mayfield West Phase 1 north of Mayfield Road and between Hurontario Street / Highway 10 and Dixie Road are in various stages of development approval.</li> </ul>	<ul style="list-style-type: none"> <li>The key constraints to new transportation corridor include:                             <ul style="list-style-type: none"> <li>Woodlots located between Dixie Road and Heart Lake Road north of Mayfield Road (under jurisdiction of TRCA)</li> <li>Existing residential community of Valleywood</li> <li>Geometric constraints to connect future GTA West transportation corridor and Highway 410</li> <li>Existing Highway 410 corridor</li> <li>Development plans south of Mayfield Road in the City of Brampton</li> </ul> </li> <li>It is recognized that the Mayfield West Phase 1 area is in advanced stage of development</li> <li>Consideration must be given to accommodate link to freeway to freeway interchange (i.e. connection to Highway 410) while minimizing impact to natural environment features and planned development.</li> </ul>	<ul style="list-style-type: none"> <li>Preliminary Route Planning Study Area boundary has been refined in consultation with Town of Caledon to ensure that a reasonable range of alternatives can be considered in this area – some that could minimize impact to the planned development as well as some that could minimize impacts to existing communities and land uses, as well as natural features.</li> </ul>
Town of Caledon – Existing Highway 410/ Highway 10 Area	<ul style="list-style-type: none"> <li>Lands in the general proximity of Highway 410 and Highway 10 (i.e. terminus of existing Highway 410).</li> </ul>	<ul style="list-style-type: none"> <li>The key constraints to new transportation corridor include:                             <ul style="list-style-type: none"> <li>Geometric constraints to connect future GTA West transportation corridor and Highway 410</li> <li>Existing residential community</li> <li>Interchange at Valleywood Drive</li> <li>Environmental features</li> <li>Mayfield West Phase 2 lands</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Existing Highway 410/Highway 10 will continue to be considered to potentially provide connection to the new transportation corridor as an alternative to a new north-south connection north of Highway 410/Mayfield Road Interchange.</li> </ul>
Town of Caledon – Mayfield West Phase 2 Area	<ul style="list-style-type: none"> <li>Lands located in the area are bounded by Hurontario Street and Chinguacousy Road, north from Mayfield Road.</li> </ul>	<ul style="list-style-type: none"> <li>The key constraints to the new transportation corridor include:                             <ul style="list-style-type: none"> <li>Future crossing of Etobicoke Creek, tributaries and Greenbelt</li> <li>Future crossing of north-south railway corridor east of McLaughlin Road</li> </ul> </li> <li>Consideration must be given to accommodate reasonable crossing of the Etobicoke Creek and the railway corridor. There could be an opportunity for the new transportation corridor to cross the Etobicoke Creek at a perpendicular angle east of McLaughlin Road and then follow the south side of the Etobicoke Creek.</li> </ul>	<ul style="list-style-type: none"> <li>Preliminary Route Planning Study Area boundary has been shifted to the north and to the west near Chinguacousy Road and Mayfield Road to better reflect the highway geometrics without compromising the alternatives crossing the Etobicoke Creek.</li> </ul>
Halton Region / Town of Halton Hills – Highway 401 / 407ETR Connection Area	<ul style="list-style-type: none"> <li>The area generally between Eighth Line and Winston Churchill Boulevard along Highway 401.</li> </ul>	<ul style="list-style-type: none"> <li>The key constraints to the new transportation corridor include:                             <ul style="list-style-type: none"> <li>Geometric constraints to connect future GTA West transportation corridor and Highway 401/407 ETR</li> <li>The need to accommodate freeway to freeway interchange between new transportation corridor and Highway 401 / 407 ETR interchange</li> <li>The area in the northeast quadrant of Highway 401 and Trafalgar Road received site plan approval, and is currently under construction for commercial development</li> </ul> </li> <li>Consideration must be given to accommodate freeway to freeway interchange between the new transportation corridor and Highway 401/407 ETR while reducing impact to the commercial development in the northeast quadrant of Highway 401 and Trafalgar Road.</li> </ul>	<ul style="list-style-type: none"> <li>Preliminary Route Planning Study Area boundary has been updated to reflect the terminus of the new transportation corridor at Highway 401 / 407 ETR while taking into consideration the need to accommodate a future freeway to freeway interchange between the new transportation corridor and Highway 401 / 407 ETR interchange and avoiding impact to the planned development at Highway 401/Trafalgar Road.</li> <li>Boundary is east of most residential lots along Eighth Line.</li> </ul>

