



**GTA  
West**

GTA West Corridor  
Environmental Assessment



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**APPENDIX A:  
Individual Transportation Alternatives**

Revised Draft

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## A. Individual Transportation Alternatives

### A.1 OVERVIEW

Chapter 2 of the Area Transportation System Alternatives Report describes the existing transportation system corresponding to each mode of transportation and the alternatives that were generated by the study team and through consultation. Each of the following sections focus on each mode of transportation and includes a summary of the findings of the study team's review of relevant transportation practices in other jurisdictions, and policies and constraints that are applicable to the mode of transportation.

### A.2 TRANSPORTATION DEMAND MANAGEMENT (TDM) / TRANSPORTATION SYSTEMS MANAGEMENT (TSM)

#### A.2.1 Relevant Initiatives in Other Jurisdictions

To facilitate the creative process, the study team's specialists reviewed relevant initiatives in other jurisdictions. This review assisted in the development of a creative 'long list' of alternatives that reflected elements of successful transportation practices used in other jurisdictions.

#### Transportation Demand Management (TDM)

##### **Washington State, US – Commuter Trip Reduction (CTR)**

(Source: <http://www.wsdot.wa.gov/TDM/CTR/CTRworks.htm>)

This is a state-wide program that helps develop and promote commuting options in Washington State. The goals of the CTR Program are to reduce traffic congestion, air pollution and fuel consumption by working with local jurisdictions and major employers to reduce drive-alone commuting. Nearly 1,100 worksites in Washington State participate in the program. The Washington State Legislature passed the CTR Law in 1991, incorporating it into the Washington Clean Air Act.

The CTR program works in collaboration with local jurisdictions, employers and the Washington State Department of Transportation (WSDOT) to reduce the number of single occupant vehicle (SOV) trips made by encouraging transit use, vanpooling, carpooling, walking, cycling, telecommuting and compressing the workweek (i.e., allowing employees to work flexible hours resulting in fewer days travelling to work).

In 2007, employees commuting to all CTR worksites state-wide made more than 26,000 fewer vehicle trips each weekday morning. Since many of these trips would otherwise have passed through the state's major traffic bottlenecks, their absences reduced travel delay. For example, CTR employees in the Central Puget Sound made more than 19,200 fewer vehicle trips each weekday morning. The absence of these trips reduced travel delay by an estimated 18 percent on average during the peak morning commute in the region.

A program such as Washington's CTR would be very applicable to the GTA West Preliminary study area. However, the program would benefit from an economy of scale. Key requirements for the program include legislation to enforce program adoption by local jurisdictions and employers, and program funding. The Washington CTR cost the state US \$5.6 million in 2007. Therefore,

such a program should be considered as part of a Greater Golden Horseshoe-wide plan.

### **Transportation Systems Management (TSM)**

#### **1. TSM in Europe (Denmark, England, Germany and the Netherlands)**

Based on the *Active Traffic Management: The Next Step in Congestion Management (July 2007)*, the deployment of congestion management strategies (i.e. TSM) in Denmark, England, Germany, and the Netherlands, is able to optimize the investment in infrastructure to meet drivers' needs. These strategies include:

- *Speed Harmonization* - which involves the use of an expert traffic management system to monitor travel data coming from the sensors that are embedded in the pavement of a roadway and automatically adjust speed limits when congestion thresholds are exceeded. Overhead signs provide speed limits and additional information, depending on the roadway conditions. Speed harmonization can also be implemented to slow traffic in advance of a slowdown, shock wave, or work zone, as well as promote safer traffic operations under adverse weather conditions.
- *Dynamic Signing and Rerouting* - the display of warning signs and flashing lights along a roadway to alert that congestion and queues are ahead. The goal is to reduce incidents and provide real-time information to the motorists.
- *Temporary Shoulder Use* - the practice of opening the shoulder lane for temporary use to address capacity bottlenecks on the freeway network during times of congestion and reduced travel speeds. Travel on the shoulder is permitted only when speed harmonization is active and speed limits are reduced.
- *Truck Restrictions* - restrictions along a roadway on the operation of trucks or heavy goods vehicles. Examples include restricting trucks to specific lanes, prohibiting them from using particular lanes, limiting their operating speed, or prohibiting their use of the entire facility during specific periods of the day.
- *Congestion Tolling* – toll rates are structured such that prices are assessed based upon time of day concurrent with typical or even actual periods of congestion (i.e. higher charges during the peak periods and lesser charges during off-peak or shoulder periods). The goal is to: 1) divert traffic from the peak period to the shoulder periods, and, 2) provide a cost-based encouragement for the use of alternative transportation modes such as transit and ridesharing.

In summary, the benefits resulting from the implementation of a comprehensive suite of congestion management strategies can include:

- An increase in average throughput for congested periods (speed harmonization, dynamic signing and rerouting, temporary shoulder use, truck restrictions).
- An increase in overall capacity (temporary shoulder use, truck restrictions).

- A decrease in primary incidents (speed harmonization, dynamic signing and rerouting).
- A decrease in secondary incidents of (dynamic signing and rerouting).
- An overall harmonization of speeds during congested periods.
- Decreased headways and more uniform driver behaviour (speed harmonization, dynamic signing and rerouting, temporary shoulder use, truck restrictions).
- An increase in trip reliability (speed harmonization, dynamic signing and rerouting, temporary shoulder use, truck restrictions).
- The ability to delay the onset of freeway breakdown (speed harmonization, temporary shoulder use).

## **2. Highways Agency, UK - Incident Screen**

An incident screen system generally includes a series of incident screen panels. It may be used at incident locations or in work zones, and its purpose is to block drivers' view of the incident or work activities that may distract other motorists from their driving tasks.

Research on the use of incident screen was carried out by the Transport Research Laboratory (TRL) in Area 5 (Berks, Bucks, Essex, Herts, Kent & Surrey) and Area 8 (Bucks, Herts, Beds, Essex, Cambs & Northants), East Region, UK. The research result indicated that the quick deployment and setting up of screening around serious incidents can minimize 1) the distractions to other motorists (i.e. avoid slowing down on the approach to the incident scene) and 2) the likelihood of the occurrence of secondary incidents (i.e. collisions).

## **3. Quebec – Mandatory Use of Winter Tires**

Among all provinces in Canada, Quebec is the first province to adopt the regulation to make the use of winter tires between December 15 and March 15 mandatory. The goal is to reduce the number of fatalities on the road. In Quebec, all-season tire users are involved in 38 per cent of the accidents on the road in the winter, whereas these users make up roughly 10% of all drivers.

Finland, Sweden, Estonia and Latvia also have similar laws that require drivers to use winter tires to navigate snowy roads.

### **A.2.2 Related Policies**

In Canada, there is increasing awareness of the importance of TDM and TSM as innovative strategies to optimize transportation infrastructure. As such, TDM and TSM are becoming key components of the transportation planning process, for all government agencies, municipalities and regions. Background document and internet research was undertaken to identify TDM and TSM plans and policies associated implemented in or adjacent to the GTA West Preliminary study area. Phone interviews were also undertaken with local public agencies and transportation service providers.

The following is a summary of the existing policies that support the development and implementation of TDM measures in the province of Ontario:

## **1. Metrolinx**

Metrolinx is the primary TDM programs coordinator in the area. It was created by the Province of Ontario to develop and implement an integrated multi-modal transportation plan for the Greater Toronto and Hamilton Area (GTHA). Its mandate includes providing seamless, coordinated transportation throughout the GTHA, which is Canada's largest and among North America's most rapidly growing region. Metrolinx plays an important role in developing a plan to resolve congestion problems, coordinate and improve transit systems, and create a more sustainable economy, environment and quality of life. The following are a few of Metrolinx's key TDM / TSM initiatives:

- a. *Smart Commute* - on January 1, 2008, the Smart Commute Association became part of Metrolinx. Its mission is to reduce traffic congestion and to take action on climate change through transportation efficiency. The Smart Commute program encourages employers and commuters to explore more sustainable transportation choices like carpooling, teleworking, transit, cycling, walking or flexible work hours.
- b. *BikeLinx* - is one of Metrolinx's green initiatives. It is designed to accommodate and encourage trips which combine cycling and public transit throughout the GTHA. Funding for the program is part of the Ontario government's financial commitment to the Metrolinx Quick Wins initiatives, confirmed in the March 2008 Budget. Under the \$5 million BikeLinx program, municipalities in the GTHA received funding that will be used to make it easier for people to combine the use of their bicycles and public transit on the same trip. GTHA municipalities will be able to equip each bus in their fleet with a bicycle carrying rack.
- c. *Trip Planner* – Metrolinx will collaborate with GO Transit, TTC and other transit and transportation providers across the GTHA to implement a one-stop integrated trip planner system hosted by [www.metrolinx.com](http://www.metrolinx.com). The trip planner will provide convenient links to real-time traffic and weather conditions, traffic incident reports, as well as airport and border crossing delays.
- d. *Enhance and Expand Active Transportation (from The Big Move)* – Metrolinx is planning complete, contiguous and integrated cycling and walking networks that address key barriers such as bridges over freeways, rail corridors and rivers. Access to the cycling network will be within one kilometre of every urban resident in the GTHA. Other initiatives include BikeLinx (noted above), intersection improvements such as pedestrian scrambles and bike boxes, and a region-wide bicycle registry to facilitate searches for stolen bikes.
- e. *Improve the Efficiency of the Road and Highway Network (from The Big Move)* – The plan for the regional highway network will involve implementing multi-purpose reserved lanes, such as HOV lanes, with the potential for creating HOT (high occupancy / toll) lanes. Metrolinx also plans to expand video and computer-aided traffic monitoring, ramp metering, and traveller information systems to the complete regional highway network and continuing to construct additional carpool lots at strategic locations aligned with the HOV and regional / inter-regional transit network. This will also involve piloting innovative TSM measures such as

contra-flow lanes, continuous flow intersections, diverging diamond interchanges, and moveable barriers. Finally, Metrolinx is working to have the *Ontario Public Vehicles Act* amended to allow third parties to provide vanpool services.

- f. *Create an Ambitious Transportation Demand Management Program (from The Big Move)* – The strategies that will be incorporated into the TDM program will include: developing TDM strategies for agencies such as school boards, hospitals, universities and establishing guidelines and model policies that municipalities may incorporate into their Official Plans and transportation master plans. Additionally, encouraging employers to implement TDM programs, to offer cash or subsidized transit fare in lieu of free parking, and requiring Official Plans to include a TDM strategy for all major developments could be part of this program.
  - g. *Create a Customer-First Transportation System (from The Big Move)* – The cornerstone of a customer-first transportation system will be the traveller information system, which will incorporate up-to-date information and trip planners for the entire system and will be easily accessible online, by telephone and by Smartphone.
  - h. *Build Communities that are Pedestrian, Cycling and Transit-Supportive (from The Big Move)* – Metrolinx will support the implementation of mixed-use development, sidewalks and bicycle lanes through municipal plans to promote pedestrian, cycling and transit-supportive development.
2. **Ministry of Transportation – Ontario Transportation Demand Management Municipal Grant Program** – The program provides financial assistance to Ontario municipalities for the development and implementation of TDM plans, programs, and services that promote alternatives to driving alone such as cycling, walking, transit, or carpooling.
  3. **Transport Canada – The \$10-million ecoMOBILITY program** – makes funding available to municipalities and regional transportation authorities as part of the contribution program.

### **A.2.3 Other Relevant Issues / Constraints**

#### **TDM**

Based on the study team's review of relevant TDM / TSM practices as well as the feedback from interviews with local public agencies and transportation service providers the findings and thoughts based on the interviews that would be applicable to the GTA West study include:

- a. Identifying the need for enhanced / comprehensive transportation network to support TDM / TSM initiatives and promote behavioural changes. It is anticipated that TDM success is directly linked to the other modes (transit, active), such as construction of more HOV lanes, bus lanes, enhanced bus service and, comprehensive bike networks.
- b. Engaging greater area municipality participation to champion / for advocacy at the resident and corporate levels.

- c. In order to modify motorist behaviours, it is important to continuously develop the transportation network while aggressively advocating TDM. However, it should be noted that behaviour is slow to change.
- d. It will be beneficial to target bigger markets as it is easier to inspire behavioural change to travel in bigger communities / markets. It is also easier to fund in bigger markets as there will be greater resources.
- e. Although TDM funding is generally not an issue (at Smart Commute) there is still a list of desirables / wish list items that would like to be achieved, and funding has to be continuously monitored. It is important to allow easier access to funding.

Other thoughts for consideration include:

- o Metrolinx's service area currently only covers the Greater Toronto and Hamilton Area (GTHA), including the metropolitan region that stretches from York and Durham, through Toronto, Peel, Halton and onward to Hamilton. Thus, Smart Commute's funding is not available for programs outside of the GTHA. Despite this limitation, Smart Commute can assist with knowledge dispersion, providing background materials / toolkits, and presenting information to interested parties. Also, the Carpoolzone.ca website for carpool matching is available province wide.
- o Smart Commute is a partnership between Metrolinx and the cities and regions of the GTHA. Under Smart Commute, there are numerous Transportation Management Associations (TMAs) that coordinate and roll-out TDM initiatives in different areas within the GTHA. However, it is recognized that there is currently no standard amongst the various TMA operations.
- o Active transportation is one of the main themes of Metrolinx's *The Big Move*. The principal opportunities for active transportation in the GTA West Preliminary study area involve reducing the demand for short distance travel on the highway network and in increasing accessibility for active modes to inter-modal options, such as transit or carpool lots. The main limitation of active transportation is that it does not contribute to the primary study goal of addressing longer distance travel demand. Walking and cycling are limited to shorter distances; walking generally to two kilometres and cycling under 10 kilometres. Longer distance cycling generally is recreational or tourist related and generally occurs on local municipal roads. Metrolinx has, however, raised a concern that freeways pose a barrier to the mobility of active modes, since walkers and cyclists may be reluctant to cross freeway interchanges. This issue is primarily one of accessibility and mobility, but can have some impact on demand for short distance travel in and around freeway locations. In addition to improving the safety of active transportation, initiatives to improve freeway crossings for pedestrians and cyclists, if coordinated with local municipal bicycle plans, can reduce automobile demand in and around freeways. Although the reduction of demand would be minor, it can contribute substantively towards the stated goal of a 4% reduction in congestion due to TDM measures. Bicycle policy is currently under policy review by MTO.

Currently, all regions in the GTA West Preliminary study area have or are developing bicycle networks, most of which currently or will allow cyclists to travel long distances via paved shoulders, dedicated bicycle lanes, or trail systems. Many of these plans have been developed with the consideration of improving

connections between neighbouring jurisdictions. The development of these bicycle networks is consistent with the *Growth Plan for the Greater Golden Horseshoe* and Metrolinx's *The Big Move*. In addition, a number of municipalities and Go Transit are improving bicycle storage facilities on buses and at transit stations. These efforts should be continued and expanded by all jurisdictions. These initiatives provide opportunities for bicycle users to travel longer distances without using an automobile and should continue to be pursued.

### **TSM**

As noted in the previous section, some of the TSM measures have already been implemented on some sections of the existing highway network (i.e. Highways 401 and 407 ETR), but are only available in the GTA and the immediate areas.

## **A.3 TRANSIT**

### **A.3.1 Relevant Initiatives in Other Jurisdictions**

To facilitate the creative process, the study team's specialists reviewed relevant initiatives in other jurisdictions. This review assisted in the development of a creative 'long list' of alternatives that reflected elements of successful transportation practices used in other jurisdictions. The following provides a brief summary of the findings of this exercise:

#### **1. Translink**

*(source: [www.translink.ca](http://www.translink.ca))*

The South Coast British Columbia Transportation Authority (commonly referred to as Translink) is Metro Vancouver's regional transportation authority. It is responsible for regional transit, cycling and commuting options as well as AirCare and Intelligent Transportation System programs. In 2008, about 179 million passengers used the network, a net increase of 3.9% from the year before.

It shares responsibility for the Major Road Network (MRN) and regional cycling with municipalities in Metro Vancouver. Translink is the first North American transportation authority to be responsible for the planning, financing and managing of all public transit in addition to major regional roads and bridges.

Translink, in its role in designing, coordinating and generally overseeing all manners of transit and transportation in the large Vancouver area has several legislated powers such as authority to impose a parking sales tax (21%), a motor fuel tax (15 cents per litre), tolls (such as Golden Ears Bridge set at \$2.75 with transponder and \$3.30 without) and property taxes. These powers allow Translink to generate a constant source of revenue around which it can better plan. In 2008, it generated some \$939 Million from fares, advertising and all taxes and levies.

#### **2. Calgary Transit**

*(source: [www.calgary.ca](http://www.calgary.ca))*

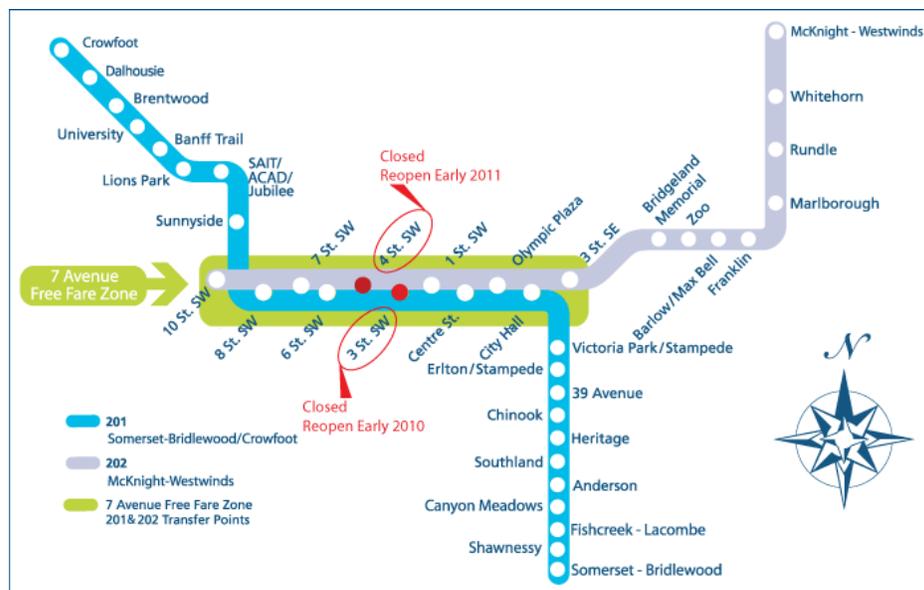
The City of Calgary has plans to manage city growth and to promote more compact, mixed use developments to support sustainable travel choices such as walking, cycling and transit. Compact communities reduce the need to travel, and minimize both travel distances and dependency on the private vehicle.

Strategically located employment centres, outside of the downtown and higher residential densities, particularly in areas adjacent to transit lines were key policies to support these goals. As well, a more compact city would result in a more efficient transportation network that would help preserve valuable natural areas.

As such, Calgary is constantly working on fostering public transit and this effort can be seen by the highest ridership, for a light rail system, in North America. Overall, in 2008, Calgary Transit carried 95.3 million passengers. The City restricts parking in the City core, generates electricity (from wind mills) equivalent to run the entire light rail system (only zero-emissions system) and has a transit-oriented development policy.

An overview of Calgary's Light Rail Transit Line is provided in **Exhibit A-1**.

**Exhibit A-1: Calgary's Light Rail Transit Line**



### 3. San Francisco, California - BART

(Source: <http://www.bart.gov/about/reports/index.aspx>)

The Bay Area Rapid Transit (BART) system in San Francisco is a 167 kilometre long linear metro network with branching lines to outlying suburbs. It is an electric heavy-rail public transit system that combines the characteristics of a metro and a commuter rail.

Like a metro, it is electrically-powered and features a completely dedicated right-of-way. However, similar to a commuter rail system, the station spacing is relatively wide, almost four kilometres, particularly outside of the urban areas of San Francisco and downtown Oakland. The interlined routes limit the achievable line headways to 13 minutes (combined headways in the interlined portion of the network can be as low as 2.5 minutes).

The BART system carries 357,000 passengers per weekday. The transit modal split in the Bay Area (including local transit systems) is 17% of all trips and 31% of commuter trips.

This type of transit system is not expected to address the problems and opportunities of the GTA West Preliminary study area because there are already key rail and highway corridors that connect the urban centres from Guelph to Toronto. However, some of the principles may be applied to a comprehensive transit solution, such as electrification of heavy rail lines, dedicated passenger rail right-of-way and branched service that provides greater service in the interlined portions of the route and less service in the branches where demand is less.

An overview of the BART system in San Francisco is provided in **Exhibit A-2**.

**Exhibit A-2: BART System Map**



#### 4. Tokyo, Japan – Shinkansen High-Speed Rail

(Source: *Features and Economic and Social Effects of the Shinkansen, Japan Railway & Transport Review, October 1994; Central Japan Railway Company, <http://english.jr-central.co.jp/company/company/achievement/transportation/index.html>)*

The Shinkansen high-speed electric rail network in Japan has been in operation since 1964. Although the network can be considered an inter-regional transit

system due to the distances that are covered, its travel times, relatively short station-spacing, service frequency and reliability make it comparable to a commuter rail system as well.

The network consists of 10 lines, four of which connect at Tokyo Station, covering 2,459 kilometres. The line speeds vary from 210 kilometres / hour to 581 kilometres / hour. Trains operate daily from 6:00 a.m. to 12:00 midnight, with maintenance performed at night.

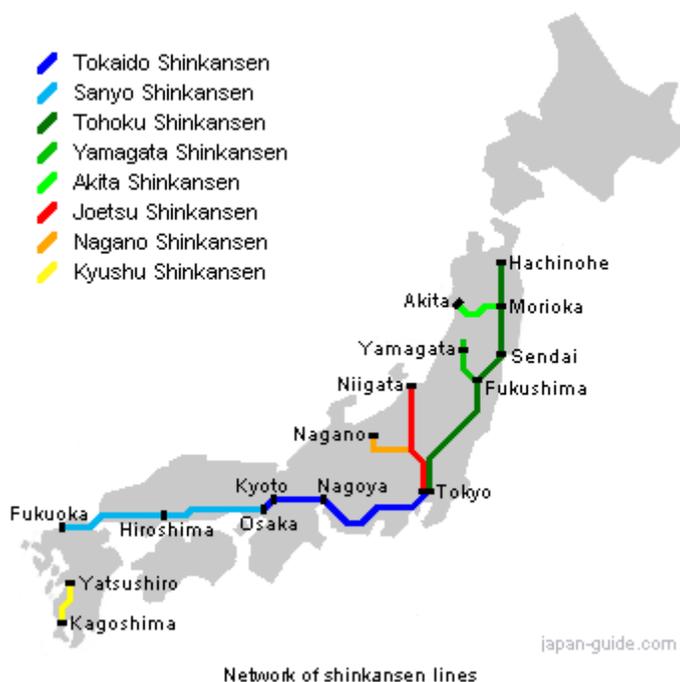
The Tokaido Shinkansen, connecting Tokyo to Osaka, was the first line built and is also carries the most passengers. In 1992, it carried 220,000 passengers / kilometre / day. During peak periods, headways are less than six minutes and the trains carry 23,000 passengers / hour. The modal capture of the system is very high – about 30% overall, and as high as 65% for long-distance trips.

The costs of the network are relatively high compared to alternative systems. The Tohoku and Joetsu lines, completed in 1985, cost approximately US \$20 million / kilometre (US \$32 million / kilometre in 2009 dollars). Higher costs are also associated with track maintenance, power supply and rolling stock requirements.

The Shinkansen system takes advantage of the natural and urban geography of Japan. The nation is linearly-oriented and the majority of urban centres lie on the east coast. This allows for a high number of potential passengers per kilometre of track. The urban centres are also very densely populated, and generally are well-served by urban transit systems, facilitating connections from feeder systems to the Shinkansen. Finally, the network implements policies that are recognized to increase the relative attractiveness of transit systems – it is reliable, frequent, comfortable and has competitive travel times. These factors allow the Shinkansen to capture a high ridership and command relatively high fares. A high-speed rail system such as the Shinkansen is not expected to be feasible in this GTA West Preliminary study area as a stand-alone system. However, some principles that have made this system successful could be considered for the GTA West Preliminary study area. In particular, the integration of inter-regional and commuter service as a planning principle would help address the demand profile of the GTA West Preliminary study area. This case study also highlights the advantages of transit-oriented development in facilitating the creation of an effective and attractive transit system. These principles could help make a transit solution more effective.

A map of Japan's Shinkansen High-Speed Rail is provided in **Exhibit A-3**.

Exhibit A-3: Japan's Shinkansen System Map



### A.3.2 Related Initiatives / Policies within the GTA West study area

In the province of Ontario, there is increasing awareness of the importance of transit as part of any transportation strategy. This is evidenced by the commitment to transit as the first priority in the province's Growth Plan, as well as the development of the transit focused Metrolinx *Regional Transportation Plan (RTP)*.

Transit is a critical component of the transportation planning process, for all government agencies, municipalities and regions. Background document and internet research was undertaken to identify transit plans and policies associated, implemented in or adjacent to the GTA West Preliminary study area.

The key documentation research and background studies included:

- Metrolinx: *The Big Move*;
- Metrolinx: *Green Paper #7 - Transit*;
- GO Transit's *Strategic Plan – GO 2020*;
- The Tri-Cities Transportation Action Group;
- The Guelph Wellington Transportation Study;
- The West Vaughan Individual Environmental Assessment; and
- Official Plans and Transportation Master Plans of various municipalities.

Phone interviews were also undertaken with local public agencies and transportation service providers. The following transportation service stakeholders were interviewed as part of the study:

- GO Transit / Metrolinx;

- City of Brampton;
- City of Guelph; and
- Peel Region.

This commitment to transit is also being adopted by the municipalities within the GTA West study area in developing their transportation master plans and associated policy documents.

Halton Region's Transportation Master Plan identifies several strategies, including:

- Continue to encourage the introduction of HOV lanes on Highways 403 and 407 ETR through Halton, as part of a GTA-wide HOV network.
- Introduce new HOV lanes on Dundas Street (between Highways 403 and 407 ETR) and Trafalgar Road (between Oakville GO station and 407 ETR) as HOV lanes with 2+ eligibility in the short-term, and introduce HOV lane eligibility with 3+ occupants across the network by 2021.
- Facilitate the provision of local transit services within the Region in support of the inter-regional transit corridors.
- Explore opportunities to introduce transit priority measures through further studies and in conjunction with local transit service providers.

### **A.3.3 Other Relevant Issues / Constraints**

From a broad perspective, one of the key factors contributing to the utilization of transit services is the associated land use in the vicinity of the service. High population and employment densities are critical to realizing a high utilization of transit. The provision of these densities particularly in communities in proximity to the GTA is a core objective of the Province's *Growth Plan*.

Further to the above, representatives from several transportation service providers, municipalities and other government agencies including the City of Brampton, City of Guelph, Peel Region, and GO Transit / Metrolinx were interviewed.

Based on the research and input from the interviewees, the following key points were identified as the primary barriers to implementing an effective transit system in the area:

- a. Need for consistent transit policies and practices across municipalities and regions in the GTA West Preliminary study area, such as permitting neighbouring municipalities to enter each other's jurisdictions, coordinating schedules and service times to facilitate transfers, and creating fare structures that enable multi-jurisdiction transit trips to be competitive with other travel modes.
- b. Need for improved co-ordination between public transportation (local and inter-regional) and transit service providers.
- c. Constraints of property acquisition.
- d. Control / source of capital and operating funds to support transit improvements.

- e. Need to identify funding priorities related to the inter-regional transit system and creating an implementation schedule.

In order to address these concerns, two broad types of system improvements can be made:

- o **Inter-Regional Network Improvements:** Ensure a high quality inter-regional transit network by improving the existing transit infrastructure, strengthen transit-supportive elements such as land use policies, facilitate inter-modal connections, and enhance transit connections between regions; and
- o **Inter-Municipal Improvements and Integration:** Consolidate transit services between neighbouring municipalities such as Georgetown, Milton and Brampton in order to promote seamless and integrated transit service.

## **A.4 FREIGHT RAIL**

### **A.4.1 Relevant Initiatives in Other Jurisdictions**

To facilitate the creative process, the study team's specialists reviewed relevant initiatives in other jurisdictions. This review assisted in the development of a creative 'long list' of alternatives that reflected elements of successful transportation practices used in other jurisdictions.

#### **1. European Union – Development of the Community's Railways**

A number of legislative actions have been taken to develop the European Union's (EU) railways, which were characterized in the early 1990s by aging infrastructure, state ownership and declining patronage.

The "First Railway Package" known as Directive 91 / 440 / EEC was issued in 1991, which separated the management of railway operation and infrastructure from the provision of railway transport services. It established access rights to the whole European rail network for international freight services, encouraging competitiveness and market opening.

Additionally, EU legislation gives rail operators the ability to run services in and between other EU countries, enabling cross-border competition. Rail freight transport has been completely opened up in the EU since the start of 2007. Any licensed EU railway company with the necessary safety certification can apply for capacity and offer national and international freight services by rail throughout the EU.

For international rail passengers, the EU will open up the market from January 2010. Any licensed, certified rail company established in the EU will in principle be able to serve passengers at any station along the international route.

The separation of railway infrastructure from railway services could encourage new services to operate within the study area, including passenger and goods movements.

#### **2. European Union – Rail Infrastructure Programmes**

**European Rail Traffic Management System (ERTMS)** - The EU has recognized that the construction of the trans-European transport network (TEN-

T), based on the inter-connection and inter-operability of national transport networks is important to the EU's economic competitiveness and sustainable development. As part of the EU's TEN-T program, a number of multi-country rail projects are underway, six of which include ERTMS.

One aim for the rail sector is to upgrade by 2012–2015 a number of important freight routes by deploying ERTMS. The six routes carry around one-fifth of Europe's rail freight traffic.

**Rail Freight Oriented Network** – In December 2008 the European Commission adopted a proposal for a regulation working toward designation of international rail corridors, providing operators with an efficient, high-quality freight transport infrastructure. The proposal is intended to make the railway infrastructure more attractive for long-distance freight transport across Europe.

The intention is that the corridors linking the Member States will make it possible to do the following:

- Integrate national infrastructure on the basis of closer co-operation between infrastructure operators both on investment and actual operation.
- Respond better to rail freight operators' requirements.
- Effectively manage infrastructure that is used by passengers and goods such that freight is not at a systematic disadvantage.
- Ensure better connections between rail infrastructure and other modes of transportation.

Competition between passenger and freight uses for an ultimately limited rail capacity has been raised as a potential future issue for the GTA West study area as increasing demands will constrain capacity. Both CNR and CPR have advised that their corridors have capability for expansion to accommodate growth in demand. Increasing focus on managing passenger and freight rail needs will enable continuation of both uses of the rail network.

### **3. Rolling Highway**

A Rolling Highway is a European concept of transporting road vehicles, generally trucks, with their drivers by rail. This is a variation on the concept of Trailers on Flat Car (TOFC) and ultimately of inter-modal containers. The concept has the potential to operate over relatively short distances, allowing trucks to be transported by rail instead of using the road network.

In general, truck operators do not favour such systems due to their cost and need to meet fixed schedules. Without a significant physical obstruction, such as the English Channel or the Alps, a Rolling Highway system is less likely to be successful.

The two Class 1 Railways in Canada are presently offering variations on this type of service. CPR offers the Expressway service, which allows shippers to move standard, non-reinforced truck trailers in high-volume corridors. Expressway hubs are located in Toronto, Montreal and Detroit. CNR offers a similar service using

bi-modal RoadRailer trailers, suitable for truck and rail, linking Montreal and Toronto through to Chicago. Both of these services require truck cabs to move trailers at the terminal ends. The success of these services is still not yet certain in the Canadian market, and there could be potential for increased use in the GTA West Corridor.

#### **A.4.2 Related Policies**

Rail operations in Canada are subject to economic regulation by the Canadian Transportation Agency under the Canada Transportation Act (CTA); safety regulation by the federal Minister of Transport under the Railway Safety Act and certain other statutes; and security regulation by the Canada Border Services Agency (CBSA).

##### **1. Rail Corridors**

As rail is regulated by the federal government, existing provincial transportation policy does not explicitly address rail corridors. Rail corridors require protection as important elements in the overall development of transportation services in the province. Increasing provincial involvement could be beneficial in rail corridor protection. Changes to rail corridor protection policies would be expected have a minor potential to address the study area's problems and opportunities, and the study has a low potential to influence national regulations. The government of Ontario's policies and directives to municipalities are important, however, in the implementation of national policy.

##### **2. Rail Grade Separation**

The Canadian Transportation Agency is responsible for making cost apportionment decisions concerning the construction and reconstruction of grade separations when the parties involved in the project are unable to reach an agreement.

The CTA has set out principles for apportioning these costs. For example, if a grade separation is to be constructed or an existing grade separation is to be reconstructed, the construction costs are normally apportioned as 85% road authority and 15% railway company. These contributions can reduce the railway companies' capital available for other investments and such costs are transferred to customers, increasing the price of shipping.

Typically, the grade separation provides for the existing track and protection for any immediately planned additional track. Grade separations typically do not span the full railway corridor. Should the railway want to protect for long-term additional tracks, the railway is required to pay the additional cost. This has the potential to constrain future use and expansion of the railway corridors. Similar to rail corridor protection, changes to rail grade separation policies would be expected to have a minor potential to address the study area's problems and opportunities, and this study has a low potential to influence national regulations. The government of Ontario's policies and directives to municipalities are important, however, in the implementation of national policy.

### 3. Adjacent Land Use

When land owners decide to change land uses adjacent to a rail corridor, plans must be submitted to the local municipality and approval sought to proceed. As an adjacent land owner, the railways can comment on the acceptability of revised land uses.

As ownerships and land uses change over time, the railways can be faced with non-industrial land holders objecting to additional rail traffic within the rail corridor adjacent to these lands. In response, the railways have developed adjacent land use information and best practices known as Proximity Issues. This industry reference sets out acceptable adjacent land uses that the railway will find acceptable as an adjacent land owner. It seeks to address the main variations of proposed adjacent land use and mitigation measures that the industry would accept between the differing land uses of the proposed project and the industrial rail corridor, and to enable better communication between all parties involved.

Changes to adjacent land use policies would be expected to have a minor potential to address the study area's problems and opportunities; the study has some potential to influence municipal level regulations. The Ontario government's policies and directives to municipalities are important, however, in the implementation of national policy.

#### A.4.3 Other Relevant Issues / Constraints

From a broad perspective, the utilization of rail for goods movements is constrained by the limited flexibility offered by this mode in terms of origin and destination, and by the time required to make the trip via rail versus another mode such as by truck. As an example, goods movement by track becomes efficient from a time perspective for distance greater than 500 km. In addition, a number of other factors are important for the use of freight rail transportation for goods movement.

**Security issues** are becoming an increasingly important and expensive issue for railways, as is the case for all modes of transportation. This is most evident at international border crossings. US and Canadian border patrol have been increasing their rules on railway movement between the US and Canada. The railways are concerned that additional security-related measures are becoming more burdensome than those being applied to other competing modes of transportation.

**Coordination of goods movement planning** was identified as an issue by the rail operators. As different parties are responsible for planning of the railways, road networks and other modes, it can be difficult to coordinate planning to ensure that goods and people are moved more efficiently and effectively.

**Inconsistency of regulations** was also identified as an issue by rail operators, including potential for duplication of effort between Canadian and US customs, decreasing efficiency of goods movement, the lack of a harmonized protocol for goods inspection procedures for all cargo shipments, and inconsistent load limitations and weight restrictions amongst railway companies.

**Insufficient and / or inefficient freight inter-modal road connections** can constrain inter-regional goods movement by rail freight, due to limited connections

and capacity constraints at such locations, as well as the capacity of the connecting higher order road transportation systems.

Changes to address these issues and constraints could potentially contribute to improving rail transportation services in the NGTA study area and thereby addressing the transportation problems and opportunities. As these are global issues, however, the study has a low potential to influence such changes. The exception is freight inter-modal connections: improvements have a high potential to address the problems and opportunities, and this study has a high potential to influence such changes.

## **A.5 MARINE**

### **A.5.1 Relevant Initiatives in Other Jurisdictions**

To facilitate the creative process, the study team's specialists reviewed relevant initiatives in other jurisdictions. This review assisted in the development of a creative 'long list' of alternatives that reflected elements of successful transportation practices used in other jurisdictions.

#### **1. Port Inland Distribution Network, Port of New York / New Jersey**

The Port Inland Distribution Network (PIDN) is a planned system for distributing containers moving through the Port of New York and New Jersey (PANYNJ). This system is designed to move containers to inland sites linked by barge, dedicated rail or truck, improving the landside distribution of increased volumes of containers predicted for the port. The goals of the network are to reduce inland distribution costs, reduce reliance on truck trips, improve air quality, increase throughput capacity, and increase market share.

Prior to implementation, about 84% of the containers passing through the port were transported by truck. With all of the ports on line in 2020, the percentage of maritime containers moved by truck could be reduced to 57%<sup>1</sup>. Note that a pilot barge service, Albany ExpressBarge, was initiated between the PANYNJ and the Port of Albany in 2003 and was temporarily suspended in 2006.

#### **2. Commission of the European Communities' Programme for the Promotion of Short Sea Shipping**

Recognising the potential growth in Short Sea Shipping in the European Community, a program was developed to promote it throughout the European Union (EU). The program, developed in 2003, includes 14 legislative, technical and operational actions with the objective to improve Short Sea Shipping's efficiency and overcome obstacles to its development.

##### Legislative Actions

1. Implementation of the Directive on certain reporting formalities for ships to arrive in and / or depart from ports in the Member States (IMO-FAL).
2. Implementation of Marco Polo.
3. Standardization and harmonization of inter-modal loading units.
4. Motorways of the Sea.
5. Improving the environmental performance of Short Sea Shipping.

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<sup>1</sup> Port Authority of New York and New Jersey, Press Release December 13, 2002

#### Technical Actions

1. Guide to Customs Procedures for Short Sea Shipping.
2. Identification and elimination of obstacles to making Short Sea Shipping more successful than it is today.
3. Approximation of national applications and computerization of Community Customs procedures.
4. Research and Technological Development.

#### Operational Actions

1. One-stop administrative shops.
2. Ensuring the vital role of Short Sea Shipping Focal Points.
3. Ensuring good functioning of and guidance to Short Sea Promotion Centres.
4. Promote the image of Short Sea Shipping as a successful transport alternative.
5. Collection of statistical information.

Although a number of activities regarding Short Sea Shipping have been initiated in Canada, a bi-lateral, detailed program aiming to address specific issues and obstacles could increase its usage for goods and people movement. Note, however, that there are significant differences in conditions in Europe and North America, including population density, road and rail infrastructure and the management of the shared rail network between passenger and freight traffic.

### **3. European Union's MOSES Project (Motorways of the Sea European Style)**

The MOSES Integrated Project is another of the Programme's Legislative Actions and was launched in June 2007. It is a three-year research project of over €14 million total budget co-funded by the European Commission DG Transport and Energy. MOSES targets a significant increase in the market share of shortsea shipping and freight inter-modal transport, by developing a blueprint for an innovative network of Motorways of the Sea which includes: developing seamless freight inter-modal connections; proposing and promoting future oriented logistics solutions; and contributing to harmonized laws and regulations facilitating freight inter-modal transport.

The focus is not only on technology improvements but an integrated approach, linking research and practical development in the technological areas of infrastructure, equipment, and Information and Communication Technologies (ICT), with research and practical development in the domains covering organizational, economic, regulatory, and marketing issues.

### **4. America's Marine Highway Program**

The goal of America's Marine Highway Program is to help accelerate the expanded use of the national network of corridors to transport more freight and passengers in a greener, more efficient and responsible manner. The *American Recovery and Reinvestment Act* of 2009 includes discretionary funds for the surface transportation system, including America's Marine Highways. The Act provides \$1.5 billion in discretionary funds for capital investments in US surface transportation infrastructure, to be made available until September 2011. Eligible projects for funding include port infrastructure investments and projects that

connect ports to other modes of transportation while improving the efficiency of freight movement, as well as road and rail investments.

## **5. Amalgamation of Ports in Vancouver**

In 2008, the Fraser River Port Authority, the North Fraser Port Authority and the Vancouver Port Authority amalgamated to become the Vancouver Fraser Port Authority (VFPA). This is a policy measure under the Government of Canada's Asia-Pacific Gateway and Corridor Initiative, as the amalgamated port is well positioned to contribute to the Initiative's objectives through better coordination on port planning and the opening up of new investment opportunities to facilitate circulation of goods to and from foreign markets. The VFPA's jurisdiction encompasses the combined land, water and assets of the previous three Port Authorities. The VFPA also has greater resources for land acquisition, river management and strategic infrastructure investments. The amalgamated port is now Canada's largest and the fourth largest port in North America by tonnage<sup>2</sup>.

Improved coordination could be a way to improve the distribution of goods throughout the GGH, resulting in better use of the marine infrastructure as well as the connecting travel modes of rail and road. More consolidated port planning could also open up new investment opportunities. Further investigation would be required regarding matters including feasibility of further coordination, advantages of port competition, etc.

### **A.5.2 Related Policies**

#### **1. US Harbour Maintenance Tax**

The US Harbour Maintenance Tax (HMT) was enacted by Congress in the Water Resources Development Act of 1986. It is levied on all commercial vessels passing through federally maintained channels and imposes a 0.125% tax of the value of vessel's cargo, paid by the cargo owner. The original tax was applied to all cargo transported by ship in the US with a few exceptions. Since 1998 the tax has been applied to cargo transported between US ports as well as to cargo imported to US ports from other countries, but not on exports. Its purpose is to generate revenue for port maintenance conducted by the US Army Corps of Engineers.

HMT is an impediment to cross-lake short sea shipping. As this tax is only applied to cargo moving by ship, it is a disincentive to move freight by water. This barrier is widely recognized by the marine shipping industry.

Movements on changes to the HMT have been ongoing in the US. In January 2009, two bills were introduced for Harbour Maintenance Tax exemptions. The 'Short Sea Shipping Act of 2009' would exempt commercial cargo, other than bulk cargo, moving between US ports and between the US and Canada on the Great Lakes St. Lawrence Seaway System. Another bill, with virtually the same name, The 'Short Sea Shipping Promotion Act of 2009' would exempt cargo contained in inter-modal cargo containers moving between US ports and

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<sup>2</sup> Vancouver Fraser Port Authority website – Port Overview  
(<http://www.portmetrovancover.com/about/portoverview.aspx>)

between the US and Canada on the Great Lakes St. Lawrence Seaway System. Both bills are in the first step of the US legislative process.

Changes to this tax would be expected to have a minor potential to address the transportation problems and opportunities in the study area, and as a US tax, the GTA West Corridor Planning and EA Study has a low potential to influence it.

## **2. Cabotage Laws**

Cabotage laws generally deal with the right to trade or transport in coastal waters or between two points in a country. They are intended to assist with the participation of a country's citizens in its own domestic trade, the presence of a strong merchant marine for defense and general economic support<sup>3</sup>. Cabotage laws are enacted to require freight and passenger traffic to be carried on nationally registered and sometimes built and crewed ships.

Canada's *Coasting Trade Act* of 1992 reserves marine transportation of goods and people between two points in Canada, as well as any other marine activity of a commercial nature, to Canadian registered duty-paid ships. If it is demonstrated that no Canadian vessel is available for the specific activity, foreign-built vessels are permitted with a 25% import duty on the full vessel price. Despite the tariff, the Canadian shipbuilding industry continues to suffer a decline in business and many ship-owners find it cheaper to have ships built abroad, even after the import duty is included<sup>4</sup>. Vessel refitting and repair generally constitute the core business of Canadian shipyards.

Under the US Cabotage laws known as the Jones Act, marine vessels transporting cargo, engaged in dredging, towing, salvage, fishing, and other marine operations are required to be built, owned, operated and manned by US citizens and to be registered under the US flag.

The marine cabotage laws serve as a constraint to shortsea cargo transport operations in Canada. They can result in higher shipping rates for coastal or shortsea service and prevent them from being able to compete effectively with other modes. The difficulties associated with bringing in new vessels can be a barrier to expansion or introduction of new marine transportation services. It is considered that this is among the most important issues impacting the Ontario marine transportation industry<sup>5</sup>.

Changes to cabotage laws would be expected to have a minor potential to address the transportation problems and opportunities in the NGTA study area, and as Canadian national law, the current study has a low potential to influence it.

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<sup>3</sup> Transport Canada, Policy Group: A Review of Regulations Governing Use of International Marine Containers in Canadian Domestic Cargo Carriage (December 2005)

<sup>4</sup> Transport Canada, Canada Transportation Act Review 2001, Chapter 8 (<http://www.reviewcta-examenltc.gc.ca/index.htm>)

<sup>5</sup> Ontario Marine Transportation Study Phase II Final Report, MariNova Consulting Ltd., June 2009

### 3. Advance Notification Rules at Canada-US Border

The Canadian Border Services Agency's (CBSA) Advance Commercial Information (ACI) Program requires marine carriers to electronically transmit marine cargo data to the CBSA 24 hours prior to loading cargo at a foreign port. If the voyage is less than 24 hours in duration, the cargo and conveyance data must be reported at the time of departure from the foreign port. This requirement is intended to allow the CBSA to identify threats to Canada's health, safety, and security.

US Customs and Border Protection (CBP), through the *Trade Act of 2002*, requires advanced notification of cross-border shipments. Under this act, container, bulk and CBP-approved break-bulk carriers are required to electronically transmit shipment manifests to CBP via Vessel Automated Manifest System (AMS) prior to arrival in the US.

Similar to the policies above, changes to border notification rules would be expected to have a low potential to address the transportation problems and opportunities in the NGTA study area, and as Canadian and US national regulations, the current study has a low potential to influence it.

### 4. Environmental Ballast Water Regulations

Ballast water is carried in un-laden ships to provide stability. At destination, cargo is loaded and the ballast water, potentially carrying harmful stowaway organisms, is pumped out.

Over the past two decades, agencies including the International Maritime Organization (IMO) have adopted regulations to control the transfer of invasive species. The IMO has approved a measure that would require all newly built oceangoing vessels to be equipped with on-board ballast-treatment systems by 2012, with existing ships required to install them by 2016. Canadian ballast water use legislation is set at a national level.

In the US, states are developing individual ballast water regulations that are more stringent than federal and international requirements. New York State (NYS) has approved a legislation requiring conditions of operation in state waters including the following:

- All ships entering NYS with ballast water must travel 50 nautical miles offshore to exchange ballast water with salt water. Vessels serving only the Great Lakes-St. Lawrence Seaway System are exempt.
- By 2012, all ships must be retrofitted to install ballast water treatment systems that would meet 100 times the discharge standard proposed by the IMO. Extensions may be applied if the required technology is unavailable.

There is concern that these conditions will result in prohibitive costs for the shipping industry, and compliance with regulations is increasingly difficult as states are developing individual and varying ballast water requirements. Ballast Water Regulation is a potentially serious issue that could restrict the use of marine and as a result impact the study area. Stakeholders have noted that federal standards would reduce uncertainty and improve ease of compliance.

Note that it will also be costly for the marine industry to comply with the IMO's Emission Control Area regulations, including the use of new, more expensive fuel.

Changes to these environmental regulations would be expected to have a minor potential to address the transportation problems and opportunities in the NGTA study area, and as international laws, the NGTA study has a low potential to influence them.

### **A.5.3 Other Relevant Issues / Constraints**

From a broad perspective, the marine mode of transportation presents similar constraints in terms of time and route flexibility as are presented by the freight rail mode (refer to **Section A.4.3**). In addition, a number of other factors are important for the use of marine transportation for goods and people movement.

**Security issues** are becoming increasingly important in international marine shipping. The International Ship and Port Facility Security (ISPS) Code of July 2004 has the purpose to detect and take preventive measures against security incidents affecting ships or port facilities used in international trade. Requirements for ship companies include: Ship Security Assessments; Ship Security Plans; Verification and Certification; and International Ship Security Certificates. Port facilities requirements include Port Facility Security Assessments and Port Facility Security Plans. Canada is implementing the requirements of ISPS through Marine Transportation Security Regulations (MTSRs), from the 2004 Marine Transportation Security Act.

**Fuel prices** affect all modes of transportation. However, marine transportation is a relatively low-intensity user of fuel per weight shipped,<sup>6</sup> therefore, is somewhat less adversely affected than other modes such as air.

The **St. Lawrence Seaway System** closes each winter from approximately late December through March, for scheduled maintenance activities and due to operational difficulties with ice. This practice results in more rail / truck transport being used during these winter months and can limit opportunities for marine transportation to penetrate some markets.

**Vessel size** constrains marine transportation in the study area due to the lock dimensions on the St. Lawrence Seaway System (vessel maximum: 225.5 m length; 23.7 m beam; 8.08 m draft; and 35.5 m height above water)<sup>7</sup>. These constraints impact cargo throughput, with larger vessels having to stop in Montreal for transfer onto smaller ones, or onto rail or truck.

The **inter-modal interface** with rail / trucking constrains goods movement by marine transportation, due to limited connections and bottlenecks at such locations, as well as the capacity of these connecting rail and road inter-regional transportation systems.

Changes to address these issues and constraints could potentially contribute to improving marine transportation in the vicinity of the study area, and thereby

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<sup>6</sup> US Energy Information Administration; Measuring Energy Efficiency in the United States Economy: A Beginning, October 1995 - Chapter 5 ([http://www.eia.doe.gov/emeu/efficiency/ee\\_ch5.htm](http://www.eia.doe.gov/emeu/efficiency/ee_ch5.htm))

<sup>7</sup> Great Lakes St. Lawrence Seaway System web site (<http://www.greatlakes-seaway.com/en/seaway/facts/index.html>)

addressing some of the transportation problems and opportunities. As security and fuel prices are global issues, however, the current study has a low potential to influence them. Changes to the St. Lawrence Seaway have a low potential to address the transportation problems, and the study has a low potential to influence changes to the Seaway. Improvements to inter-modal connections have a high potential to address some transportation problems in the study area, and the current study has a high potential to influence such changes.

Note that another key factor in the wider use of marine transportation is the requirement for specific shipping costs and services in moving goods. Marine transportation generally moves lower value bulk cargo between waterfront locations and is less suitable for shipping higher value cargo, moving between inland locations, and shipping goods rapidly.

## **A.6 AIR**

### **A.6.1 Relevant Initiatives in Other Jurisdictions**

To facilitate the creative process, the study team's specialists reviewed relevant initiatives in other jurisdictions. This review assisted in the development of a creative 'long list' of alternatives that reflected elements of successful transportation practices used in other jurisdictions.

#### **1. Single European Sky ATM Research (SESAR)**

The Single European Sky Air Traffic Management (ATM) Research (SESAR) project is the European air traffic control infrastructure modernization program. By 2020, SESAR aims to create the capability to handle a threefold increase in air traffic in Europe, while improving safety by a factor of ten and reducing the environmental impact per flight by 10%. This modernized air traffic management system in Europe should also cut ATM-related expenses by half.

#### **2. NAV Canada**

NAV CANADA is a private sector corporation that owns and operates Canada's civil air navigation service (ANS), purchased from the Federal Government in November 1996. It is responsible for the safety and efficiency of the ANS, including providing air traffic control, flight information, weather briefings, airport advisory, aeronautical information and electronic aids to navigation services. Safety performance is regulated by Transport Canada.

NAV CANADA is leading a number of initiatives to improve air traffic management and air safety. One initiative involves working with airlines to examine operational procedures at the world's busiest airports that could help improve capacity at Canadian airports, via a "Best Practices Working Group" for discussion and assessment of options. NAV CANADA also formed the Air Traffic Services-Pilot Communications Working Group, bringing partners together to address improvements of ATS-pilot communication and reducing communication errors.

#### **3. CentrePort Canada, Winnipeg, Manitoba**

In September 2008, the government of Manitoba introduced legislation to build an inland port around Winnipeg's James Armstrong Richardson International Airport, to gain from the city's proximity to the geographic centre of North

America. The CentrePort Canada Act authorizes the creation of a corporation to facilitate the long-term development of the “port”, and to fast track investment and economic development decisions.

Federal funding will be used to develop a four-lane expressway linking the inland port to the airport, for completion in 2011. The initial phases of the CentrePort Canada initiative have also received federal funding, including a \$33.25 million contribution toward the twinning of Inkster Boulevard, adjacent to the port<sup>8</sup>.

#### **4. Kansas City SmartPort, Missouri, Kansas**

Kansas City (KC) SmartPort is a non-profit economic development organization formed to promote and enhance Kansas City as America's leading inland port. KC SmartPort is not a physical port; the organization's main function is to market all of the transportation assets in the 18-county, 50-city and two-state region. KC SmartPort plays an active role in three areas:

- Economic Development – attracting investment from companies with significant transportation and logistics elements such as distribution centres, warehouses, third-party logistic providers, and manufacturers;
- Trade Data Exchange (TDE) / Intelligent Transportation Systems (ITS) – working to improve the supply chain visibility, providing real-time visibility and cargo security as it increases efficiency in the supply chain; and
- Business Services – working to bring in additional services, such as foreign customs offices, to aide businesses moving goods domestically and internationally.

While the Southern Ontario Gateway Council (SOGC) is a related type of organization operating within the NGTA study area, it serves as a transportation and economic development forum with members that include many of the major transportation providers, shippers and industry associations in Southern Ontario. Its vision is to achieve an integrated transportation system in southern Ontario. The SOGC aims to achieve this vision by solving congestion through infrastructure and funding, improving land use policies to protect for new transportation corridors, optimizing the existing network, and improving goods movement across borders.

#### **5. A-Line – Bus Rapid Transit to Hamilton International Airport**

As part of Metrolinx's initiatives in the Greater Toronto and Hamilton Area (GTHA), in August 2009, a new rapid bus route was announced for Hamilton, called the “A-line”. This route will run north-south and operate substantially on Upper James Street, serving destinations including Hamilton Airport, the GO Transit bus and rail station on Hunter Street and the Central Business District. This initiative is funded by Metrolinx's ‘Quick Win’ contribution. The route began service on September 8, 2009 and is an express, limited-stop service, operating on weekdays during peak periods at 30-minute headways. Over time, the A-line is to expand to provide all-day service with more frequent headways.

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<sup>8</sup> Backgrounder - The CentrePort Canada Initiative, Office of the Prime Minister, April 2009

Dedicated transit service to transportation gateways such as airports meets government policy and contributes to sustainability and environmental objectives. Such a service could also contribute to reduced congestion on the road network.

## **A.6.2 Related Policies**

### **1. Blue Sky: Canada's International Air Policy**

This policy, announced in November 2006, applies to Canada's approach to bilateral air transportation negotiations for scheduled passenger and all-cargo services. It states that Canada will proactively pursue opportunities to negotiate more liberalized agreements for international scheduled air transportation that will provide maximum opportunity for passenger and all-cargo services to be added according to market demand.

As a primary objective, Canada will seek to negotiate reciprocal "Open Skies"-type agreements similar to the one negotiated with the US in November 2005, which is deemed to be in Canada's overall interest.

In essence, an "Open Skies"-type agreement would cover the following elements for scheduled passenger and all-cargo services:

- Open bilateral markets / access (third and fourth freedom rights).
- No limit on the number of airlines permitted to operate.
- No limits on the permitted frequency of service or aircraft type.
- Market-based tariff / pricing regime for bilateral and third-country services.
- Open and flexible regime for the operation of code-sharing services.
- Unrestricted services to and from third-countries (fifth and sixth freedom rights).
- Rights for stand-alone all-cargo operations (seventh freedom rights).

The policy approach does not include cabotage rights – the right for a foreign airline to carry domestic traffic between points in Canada. Since January 2007, Canada has successfully negotiated new air agreements or updated existing agreements with a number of countries, including the US, Singapore, Mexico, and the European Union (EU). This policy is expected to increase air traffic at Canadian airports, as new carriers are introduced. Note, however, that Pearson International's 2008 Master Plan includes a statement indicating that despite Blue Sky, many current bi-lateral agreements specifically deny foreign carriers rights to fly into this airport.

Changes to international air policies would be expected to have a low potential to address the study area's problems and opportunities, and this study has a low potential to influence national regulations.

### **2. Air Cargo Transshipment Program**

Canadian and foreign carriers can be authorized by the Canadian Transportation Agency to carry international cargo transshipments coming from and destined to points outside Canada via Canadian airports even if the rights are not provided in Canada's bi-lateral air transport agreements. In-transit cargo may also be stored in bond until it is transported to its final destination by air or another mode. This program only applies to in-transit cargo: carriers are not authorized to carry

Canadian-originating or destined cargo unless licensed under Canada's bilateral air agreements or arrangements or under the charter regulations.

The program was initially intended to promote the use of small and under-utilized airports by simplifying air carrier access for air cargo transshipments and providing an additional incentive to use these airports' cargo facilities, being first introduced at Mirabel in 1982. This program was not available to larger airports. However, as Transport Canada states that Canadian airports should be given the freedom to attract cargo trans-shipment activity where there are market opportunities<sup>9</sup>, the program was expanded to allow any airport to participate in the program. Hamilton International Airport has been part of this program since 1987. Other airports included in the program include the following: Windsor (1993), Winnipeg (2004), Edmonton (2006), Calgary (2007) and Toronto (2008).

As above, changes to air cargo transshipment policies would be expected to have a low potential to address the study area's problems and opportunities, and this study has a low potential to influence national regulations.

### **3. Export Distribution Centre Program**

The Export Distribution Centre Program (EDCP) came into effect in 2001 and is Canada's version of a Free Trade Zone. An EDC can be used to store foreign or domestic goods, re-package and re-furbish materials, assemble products, or manufacture and re-export commodities without paying customs, duties and taxes.

The EDCP targets specific relief for the costs that can be incurred by export-oriented businesses providing limited added value in the course of processing or distributing goods. The EDCP rules simplify the system for both the service provider and the owner of the imported goods by relieving the goods of tax if the service provider has been granted an authorization. Eligible businesses are those that do not manufacture or produce goods and that add limited value to goods in the course of their processing or distribution.

The EDCP has created opportunities for airports; however, it is considered that the program is somewhat complex and could be improved with simplification and move toward a true "Free Trade Zone"<sup>10</sup>.

As above, changes to the EDCP would be expected to have a low potential to address the NGTA study area's problems and opportunities, and this study has a low potential to influence national regulations.

#### **A.6.3 Other Relevant Issues / Constraints**

A number of factors are important for the use of air transportation for goods and people movement.

**Security issues** are becoming increasingly important in domestic and international air transportation. Transport Canada and the Canadian Air Transport Security Authority (CATSA) are the main bodies that implement air transport security in

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<sup>9</sup> Transport Canada Air Cargo Transshipment Program website  
(<http://www.tc.gc.ca/pol/en/ace/consultations/airCargoTrans.htm>)

<sup>10</sup> Hamilton International Airport Meeting, May 25, 2009

Canada. Global security policies as well as procedures at the US border crossings are important factors affecting the movement of people and goods by air. A further tightening of security policies could act as a constraint to goods and people movement by air.

**Fuel prices** affect all modes of transportation. However, air transportation is a relatively high-intensity user of fuel per weight shipped,<sup>11</sup> therefore, is somewhat more adversely affected than other modes such as marine and rail.

Limited **multi-modal connections**, particularly by rail and transit, connecting airports to urban centres and tourist attractions are a constraint for the improved use of air travel. None of the airports in the NGTA study area currently provide dedicated public transit services. Where transit services are available, they are generally privately operated and serve urban centres rather than tourist destinations. Limited road linkages and capacity are also an issue for air transportation.

Changes to address these issues and constraints could potentially contribute to improving air transportation services in the NGTA study area and thereby addressing the transportation problems and opportunities. As these are global issues, however, the study has a low potential to influence such changes. The exception is freight inter-modal connections: improvements have a high potential to address the problems and opportunities, and this study has a high potential to influence such changes.

## **A.7 FREIGHT INTER-MODAL**

### **A.7.1 Relevant Initiatives in Other Jurisdictions**

To facilitate the creative process, the study team's specialists reviewed relevant initiatives in other jurisdictions. This review assisted in the development of a creative 'long list' of alternatives that reflected elements of successful transportation practices used in other jurisdictions.

#### **1. Puget Sound Region**

A case study of the freight inter-modal issues facing the Puget Sound Region and the Port of Seattle was reviewed to identify challenges potentially experienced by existing and future facilities. The study intended to answer a number of questions relating to transportation, environmental, economic and land use challenges, including development of innovating solutions; setting priorities; and developing coalitions. Similar questions are applicable to freight inter-modal goods movement in the NGTA study area.

One key point in the study was the perception of competition amongst various transportation modes in the movement of goods. Traffic congestion was identified as a major factor impeding operations, especially for the "last leg" movement of goods, which is typically by truck on municipal roads. Financial constraints were also identified as an issue, as funding freight inter-modal developments is a constant challenge. Negative public perception of a freight inter-modal facility can

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<sup>11</sup> US Energy Information Administration; Measuring Energy Efficiency in the United States Economy: A Beginning, October 1995 - Chapter 5 ([http://www.eia.doe.gov/emeu/efficiency/ee\\_ch5.htm](http://www.eia.doe.gov/emeu/efficiency/ee_ch5.htm))

also be important, especially in areas with mixed land uses in close proximity to freight inter-modal facilities.

The FAST Corridor (Freight Action Strategy for the Everett-Seattle-Tacoma Corridor) is a partnership of 26 local cities, counties, ports, federal, state and regional transportation agencies, railroads and trucking organizations, working toward solving freight mobility problems with coordinated solutions. It is co-sponsored by the Washington State Department of Transportation and the Puget Sound Regional Council, and is managed via a multi-agency staff team. Their vision is to integrate local and regional transportation system improvements along mainline rail lines and truck corridors near ports in the central Puget Sound region.

Closely linked to the FAST Corridor is the Freight Mobility Roundtable, which is a nationally recognized public-private forum working to define and recommend actions serving freight mobility needs in and through central Puget Sound. It is consulted by the FAST Corridor and provides input into regional and state transportation plans. Meetings are held bi-monthly.

## **2. Mid-Continent International Trade Corridor – Developing Freight Inter-Modal Facilities**

Another case study that has been reviewed, *Development of Freight Inter-Modal Facilities in the Mid-Continent International Trade Corridor*, identified important considerations required in the successful implementation of freight inter-modal facilities across North America. These considerations included private-public partnerships that can be highly important in creating successful multi-user freight inter-modal hubs. Cooperation amongst participants was also identified as a key factor. A common challenge is the lack of available information about shipments made by privately-owned companies; this can create challenges in determining site-specific characteristics and requirements when developing strategies for future facility and access capabilities.

Logistical support was also identified as an important item, as it is important in the development of business opportunities. The last point identified by the study was international trade itself, and identification of the needs of the business community with respect to it. The study stated that trade processing centres would be beneficial to the mid-continent / Winnipeg area with respect to growth in international trade.

## **3. Kansas City SmartPort, Missouri**

Kansas City (KC) SmartPort is a non-profit economic development organization formed to promote and enhance Kansas City as America's leading inland port. KC SmartPort is not a physical port; the organization's main function is to market all of the transportation assets in the 18-county, 50-city and two-state region.

While the Southern Ontario Gateway Council (SOGC) is a related type of organization operating within the study area, it serves as a transportation and economic development forum with members that include many of the major

transportation providers, shippers and industry associations in southern Ontario. The SOGC is involved in the Ontario Quebec Continental Gateway and Trade Corridor study, as well as the Metrolinx goods movement strategy. Alongside the SOGC, a practical, working-level, transport-focused gateway organization can provide assistance to gateway operators, attracting investors and interest. This can be useful in the context of supporting inter-modal transportation assets with capacity for growth.

### **A.7.2 Related Policies**

As freight inter-modal facilities accommodate interaction amongst various transportation modes at one location, policies that are applicable to these modes are generally applicable to the freight inter-modal facilities that accommodate them. Policies related to the freight rail, marine and air transportation modes are discussed in **Sections A.4.2, A.5.2, and A.6.2** respectively.

### **A.7.3 Other Relevant Issues / Constraints**

A number of factors are important for the implementation of freight inter-modal facilities for goods movement.

**Security issues** are becoming an increasingly important and expensive issue for all transportation modes. As further tightening of security policies may affect certain transportation modes more than others, this may subsequently affect implementation, characteristics and location of a potential inter-modal facility.

**Fuel pricing** affects all transportation modes although some more than others. Air transportation is affected the most by fuel prices.

**Perceived competitive interaction amongst transportation modes** has been identified as a potential issue as goods movement is a profit-driven market. Practically speaking, however, rail, marine and truck modes service different goods movement needs.

**Insufficient and / or inefficient inter-modal road connections** can constrain inter-regional goods movement due to limited connections and capacity constraints, as well as the capacity of the connecting higher order road transportation systems. This subsequently affects implementation of new or expansion of existing inter-modal facilities.

**Lack of coordination in and recognition of goods movement planning**, including insufficient treatment of freight in public sector planning and absence of coordination on freight issues between levels of government, were identified as issues by rail operators and by Transport Canada in their 2004 Inter-modal Freight Consultation. As different parties are responsible for planning of the railways, road networks and other modes, it can be difficult to coordinate planning such that goods are moved efficiently and effectively.

Changes to address these issues and constraints could potentially improve inter-modal transportation services in the study area and thereby addressing the transportation problems and opportunities. As security and fuel pricing are global issues, however, the study has a low potential to influence such changes. Inter-modal connections and coordination and recognition of the importance of goods

movement also have a high potential to address the problems and opportunities, and this study has a high potential to influence such changes.



**GTA  
West**

GTA West Corridor  
Environmental Assessment



**GTA West Corridor  
Environmental Assessment**

**APPENDIX B:  
Assessment of Multi-Modal Alternatives**

Revised Draft

January 2011



McCORMICK RANKIN  
CORPORATION  
A member of  STANTEC

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## B. Assessment of Multi-Modal Alternatives

Chapter 3 of the Area Transportation System Alternatives Report provides an overview of the second stage of the process for generating and assessing the Area Transportation Alternatives that was discussed in **Section 1.6** of the main report.

A number of alternatives were identified by the study team, stakeholders and the public to address the transportation problems and opportunities in the study area as part of the first stage of the process (refer to **Chapter 2**). These include policies, programs, operational changes, and new infrastructure and inter-modal connections. The transportation, environmental, economic and community criteria that will be utilized to support the assessment of and evaluation of the preliminary planning alternatives are outlined in **Table B-1**. **Table B-2** of this appendix describes each alternative and the study team's assessment as to whether it is able to substantively contribute to addressing the transportation problems and opportunities in the study area. The table further categorizes each of the alternatives that are considered able to substantively contribute on the basis of whether the alternative will be pursued as part of this study, or should be pursued as part of a separate study or initiative. In addition, a high-level assessment and evaluation of the Groups #3 and #4 alternatives are summarized in **Table B-3**.

**Table B-1: Factors & Criteria for Assessing Preliminary Planning Alternatives**

FACTOR	SUB-FACTOR	EVALUATION CRITERIA	MEASUREMENT OF THE EFFECTS
<b>1. Natural Environment Factors</b>			
1.1 Fish and Fish Habitat	1.1.1 Fish Habitat	Potential to affect sensitive fish habitat and fish community.	Number of potential stream / water course crossings by type: <ul style="list-style-type: none"> <li>• Coldwater</li> <li>• Warmwater</li> </ul>
	1.1.2 Fish Community		
1.2 Terrestrial Ecosystems	1.2.1 Wetlands	Potential to affect provincially and locally significant wetlands.	Number of wetland complexes potentially impacted by type: <ul style="list-style-type: none"> <li>• Provincially Significant Wetland (PSW)</li> <li>• 'Other'</li> </ul>
	1.2.2 Woodlands and Other Vegetated Areas  (e.g. forest stands, woodlots, interior forest habitat and significant valley lands)	Potential to affect significant forest and vegetation communities.	Number of significant wooded areas (over 40 hectares) potentially impacted by: <ul style="list-style-type: none"> <li>• Linear area of significant woodlot potentially impacted.</li> </ul>
	1.2.3 Wildlife Habitats and Movements	Potential to affect significant wildlife habitat and wildlife movement opportunities.	Qualitative assessment of the potential effects on wildlife movement, based on natural areas, as identified by MNR: <ul style="list-style-type: none"> <li>• Type of habitat</li> <li>• Length of habitat</li> </ul> <i>Species at Risk</i> Qualitative assessment of potential effects on Species at Risk based on known concentrations. Summarized using a high, medium and low scale to identify the potential to effect concentrations.
	1.2.4 Regional Natural Heritage System (RNHS)	Potential to affect connections between patches of remnant habitat.	Number of features on the landscape and key linkage areas between these features potentially impacted.
1.3 Groundwater	1.3.1 Areas of Groundwater Recharge and Discharge	Potential to affect areas of groundwater recharge and discharge.	Qualitative assessment based on: <ul style="list-style-type: none"> <li>• Soil type and permeability to identify areas of high, moderate and low groundwater recharge capability.</li> <li>• Number and location of groundwater recharge and discharge areas.</li> </ul>
	1.3.2 Groundwater Source Areas and Wellhead Protection Areas	Potential to affect groundwater source areas and wellhead protection areas.	Number of wellhead protection areas that are potentially affected and their location.  Identify the names and locations of wellhead protection zones potentially impacted.
1.4 Surface Water	1.4.1 Watershed / Sub-Watershed Drainage	Potential to affect existing drainage systems associated with	Indicator is pavement. Area of new pavement (impervious surface) is calculated by the number of new lanes and length of

FACTOR	SUB-FACTOR	EVALUATION CRITERIA	MEASUREMENT OF THE EFFECTS
	Features/Patterns	permanent watercourses.	widening/new corridor.  Summarized as qualitative description using ranges of numbers for high, medium and low potential to affect.
1.5 Designated Areas	Designated Areas are defined by resource agencies, municipalities, the government and/or the public through legislation, policies, or approved management plans, to have special or unique value. Such areas may have a variety of ecological recreational, and/or aesthetic features and functions that are highly valued. Examples of Designated Areas include the following: Niagara Escarpment; Bruce Trail; Trans Canada Trail; Oak Ridges Moraine; National and Provincial Parks; Designated federal wildlife/marine Areas; RAMSAR wetlands; Remedial Action Plan areas (RAP); International Biological Program areas; World Biosphere Reserves; Designated heritage rivers; Environmentally Sensitive Areas (ESA); Environmentally Sensitive Policy Areas (ESPA); Provincially Significant Areas of Natural and Scientific Interest (ANSI); Conservation Authority parks/Open Space lands; Stewardship lands; Greenbelt; and Land trust areas (such as Nature Conservancy of Canada and others).	Potential to affect designated areas.	Qualitative description of designated areas potentially impacted.  Measured by the number and location of Designated Areas potentially affected.  (There is potential to avoid and mitigate Designated Areas during route planning.)

FACTOR	SUB-FACTOR	EVALUATION CRITERIA	MEASUREMENT OF THE EFFECTS
<b>2. Land Use / Socio-economic Environment Factors</b>			
<b>2.1 Land Use Planning Policies, Plans, Goals, Objectives</b>	2.1.1 First Nations Land Claims	Potential to affect areas for which there are First Nations outstanding land claims or treaties.	Number of known land claims and the name of each land claim that could be potentially impacted.
	2.1.2 Provincial/Federal land use planning policies/goals/objectives	Potential to support federal/provincial land use policies/plans/goals/objectives	Qualitative assessment of potential to affect federal/provincial land use policies/plans/goals/objectives.  (Use level of detail developed during Evaluation Stage 2).
	2.1.3 Municipal (regional and local) land use planning policies/goals/objectives (Official Plans)	Potential to support municipal Official Plans.	Qualitative assessment of potential to affect municipal Official Plans.  (Use level of detail developed during Evaluation Stage 2).
2.2 Land Use / Community	2.2.1 Indian Reserves	Potential to affect Indian Reserves.	Qualitative assessment of potential to affect Indian Reserves.  Measured by number and description of reserves impacted.
	2.2.2 First Nations Sacred Grounds	Potential to affect First Nations Sacred Grounds.	The potential to impact cultural resources of historical significance to First Nations will be confirmed through discussions with First Nations as part of the EA process.
	2.2.3 Residential (Urban and Rural)	Potential to affect urban and residential areas.	Qualitative assessment of potential to affect urban and residential areas.  Measured by number of areas affected and summarized using a high, medium and low scale to identify the potential to affect. Summary will include a description of communities affected and the potential to mitigate, avoid and displace effects.
	2.2.4 Commercial / Industrial	Potential to affect commercial and industrial areas.	Qualitative assessment of the potential to affect commercial and industrial areas.  Measured by the estimated number of properties/buildings potentially affected within commercial and industrial areas along the existing corridors.  Summarized using a high, medium and low scale to identify the significance, disruption and displacement of the affected areas.
	2.2.5 Tourism Operations  (e.g. Tourist areas, major attractions)	Potential to support tourist areas and attractions.	Qualitative assessment of potential to impact or support tourist areas and attractions.  Summary will include the name of the tourist areas and

FACTOR	SUB-FACTOR	EVALUATION CRITERIA	MEASUREMENT OF THE EFFECTS
	2.2.5 Community Facilities / Institutions  (e.g. libraries, recreation centres, etc)	Potential to affect major community facilities and institutions.	attractions, a description of the area and how the area will be supported or impacted by the new corridor or widening.  Qualitative assessment of potential to affect major community facilities and institutions.  Measured by the number of community facilities and institutions affected and summarized with the name and a description of each facility.
2.3 Noise	2.3.1 Transportation Noise	Potential for increased transportation noise in Noise Sensitive Areas (NSAs) (residential areas and sensitive institutional uses).	Qualitative description of the different types of noise impacts, the locations of increased noise, the proximity to NSAs and the magnitude and severity of impacts.  (Acknowledge the difference between urban and rural impacts, where increases in rural areas will affect less people but more significantly and urban places will affect more people but less significantly.)
2.4 Air	2.4.1 Local and regional air quality impacts; greenhouse gas emissions	<ul style="list-style-type: none"> <li>• Potential for exposure of sensitive receptors to various levels of air pollution (including extent and duration of exposure).</li> <li>• Incremental annual amounts of air pollutants (criteria air contaminants emitted into the region for the horizon year.</li> <li>• Incremental annual amounts of greenhouse gases emitted per annum for the horizon year.</li> </ul>	RWDI
2.5 Land Use / Resources	2.5.1 First Nations Treaty Rights and Interests or Use of Land and Resources for Traditional Purposes  (e.g. hunting, fishing, harvesting of traditional foods, harvesting of medicinal plants)	Potential to affect First Nations Treaty Rights and Interest or use of land and resources for traditional purposes	The potential significance to impact First Nations Treaty Rights and Interest or use of land and resources for traditional purposes will be confirmed through discussions with First Nations as part of the EA process.
	2.5.2 Agriculture	Potential to affect specialty crop areas and/or areas of Canada Land Inventory Classes 1, 2 and 3 soils.	Qualitative assessment of prime agricultural lands and description of specialty crop areas.  Measured by the linear area/distance of Class 1-3 agricultural land potentially impacted.

FACTOR	SUB-FACTOR	EVALUATION CRITERIA	MEASUREMENT OF THE EFFECTS
	2.5.3 Recreational Lands and Natural Areas of Provincial Significance (e.g. national/provincial parks, conservation areas, major trails)	Potential to affect parks and recreational areas.	Number of parks and recreation areas potentially affected and the names of each area.  Qualitative summary of the major parks and recreational areas impacted.
	2.5.4 Aggregate and Mines	Potential to affect aggregates and mineral resources sites.	Number of pits and quarries that will be potentially affected.  Summarized with a qualitative description of each pit and quarry and an acknowledgement of other significant areas/resources potentially impacted.
2.6 Municipal Services	2.6.1 Major Utility Transmission Corridors  (e.g. railway, hydro, pipelines, gas, oil)	Potential to affect major utility transmission corridors.	Number and description of potential crossings for each major utility transmission corridor that could potentially be impacted.
2.7 Contaminated Property Identification and Management	(e.g. Landfills, Hazardous Waste Sites, “Brownfield Areas”, other known contaminated sites, and high-risk contamination areas)	Potential to release of existing site contamination from landfills (open and closed), hazardous waste sites and other known contaminants.	Number and type of contaminated sites potentially affected.  (New corridor summaries can state that ‘there is a high probability to avoid sites during route planning, but the corridor will pass through x number’)
<b>3. Cultural Environmental Factors</b>			
3.1 Cultural Heritage – Built Heritage and Cultural Heritage Landscapes	3.1.1 Buildings or “Standing” Sites of Architectural or Heritage Significance or Ontario Heritage Properties	Potential to affect buildings or “standing” sites over 40 years of age including local, provincial or national interest or Ontario Heritage properties.	Qualitative assessment of the potential to affect or avoid cultural heritage areas/resources.  (Note in the summary description that there is higher probability for a widening alternative to impact cultural heritage.)
	3.1.2 Heritage Bridges	Potential to affect significant heritage bridges.	
	3.1.3 Areas of Historic 19 <sup>th</sup> Century Settlement	Potential to affect areas of historic 19 <sup>th</sup> century settlement.	
	3.1.4 Cemeteries	Potential to affect known cemeteries.	
	3.1.5 First Nations Burial Sites	Potential to affect known burial sites.	The potential to impact cultural resources of historical significance to First Nations will be confirmed through discussions with First Nations as part of the EA process.
3.2 Cultural Heritage – Archaeology	3.2.1 Pre-Historic and Historic First Nations Sites	Potential to affect significant pre-historic and historic First Nations archaeological sites of extreme local, provincial or national interest.	The potential to impact archaeological sites of historical significance to First Nations will be confirmed through discussions with First Nations as part of the EA process.
	3.2.2 Historic Euro-Canadian	Potential to affect significant	Qualitative assessment of the potential to affect or avoid Euro-

FACTOR	SUB-FACTOR	EVALUATION CRITERIA	MEASUREMENT OF THE EFFECTS
	Archaeological Sites	historic Euro-Canadian archaeological sites of extreme local, provincial or national interest.	Canadian archaeological sites.  (Note in the summary description that there is a higher probability for a new corridor to impact archaeological sites.)
<b>4. Area Economy</b>			
<b>4.1 First Nations Industry</b>		Potential to support First Nations industry in the area by efficient and reliable movement of people and goods.	The potential to support First Nations industry will be confirmed through discussions with First Nations as part of the EA process.  To be confirmed by economic specialists.
<b>4.2 Industry and Trade</b>		Potential to support heavy industry and trade by efficient and reliable goods movement.	
<b>4.3 Tourism and Recreation Industry</b>		Potential to support tourism and recreation industry by efficient movement of people.	
<b>4.4 Agriculture Industry</b>		Potential to support area agriculture industry by efficient movement of goods.	

Table B-2: Description and Categorization of Multi-Modal Alternatives

Transportation Alternative		Potential to Substantively Contribute to Addressing the Identified Transportation Problems & Opportunities	Should be Further Considered as Part of the GTA West Study	Should be Pursued as Part of Separate Study / Initiative	Rationale
<p>* These alternatives will be re-ordered so that similar alternatives are listed together. This will be done in conjunction with addressing the Ministry's comments on the draft report.</p>					
<b>TRANSIT</b>					
GROUP #1	1. Improve access to transit, e.g. direct BRT/HOV ramps into transit parking lots.	✓	✓		This would promote transit ridership.
	2. Encourage improved integration of municipal and inter-regional transit services by promoting the use of major inter-regional transit stations.	✓			This would facilitate transfers between transit systems.
	3. Incorporate active transportation at transit stations and on transit vehicles, e.g. bike racks, lockers, etc.	✓	✓		This would promote transit ridership and facilitate inter-modal connections.
	4. Use shoulders as bus lanes during peak hours to allow transit vehicles to bypass queues.	✓			This would help to enhance reliability of transit services and minimize delays.
	5. Consider multi-purpose use of existing corridors (e.g., parallel transitway and motorways within existing corridors, such as Highway 401 from Pearson International Airport to Guelph, with a dedicated transit right-of-way to be expanded to higher-order transit as warranted by demand).	✓			Increases transit capacity with minimal land requirements.
	6. Provide dedicated transit lanes in existing road corridors either through lane conversion or addition.	✓			Increases transit capacity.
	7. Build park and ride (with bike parking) at all interchanges along 400-series highways and other locations and improve transit access at key locations.	✓	✓		This would promote transit ridership and increase inter-modal connections.
	8. Provide new/improved transit connections west of Pearson International Airport.	✓	✓		This would promote transit ridership.
	9. Provide new rapid transit links between major nodes, such as Guelph – Milton - Brampton – Mississauga – York / North York.	✓	✓		This would increase transit capacity and promote transit ridership.
	10. Provide new or improved local transit connections to inter-regional transit stations.	✓	✓		Promote a seamless and integrated transit service which would promote transit ridership.
	11. Improve various existing roads to provide priority for transit.	✓			This would increase transit capacity and promote transit ridership.
	12. Make long distance transit trips more desirable than long distance car trips.	✓	✓		This is represents a goal of this study and will be implemented through a combination of alternative solutions.
	13. Make transit fares competitive with other modes of transportation.	✓	✓		This would promote and increase incentives of using transit.
	14. Grade separate existing rail / rail grade crossings involving passenger lines.	✓	✓		This would improve transit service.

<p style="text-align: center;"><b>Transportation Alternative</b></p> <p style="font-size: small;">* These alternatives will be re-ordered so that similar alternatives are listed together. This will be done in conjunction with addressing the Ministry's comments on the draft report.</p>	<p style="text-align: center;">Potential to Substantively Contribute to Addressing the Identified Transportation Problems &amp; Opportunities</p>	<p style="text-align: center;">Should be Further Considered as Part of the GTA West Study</p>	<p style="text-align: center;">Should be Pursued as Part of Separate Study / Initiative</p>	<p style="text-align: center;">Rationale</p>
15. Provide improved bus service at GO Rail stations, especially for tourists / recreational users.	✓			This would increase transit ridership for tourism / recreational purposes. Tourism and recreational users will benefit from all-day two-way service.
16. Coordinate GO and municipal transit (i.e. TTC) service hours.	✓	✓		Promote a more seamless and integrated transit service which would promote transit ridership.
17. Encourage municipal transit to feed into major inter-regional stations.	✓	✓		This would promote transit ridership.
18. Increased frequency of GO Transit service (bus and rail).	✓	✓		This would increase transit capacity and promote transit ridership.
19. Provide more express GO trains.		✓		This is being considered by Metrolinx.
20. Legislate car license at age 25 to support transit culture (in 416 and 905).			✓	This idea is beyond the policy framework of this study.
21. Implement two-way all day service on all GO lines.			✓	Demand forecasts do not warrant all day service on all GO lines. Service requirements will be determined on a line-by-line basis by Metrolinx.
22. Provide increased funding / support for improvements (e.g. higher-order transit, more routes and vehicles).			✓	Any new initiatives that emerge from this study would require increased funding support beyond that which is currently committed.
23. Provide frequent 5 a.m. – 11 p.m. GO Transit services (than hourly).			✓	GO has established the GO 2020 plan for its core network with frequent service and its commuter network with peak period service only.
24. As transit is the first priority outlined in the <i>Growth Plan</i> , modelling should take into account ideal transit times and quantify the amount of investment needed to achieve this.			✓	This is a part of the process to evaluate alternatives in this study.
25. Implement more tax incentives to encourage the use of transit.			✓	This is beyond the terms of reference of this study.
26. Encourage greater company participation in promoting transit use by employers.		✓		This is currently being pursued by Metrolinx in conjunction with local TDM organizations.
27. Implement provincial level development charges to encourage desirable transit-oriented land use.			✓	This is beyond the terms of reference of this study.
28. Provide support for private, small-scale transit providers.			✓	This is more of a local solution, and would not significantly reduce inter-regional transportation demands.
29. Electrify the passenger rail network.		✓		This is being investigated by Metrolinx.

Transportation Alternative <small>* These alternatives will be re-ordered so that similar alternatives are listed together. This will be done in conjunction with addressing the Ministry's comments on the draft report.</small>		Potential to Substantively Contribute to Addressing the Identified Transportation Problems & Opportunities	Should be Further Considered as Part of the GTA West Study	Should be Pursued as Part of Separate Study / Initiative	Rationale
30.	Introduce a multisystem smart card.		✓		This is being pursued by Metrolinx to promote a seamless and integrated transit service which would promote transit ridership.
31.	Integrate fare and information system online in real time.		✓		This is being pursued by Metrolinx to promote a seamless and integrated transit service which would promote transit ridership.
32.	Improved integration of local and inter-regional transit via higher level organization (fare integration, physical links) (i.e., Metrolinx).		✓		This is being pursued by Metrolinx to promote a seamless and integrated transit service which would promote transit ridership.
33.	Implement incentives or regulations to have rail companies give preference to passenger rail traffic during peak commuter periods (at diamonds).		✓		Class I rail companies make decisions on how tracks are utilized, and would adopt this approach provided it makes sense from a business perspective. The province does not have jurisdiction over the rail companies, and therefore could not mandate this. However, GO Transit / Metrolinx is working closely with CN and CP to ensure better co-ordination and cooperation resulting in fewer conflicts.  GO Transit is also pursuing opportunities to acquire rail corridors for the benefit of passenger transportation, and will move toward rail traffic control and operation.
34.	Make transit schedules of public transit services available in small towns (both paper and electronic).		✓		One Metrolinx' key objective as per the RTP is to create a comprehensive passenger information system.
35.	Improve security at GO Transit parking lots.		✓		This would make transit more attractive, but is within the mandate of GO transit.
36.	Intensify development to make transit a more sustainable alternative.		✓		The province has established the <i>Growth Plan</i> for the Greater Golden Horseshoe that identifies population, employment and intensification targets.
37.	Make transit cheaper than cars (e.g. parking management – high parking fees, tax parking lots for commuters, max parking supply, etc.) in order to promote and increase incentives of using alternative modes.		✓		This is being considered by Metrolinx.
38.	Take the Northern Mainline Passenger Rail Service Study into consideration. <sup>1</sup>		✓		The study team will be compiling and analyzing data from various sources to identify problems and possible solutions to the transportation issues in the Preliminary study area.
39.	Provide longer or shorter GO trains, as required.		✓		Service requirements are determined by GO. Maximum train lengths are established and limited by existing platform lengths.

<sup>1</sup> The Northern Mainline Passenger Rail Service Study was a report commissioned by local municipalities in 2003 to investigate rehabilitation of rail service from Georgetown to London via Acton, Guelph, Breslau (near Kitchener) and Stratford.

Transportation Alternative		Potential to Substantively Contribute to Addressing the Identified Transportation Problems & Opportunities	Should be Further Considered as Part of the GTA West Study	Should be Pursued as Part of Separate Study / Initiative	Rationale
* These alternatives will be re-ordered so that similar alternatives are listed together. This will be done in conjunction with addressing the Ministry's comments on the draft report.					
GROUP #1	40. Use taxis and a taxi scrip service to improve transportation mobility for the disabled.		✓		This would not resolve inter-regional transportation issues within the study area. Metrolinx is investigating a region-wide approach to improving mobility for people with disabilities.
	41. Nationalize rail / bus system and use private operators.		✓		This would not resolve inter-regional transportation issues within the Preliminary study area.
	42. Establish minimum transit service levels such that travel times or no greater than "x" minutes or "y" percent than automobile travel.			✓	It would be difficult to quantify travel time in such a manner because traffic conditions constantly change and are affected by numerous external factors (e.g. weather, incidents, etc.).
	43. Increase the amount of parking at existing transit stations, such as the King City Go Station.		✓		This is a local solution that may be considered as part of an array of improvements. Metrolinx / GO Transit establishes parking requirements for its facilities.
GROUP #2	44. Expand GO service frequency and hours beyond peak periods in some locations.	✓	✓		This would promote transit ridership.
	45. Create mobility hubs with radial connections to outlying areas at urban growth centres (such as Kitchener / Waterloo, Guelph and Georgetown, Brampton and Vaughan) that would provide inter-regional transit service to neighbouring communities.	✓	✓		This would promote transit ridership to, from and between these communities to promote community self-sufficiency.
	46. Consider rapid transit (BRT / LRT) along all new highway corridors.	✓			This would increase transit capacity.
	47. Increase the number of transit hubs outside of urban areas.	✓	✓		This would promote transit ridership.
	48. Provide Georgetown to Milton shuttle train.	✓	✓		This is a local solution that may be considered as part of a larger network. It would increase transit connectivity and promote transit ridership.
	49. Investigate perimeter rail routes for commuters.	✓			This would increase transit connectivity and promote transit ridership. Route selections of any potential solutions will be investigated in a later stage of this study.
	50. Provide local transit service for any community / town that has population more than 20,000.	✓			This would promote transit ridership.

Transportation Alternative		Potential to Substantively Contribute to Addressing the Identified Transportation Problems & Opportunities	Should be Further Considered as Part of the GTA West Study	Should be Pursued as Part of Separate Study / Initiative	Rationale
* These alternatives will be re-ordered so that similar alternatives are listed together. This will be done in conjunction with addressing the Ministry's comments on the draft report.					
	51. Provide high speed rail service from Union to Pearson International Airport to Kitchener / Waterloo.		✓		A passenger rail link between Union Station and Pearson International Airport is being planned by Metrolinx. High speed rail links are not being considered at this time.
	52. Provide light rail elevated above freight tracks through congested yards, particularly those near Toronto.		✓		This is a local solution that may be considered as part of a larger system of solutions.
	53. Build light rail from Barrie to Toronto along Highway 400.		✓		This is outside the GTA West Preliminary study area.
	54. Add GO train routes connecting to King City and Barrie.		✓		This is outside the GTA West Preliminary study area.
	55. Open passenger rail to competition.			✓	This would not address the transportation problem, however innovative transit implementation solutions may be considered.
	56. Investigate train tourism opportunities (e.g. to / from Mohawk Raceway).			✓	Rail service is not warranted for every tourist destination. Tourism / recreation destinations that can be served by bus routes that are warranted will be considered in the route selection phase.
	57. There is no transit solution in the completed Highway 7 EA study. Therefore, the GTA West study area may need to be extended into the Kitchener-Waterloo area.			✓	This may be considered during the route planning stage if the need to expand the study area is identified. Not pursued at this stage of the study.
	58. Expand Metrolinx' mandate and service area to cover transit, freeways (inter-regional roads), rail, etc. (i.e. all elements of inter-regional transportation system).			✓	This is Metrolinx' mandate. Expanding Metrolinx' service area will be considered.
	59. Provide passenger and freight dedicated rail infrastructure.		✓		This is being considered by rail operators.
	60. Create a connection from Union Station to Pearson International Airport.		✓		This is being pursued by Metrolinx.
	61. Expand rail infrastructure at choke points.		✓		Rail companies have indicated that they have adequate capacity to accommodate existing and future travel demands. They will consider expansion of single track sections as warranted. GO is expanding track at choke points on its rail corridors.
GROUP #4	62. Develop a dedicated transit corridor similar to the proposed 407 Transitway to improve connectivity between northern and western York Region and the Region of Peel and regions west of Peel. HOV lanes and rapid transit in the GTA West would be integrated with and support York Region Transit.	✓	✓		This would increase transit connectivity and promote transit ridership.

Transportation Alternative		Potential to Substantively Contribute to Addressing the Identified Transportation Problems & Opportunities	Should be Further Considered as Part of the GTA West Study	Should be Pursued as Part of Separate Study / Initiative	Rationale
* These alternatives will be re-ordered so that similar alternatives are listed together. This will be done in conjunction with addressing the Ministry's comments on the draft report.					
FREIGHT RAIL					
GROUP #1	63. Provide Choice and Opportunity to Benefit from Strengths of Each Mode: Providing opportunities to choose alternative transportation modes, as well as information about the strengths of each one, could result in a more balanced distribution of travel.	✓	✓		Represents a core objective of the GTA West Corridor Planning and EA Study and will be pursued through the recommended transportation alternatives.
	64. Understand Requirements and Match with Logistics and Economic Realities: A better understanding of the needs of shippers, travelers and of logistics and economic realities could enable the choice of alternatives to the road network, such as rail transportation. Further information about goods movement, particularly from the viewpoint of shippers, would be beneficial in advancing transportation solutions.		✓		Being pursued through Metrolinx's comprehensive strategy for goods movement. It is recommended that a survey of shipper requirements be considered as part of the strategy development.
	65. Understand Growth in Goods Movement and Links to the Economy: As above, a better understanding of the growth in goods movement and its importance in the economy could raise awareness of the importance of goods movement and enable better transportation choices for meeting goods movement needs.		✓		As above, being pursued through Metrolinx's comprehensive strategy for goods movement.
	66. Metrolinx Policy / Planning for Goods Movement: Similar to <i>The Big Move</i> for transit, a policy and planning study should be undertaken for goods movement throughout the Greater Golden Horseshoe (GGH). Such an initiative would improve understanding of the needs of shippers and the measures that might be necessary to advance the use of non-road transportation modes.		✓		As above, being pursued through Metrolinx's comprehensive strategy for goods movement.
	67. National Policy Targets for Modal Shift onto Rail / Marine: For goods movement, such an initiative could result in programs and practices to transfer some shipments onto rail. Government mode shift targets would need to be accompanied by action plans to assist shippers and transportation service providers to achieve modal shift. Appropriate targets and timescales would need to be identified, as well as an implementation strategy. Other regulations and policies would be affected.		✓		Outside of the jurisdiction of MTO: recommended for consideration / further study by provincial and / or federal authorities. Ontario's current policy is to let the private marketplace determine modal choice. Shippers generally use the most convenient and cost effective mode for transporting good (within the policy framework).
	68. Achieve Sustainable Multi-Modal Transportation Systems, Balancing Economic, Social and Environmental Factors: A sustainable, balanced transportation system could make increased use of the rail mode where it is appropriate for moving people and goods, and could alleviate some congestion on the road network.	✓	✓		Represents a core objective of the GTA West Corridor Planning and EA Study and will be pursued through the recommended transportation alternatives.
	69. Mandating Goods Travelling <500 km by Rail: One of the important factors determining how goods are shipped is travel distance; typically, rail is used for trips over 500 km. Formalization of this practice by regulations could increase the use of rail to ship goods over longer distances. This alternative includes policy, economic and organizational implications and would likely need to occur at a national level.			✓	Not expected to substantively contribute to addressing inter-regional transportation problems and opportunities. Shippers decide how best to transport goods based on a number of factors, including urgency of delivery, nature of goods and travel distance. There are some instances, e.g., just-in-time delivery, in which trips >500 km may need to travel by other means. There would be significant policy and economic implications of such an alternative.

<p><b>Transportation Alternative</b></p> <p><i>* These alternatives will be re-ordered so that similar alternatives are listed together. This will be done in conjunction with addressing the Ministry's comments on the draft report.</i></p>	<p>Potential to Substantively Contribute to Addressing the Identified Transportation Problems &amp; Opportunities</p>	<p>Should be Further Considered as Part of the GTA West Study</p>	<p>Should be Pursued as Part of Separate Study / Initiative</p>	<p>Rationale</p>
<p><b>70.</b> Improve the Efficiency of Marine and Rail Services to Trade Centres (e.g., Toronto): <b>Improvements to the efficiency of marine and freight rail transportation could increase use and mode share and remove some goods movement trips from the road network.</b></p>	<p>✓</p>	<p>✓</p>		<p>Represents a core objective of the GTA West Corridor Planning and EA Study and will be pursued through the recommended transportation alternatives.</p>
<p><b>71.</b> Review Regulations to get Better Use of Rail: <b>This alternative would identify regulatory barriers to freight rail transportation in the GGH and beyond. Regulations would need to be reviewed at national and international levels.</b></p>	<p>✓</p>	<p>✓</p>		<p>Part of the identification of individual transportation alternatives exercise.</p>
<p><b>72.</b> Include International Case Studies (i.e., British Rail System) in Rail Analysis: <b>An investigation of the rail initiatives and practices in other jurisdictions would be beneficial in identifying potential measures to improve and make better use of rail transportation systems in the GTA West study area.</b></p>	<p>✓</p>	<p>✓</p>		<p>Part of the identification of individual transportation alternatives exercise.</p>
<p><b>73.</b> Eliminate Municipal Tax from Railways: <b>The elimination of municipal tax from railways could enable a more competitive freight rail service with more extensive services. This could remove a disincentive to rail shipments and thereby improve the use of rail transportation.</b></p>			<p>✓</p>	<p>Not expected to substantively contribute to addressing inter-regional transportation problems and opportunities. It is not expected that such a change would significantly alter the volumes and distribution of goods by rail in the study area, and there would be significant national policy and economic implications.</p>
<p><b>74.</b> Changes to Rail Grade Separation Regulations: <b>It is considered that future growth on the rail network would benefit from changes to the regulations surrounding rail grade separations, such that the system is protected for potential expansion of the rail network at costs that are not prohibitive to the railways. Such a change would be required at the national level.</b></p>		<p>✓</p>		<p>Outside of the jurisdiction of MTO: recommended for consideration / further study by provincial and / or federal authorities.</p>
<p><b>75.</b> Standardize Rail Car / Container Carrying Requirements across Jurisdictions: <b>A harmonized protocol for goods inspection procedures across North America would benefit goods movements between Canada and the US through the study area, and could allow containers to be sealed at their point of origin on the continent and eliminate the need for customs checks at border crossings. The lack of a standardized system increases handling of containers and thereby increases costs and inefficiencies. This alternative will have security implications.</b></p>		<p>✓</p>		<p>Outside of the jurisdiction of MTO: recommended for consideration / further study by provincial and / or federal authorities.</p>
<p><b>76.</b> Targeted Incentives for Industries to Use Rail: <b>Through better understanding of shippers' needs, more targeted incentives could be developed and implemented for increased use of rail transportation. This could increase the rail mode's use and remove some trucks from the road network. This alternative includes policy, economic and organizational implications and would likely need to occur at a national level.</b></p>			<p>✓</p>	<p>Not expected to substantively contribute to addressing inter-regional transportation problems and opportunities. Shippers decide how best to transport goods based on a number of factors, including urgency of delivery, nature of goods and travel distance. There are some instances, e.g., just-in-time delivery, where rail is not the most efficient means of shipping. There would be significant policy and economic implications of such an alternative.</p>

<p style="text-align: center;"><b>Transportation Alternative</b></p> <p><i>* These alternatives will be re-ordered so that similar alternatives are listed together. This will be done in conjunction with addressing the Ministry's comments on the draft report.</i></p>	<p style="text-align: center;"><b>Potential to Substantively Contribute to Addressing the Identified Transportation Problems &amp; Opportunities</b></p>	<p style="text-align: center;"><b>Should be Further Considered as Part of the GTA West Study</b></p>	<p style="text-align: center;"><b>Should be Pursued as Part of Separate Study / Initiative</b></p>	<p style="text-align: center;"><b>Rationale</b></p>
<p>77. Subsidize Rail Transportation: <b>This alternative could increase the competitiveness of rail compared to truck transportation and increase the use of rail through the study area. This would include policy, economic and organizational implications and would likely need to occur at a national level.</b></p>			✓	<p>Not expected to substantively contribute to addressing inter-regional transportation problems and opportunities. Shippers decide how best to transport goods based on a number of factors, including urgency of delivery, nature of goods and travel distance. There are some instances, e.g., just-in-time delivery, in which trips &lt;500 km may need to travel by other means. There would be significant policy and economic implications of such an alternative.</p>
<p>78. Improve Integration of Rail and Air Transportation Modes: <b>Integration of rail and air transportation could improve planning for future needs and thereby the efficiency and effectiveness of each mode, particularly to move goods. An overarching body or strategy could improve coordination of planning. Such an alternative may need to occur at a national level.</b></p>		✓		<p>Outside of the jurisdiction of MTO; further integration of planning for the modes of inter-regional travel recommended for consideration / further study by provincial and / or federal authorities.</p>
<p>79. Expand the Type of Goods that can be Shipped Via Rail and Marine: <b>Enabling a wider variety of goods to be shipped via rail and marine modes, as opposed to truck, could help to relieve some of the demand for goods movements via the inter-regional road network.</b></p>			✓	<p>Not expected to substantively contribute to addressing the study area's inter-regional transportation problems and opportunities. Shippers decide which mode is best suited for shipping particular goods dependent on factors including: character of goods (e.g., bulk, value); cost of shipment; urgency; availability of transportation connections, etc.</p>
<p>80. Use Passenger Trains for Courier Use: <b>Such a service may allow for increased courier shipments to be made via rail and alleviate some truck trips from the road network.</b></p>			✓	<p>Not expected to substantively contribute to addressing the study area's inter-regional transportation problems and opportunities. Passenger trains do not have excess capacity for courier services and would not provide the flexibility, speed or connections that courier services require.</p>
<p>81. Provide Funding / Support for Rail / Marine Improvements: <b>This funding and support could enable rail and marine modes to become more competitive in comparison with truck for goods movement. Such improvements could include expansion of existing rail yards and lines, and expansion of existing ports.</b></p>	✓	✓		<p>Part of the identification of individual transportation alternatives exercise includes identifying and recommending any freight rail transportation improvements that could address the study area's transportation problems and opportunities.</p>
<p>82. Situate Industrial Areas Near Rail Lines: <b>As discussed above, appropriate adjacent land uses are important to the operations of the rail network. Encouraging industrial uses near rail lines could minimize potential conflicts with operations and expansion, and could allow for goods produced in these industrial areas to be shipped by rail.</b></p>		✓		<p>Although this is not expected to substantively contribute to addressing the study area's inter-regional transportation problems and opportunities, it could improve the efficiency of rail transportation and protect for its future growth. This is recommended for further study by Ontario government ministries and area municipalities.</p>
<p>83. Prevent Loss of Rail Network Sections: <b>In order to maintain efficient and competitive rail services, the physical network must be protected. Where rail corridors are currently not in use, there is an opportunity for the government to review and assess future / potential uses and purchase and / or protect corridors to remain available for current and future rail use.</b></p>		✓		<p>Maintaining the rail network is important for its future efficiency and competitiveness. Further study, including by the Metrolinx Goods Movement Strategy, is recommended to identify strategies to maintain the rail network.</p>

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	84. Coordinate with New Inter-modal Terminal in Milton: <b>The coordination of area land uses and transportation infrastructure with CN's long range plans for a new inter-modal facility in Milton could maximize the potential of this facility to improve the efficiency of goods movement and the use of freight rail transportation in the study area.</b>		✓		CN has a long range plan for an inter-modal terminal in the Milton area. No program dates have been identified. Planners in Milton and Halton Region are aware of this potential future facility and future land use and transportation planning is and should continue to take it into consideration.
	85. Double Stacking: <b>The capacity of the existing rail network could be increased by double stacking containers on trains, which would result in more goods being moved by rail transportation within the existing corridor and service schedules. There are infrastructure implications of such an alternative on trains, at inter-modal facilities and along the rail corridors.</b>		✓		Double stack containers are currently in use by CN and CP.
	86. Grade Separate Road and Rail: <b>A program of rail-road grade separations could improve the efficiency of rail travel and remove the uncertainty surrounding individual rail-road grade separations (see above). Grade separations would need to be constructed with spans of the full rail corridor to allow unconstrained expansion as required in the future.</b>		✓		Although this is not expected to substantively contribute to addressing the study area's inter-regional transportation problems and opportunities, it could improve the efficiency and competitiveness of rail transportation. Further study is recommended.
	87. Study Abandoned Rights of Way for Reinstatement: <b>This alternative could identify unused rail rights-of-way that could be put back into service potentially using existing infrastructure and without disturbing other land uses. Reinstatement would increase rail capacity and could link areas that are currently underserved by rail transportation. Rights of way would need to be located such that they connect urban, industrial and / or economic centres. This may present opportunities for shortline services.</b>		✓		Although this is not expected to substantively contribute to addressing the study area's inter-regional transportation problems and opportunities, it could improve the future capacity of the rail transportation network, should an abandoned right of way be identified between underserved urban, industrial and / or economic centres. Further study would be required.
	88. Drive-On / Drive-Off Service on Trains: <b>This kind of alternative could improve the use of freight rail transportation by better integrating rail services with trucking. Such Rolling Highway serviced are already in use in Europe and to a limited extent by CN and CP, and could be expanded within the GGH.</b>		✓		This kind of service "Rolling Highway" service is provided by CN (RoadRailer) and CP (Expressway), as discussed in Section 2.1
GROUP #2	89. Expand Metrolinx Mandate and Service Area to Cover Transit, Freeways / Inter-Regional Roads, Rail, etc.: <b>This could ensure improved planning across the GGH, with improve integration between modes and emphasis on all modes of travel.</b>		✓		Outside of the jurisdiction of MTO; Metrolinx mandate expansion would require policy changes and is recommended for further study by provincial and / or federal and municipal authorities.
	90. Work with Municipalities to Develop Logistics Hubs near Airports / Ports / Rail Yards / Industrial Parks: <b>By developing logistics hubs near transportation infrastructure, better use could be made of rail transportation as rail yards would be in close proximity to important locations for commerce and industry. Minimizing the distance between employment lands and transportation infrastructure could result in shorter trip lengths and potentially increased use of rail transportation.</b>		✓		Being pursued by the Assessment of Access to Inter-modal Facilities research report. Many of Canada's key logistics hubs are located in the GTA West Corridor. One of this report's objectives is identification of roads where access to the facilities within these hubs could be improved.

<p style="text-align: center;"><b>Transportation Alternative</b></p> <p><i>* These alternatives will be re-ordered so that similar alternatives are listed together. This will be done in conjunction with addressing the Ministry's comments on the draft report.</i></p>	<p style="text-align: center;"><b>Potential to Substantively Contribute to Addressing the Identified Transportation Problems &amp; Opportunities</b></p>	<p style="text-align: center;"><b>Should be Further Considered as Part of the GTA West Study</b></p>	<p style="text-align: center;"><b>Should be Pursued as Part of Separate Study / Initiative</b></p>	<p style="text-align: center;"><b>Rationale</b></p>
<p><b>91. Expand Rail Infrastructure at Choke Points: Expanding infrastructure at key choke points could provide opportunities for future growth of freight and passenger travel on shared rail corridors, accommodating the planned significant increase in passenger transit without limiting future rail freight services. Addressing network bottlenecks can improve the capacity of an entire corridor.</b></p>		✓		<p>Being reviewed and pursued by others: typically rail companies assess and add capacity as required, in conjunction with developments for passenger rail services.</p>
<p><b>92. Construct Dedicated Tracks for Passenger Rail: It is recognized that although capacity is not currently an issue for freight rail transportation, the significant growth planned for passenger rail could conflict with future freight rail growth. New, dedicated passenger rail tracks could reduce conflicts with freight movements and allow for substantial growth of both people and goods movement by rail. There are two options for dedicated passenger rail: within the existing rail corridor and within a new corridor separate from the freight rail network. Construction of dedicated passenger tracks on a new corridor would involve increased independence, but with increased complexity and cost implications.</b></p>		✓		<p>Could be considered as a strategy in GO Transit's 2020 Expansion Program.</p>
<p><b>93. Rail Corridor through the Greenbelt: A new rail corridor through the Greenbelt could provide additional capacity on the rail network and link economic and employment centres, thereby improving rail transportation services through the study area and potentially attracting additional business and use of the rail network.</b></p>			✓	<p>Not expected to substantively contribute to addressing the study area's inter-regional transportation problems and opportunities. It could improve the future capacity of the rail transportation network, should a new corridor be needed; however, there would be significant policy and environmental implications. Substantial further study would be required.</p>
<p><b>94. Expand CN Rail Single Track in the Credit River Area East of Georgetown: This alternative would increase rail capacity within the study area and could address constraints on the service. Additional capacity could be used to allow future growth of passenger and freight transportation on this corridor.</b></p>		✓		<p>Currently being progressed by GO Transit.</p>
<p><b>95. Double-Track Corridor from Georgetown to Kitchener: As above, this alternative would increase rail capacity in the western portion of the study area, which could be used for freight and passenger traffic to support population and employment growth and the introduction of new passenger rail services.</b></p>		✓		<p>Currently being progressed by GO Transit.</p>
<p><b>96. Provide More Rail Infrastructure to Accommodate Shorter Hauls: Short haul rail services can transfer goods between origins / destinations and the Class 1 services on the main rail corridors. Increased short haul infrastructure and maintenance funds could enable more goods to be shipped via rail for the entirety of shipments.</b></p>		✓		<p>There are potential needs for sidings for new business opportunities and maintenance needs for the short haul network. Further study of future opportunities is recommended by the Class 1 and Class 2 rail lines.</p>

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<b>MARINE</b>					
GROUP #1	<p>97. <b>Work with Municipalities to Develop Logistics Hubs near Airports / Ports / Rail Yards / Industrial Parks:</b> This alternative could increase use of marine transportation as hubs would be in close proximity to important locations for commerce and industry. Minimizing the distance between employment lands and transportation infrastructure could result in shorter trip lengths and potentially increased use of marine transportation.</p>		✓		Being pursued by the Assessment of Access to Inter-modal Facilities research report. Many of Canada's key logistics hubs are located in the GTA West Corridor. One of this report's objectives is identification of roads where access to the facilities within these hubs could be improved.
	<p>98. <b>Metrolinx Policy / Planning for Goods Movement:</b> Similar to The Big Move for transit, a policy and planning study should be undertaken for goods movement throughout the Greater Golden Horseshoe (GGH). Such an initiative would improve understanding of the needs of shippers and the measures that might be necessary to advance the use of non-road transportation modes.</p>		✓		Being pursued through Metrolinx's comprehensive strategy for goods movement.
	<p>99. <b>Expand Metrolinx Mandate and Service Area to Cover Transit, Freeways / Inter-Regional Roads, Rail, etc.:</b> This could ensure improved planning across the GGH, with improve integration between modes and emphasis on all modes of travel.</p>		✓		Outside of the jurisdiction of MTO; Metrolinx mandate expansion would require policy changes and is recommended for further study by provincial and / or federal and municipal authorities.
	<p>100. <b>Improved Coordination between GTHA Port Authorities:</b> Improved coordination between the Toronto, Hamilton and Oshawa Port Authorities could improve the distribution of goods throughout the GGH, resulting in optimized use of area marine and connecting transportation infrastructure. Such an initiative is expected to require significant organizational and policy changes.</p>	✓		✓	This is outside the scope of the study; however, there are potential advantages and disadvantages of improved port coordination.
	<p>101. <b>Make Better Use of Port Facilities and Coordinate with Other Modes:</b> Improved use of area port facilities and improved coordination with other modes (e.g., rail and road access) could increase the level of use of marine transportation and improve its efficiency.</p>	✓	✓		Represents a core objective of the GTA West Corridor Planning and EA Study and will be pursued through the recommended transportation alternatives
	<p>102. <b>Changes to Advance Notification Rules at Canada-US Border:</b> Such changes could affect cross-border / cross-lake shipments, including Hamilton-Oswego, NY. Amendments to put marine notice periods more in line with those for other modes could reduce a disincentive to marine transportation and potentially make some cross-border services more practical and viable.</p>	✓		✓	Outside of the jurisdiction of MTO and the Ontario government; however, this could be recommended for consideration by federal authorities.
	<p>103. <b>Changes to Canadian Cabotage Laws:</b> The decrease / removal of the 25% tariff on imported vessels would remove a constraint to the import of foreign vessels and potentially increase marine transportation's competitiveness for goods movement, allowing equipment to be in place for new and expanded services.</p>		✓		Outside of the jurisdiction of MTO and the Ontario government: could be recommended for consideration by federal authorities.

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<p><b>104. Changes to US Harbor Maintenance Tax: The decrease / removal of the 0.125% tax on the value of goods shipped to / from the US could affect cross-border / cross-lake shipments, including potential Hamilton-Oswego, NY services. Such amendments could reduce a disincentive to marine transportation compared to other modes and potentially make some cross-border services more practical and viable.</b></p>		✓		<p>Outside of the jurisdiction of MTO and the Ontario government: could be recommended for consideration by federal authorities.</p>
<p><b>105. Changes to Ballast Water Regulations: Changes such that ballast water regulations were more uniform across the US states and include additional stakeholder consultation could minimize the impacts of such regulations on Great Lakes and St. Lawrence Seaway marine transportation.</b></p>		✓		<p>Outside of the jurisdiction of MTO and the Ontario government: could be recommended for consideration by federal authorities.</p>
<p><b>106. Formal Distribution Network to / from Montreal: This initiative would be similar to the Port Inland Distribution Network initiative at the Port of New York / New Jersey. High level organization of shipments between the GGH and Montreal could result in better use of the marine transportation system and the removal of a number of trucks off of the road network.</b></p>		✓		<p>This is being pursued by others: the Port of Hamilton is currently implementing ferry feeder services to / from the Port of Montreal.</p>
<p><b>107. Provide Choice and Opportunity to Benefit from Strengths of Each Mode: Providing opportunities to choose alternative transportation modes, as well as information about the strengths of each one, could result in a more balanced distribution of travel.</b></p>	✓	✓		<p>Represents a core objective of the GTA West Corridor Planning and EA Study and will be pursued through the recommended transportation alternatives.</p>
<p><b>108. Understand Requirements and Match with Logistics and Economic Realities: A better understanding of the needs of shippers, travelers and of logistics and economic realities could enable the choice of alternatives to the road network, such as marine transportation. Further information about goods movement, particularly from the viewpoint of shippers, would be beneficial in advancing transportation solutions.</b></p>		✓		<p>Being pursued through Metrolinx's comprehensive strategy for goods movement. It is recommended that a survey of shipper requirements be considered as part of the strategy development.</p>
<p><b>109. Understand Growth in Goods Movement and Links to the Economy: As above, a better understanding of the growth in goods movement and its importance in the economy could raise awareness of the importance of goods movement and enable better transportation choices for meeting goods movement needs.</b></p>		✓		<p>As above, being pursued through Metrolinx's comprehensive strategy for goods movement.</p>
<p><b>110. National Policy Targets for Modal Shift onto Rail / Marine: For goods movement, such an initiative could result in programs and practices to transfer some shipments onto marine. Government mode shift targets would need to be accompanied by action plans to assist shippers and transportation service providers to achieve modal shift. Appropriate targets and timescales would need to be identified, as well as an implementation strategy. Other regulations and policies would be affected.</b></p>		✓		<p>Outside of the jurisdiction of MTO: recommended for consideration / further study by provincial and / or federal authorities. Ontario's current policy is to let the private marketplace determine modal choice. Shippers generally use the most convenient and cost effective mode for transporting good (within the policy framework).</p>

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GROUP #1	111. <b>Achieve Sustainable Multi-Modal Transportation Systems, Balancing Economic, Social and Environmental Factors:</b> A sustainable, balanced transportation system could make increased use of the marine mode where it is appropriate for moving people and goods, and could alleviate some congestion on the road network.	✓	✓		Represents a core objective of the GTA West Corridor Planning and EA Study and will be pursued through the recommended transportation alternatives.
	112. <b>Expand the Type of Goods that can be Shipped Via Rail and Marine:</b> Enabling a wider variety of goods to be shipped via rail and marine modes, as opposed to truck, could help to relieve some of the demand for goods movements via the inter-regional road network.			✓	Not expected to substantively contribute to addressing the study area's inter-regional transportation problems and opportunities. Shippers decide which mode is best suited for shipping particular goods dependent on factors including: character of goods (e.g., bulk, value); cost of shipment; urgency; availability of transportation connections, etc..
	113. <b>Provide Funding / Support for Rail / Marine Improvements:</b> This funding and support could enable rail and marine modes to become more competitive in comparison with truck for goods movement. Such improvements could include expansion of existing rail yards and lines, and expansion of existing ports.	✓	✓		Part of the identification of individual transportation alternatives exercise includes identifying and recommending any marine transportation improvements that could address the study area's transportation problems and opportunities.
	114. <b>Improve the Efficiency of Marine and Rail Services to Trade Centres (e.g., Toronto):</b> Improvements to the efficiency of marine and freight rail transportation could increase use and mode share and remove some goods movement trips from the road network.	✓	✓		Represents a core objective of the GTA West Corridor Planning and EA Study and will be pursued through the recommended transportation alternatives.
	115. <b>Year-Round Operation of St. Lawrence Seaway:</b> The winter closure may limit the potential for marine transportation in the GGH, although the system users have worked around this constraint to date. Year-round opening might allow the Port of Hamilton to pursue new business, especially new container markets. The SLSMC does not support year round activity and supports the closure period for maintenance activities.			✓	Not expected to substantively contribute to addressing inter-regional transportation problems and opportunities. Year-round operations are not considered a realistic option by the SLSMC as downtime is needed for maintenance, and the Seaway is currently operating at less than half capacity.
GROUP #2	116. <b>Rebuild St. Lawrence Seaway to Accommodate Ocean Vessels:</b> Currently, goods being transported to and from the study area via the Atlantic Ocean must access large ocean vessels at the Port of Montreal, as the locks on the St. Lawrence Seaway restrict vessel size. Increasing the size of the Seaway would enable large vessels to travel between the Atlantic Ocean and the study area, thereby keeping goods on marine transportation for a greater proportion of the journey.			✓	Not expected to substantively contribute to addressing the study area's inter-regional transportation problems and opportunities, considering the magnitude of the undertaking in terms of complexity, impacts and costs, and the declining use of the Seaway.
	117. <b>Ferry Services for Goods Movement / Trucks:</b> A shortsea shipping-type initiative could be implemented for trucks, with potential routes across Lake Erie and through the Welland Canal, and across Lake Ontario. Such an initiative would remove trucks from the roadway, potentially reduce future traffic congestion, and would use less fuel for transportation per weight shipped.		✓		Although this is not expected to substantively contribute to addressing the study area's inter-regional transportation problems and opportunities, ferry services are being investigated by others. Shipping decisions depend greatly on the type of good and length / urgency of delivery trip; some goods shipped by truck are not suitable for delivery via marine, given the dependency on "just-in-time" delivery and the increase in trip duration expected from moving trucks by ferry.
AIR					

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GROUP #1	118. <b>Achieve Sustainable Multi-Modal Transportation Systems, Balancing Economic, Social and Environmental Factors:</b> A sustainable, balanced transportation system could make increased use of other modes where appropriate for moving people and goods, and could alleviate some congestion on the road network.	✓	✓		Represents a core objective of the GTA West Corridor Planning and EA Study and will be pursued through the recommended transportation alternatives.
	119. <b>Understand Requirements and Match with Logistics and Economic Realities:</b> A better understanding of the needs of shippers, travelers and of logistics and economic realities could enable the choice of alternatives to the road network. Further information about goods movement, particularly from the viewpoint of shippers, would be beneficial in advancing transportation solutions.		✓		Being pursued through Metrolinx's comprehensive strategy for goods movement. It is recommended that a survey of shipper requirements be considered as part of the strategy development.
	120. <b>Understand Growth in Goods Movement and Links to the Economy:</b> As above, a better understanding of the growth in goods movement and its importance in the economy could raise awareness of the importance of goods movement and enable better transportation choices for meeting goods movement needs.		✓		As above, being pursued through Metrolinx's comprehensive strategy for goods movement.
	121. <b>Metrolinx Policy / Planning for Goods Movement:</b> Similar to The Big Move for transit, a policy and planning study should be undertaken for goods movement throughout the Greater Golden Horseshoe (GGH). Such an initiative would improve understanding of the needs of shippers and the measures that might be necessary to advance the use of non-road transportation modes.		✓		As above, being pursued through Metrolinx's comprehensive strategy for goods movement.
	122. <b>Expand Metrolinx Mandate and Service Area to Cover Transit, Freeways / Inter-Regional Roads, Rail, etc.:</b> This could ensure improved planning across the GGH, with improve integration between modes and emphasis on all modes of travel.		✓		Outside of the jurisdiction of MTO; Metrolinx mandate expansion would require policy changes and is recommended for further study by provincial and / or federal and municipal authorities.
	123. <b>24-Hour Operations at Toronto Pearson:</b> As part of its aircraft noise mitigation program, limits have been placed on the total number of flights between 0300 and 0600 during each year. Removal of this limitation could enable increased throughput at the airport, optimizing its existing infrastructure.			✓	Not expected to substantively contribute to addressing inter-regional transportation problems and opportunities, as it would not necessarily significantly impact the amount or distribution of goods and passenger movements throughout the study area (and would involve significant noise and environmental impacts).
	124. <b>Provincial Ownership of Regional Airports:</b> Provincial control of regional airports could help to improve the distribution of goods between airports and thereby efficiency of goods distribution by air to / from the study area. It could enable better co-ordination between airports and improved use of the connecting transportation infrastructure. Such an initiative is expected to require policy changes.			✓	Not expected to substantively contribute to addressing the study area's inter-regional transportation problems and opportunities, as it would not necessarily significantly impact the amount or distribution of goods and passenger movements throughout the study area and would require significant organizational and policy changes.
	125. <b>Improvements to Airport "Free Trade Zone" Systems:</b> It has been noted that the air cargo industry could benefit from the creation of true "free trade zones", which would provide opportunities in handling and some value-adding activities with no tax burden. Such improvements could stimulate use of air transportation at Toronto Pearson International and other airports.		✓		Although this is not expected to substantively contribute to addressing the study area's inter-regional transportation problems and opportunities, it could address other land use and economic objectives. Further study is recommended by federal authorities.

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* These alternatives will be re-ordered so that similar alternatives are listed together. This will be done in conjunction with addressing the Ministry's comments on the draft report.					
	126. <b>Improve Distribution of Cargo Shipments between Airports:</b> Changes to the distribution of cargo shipments could improve ground transportation services and the use of existing infrastructure. Such a system could improve efficiency of door-to-door goods movements and remove some trucks from the road network. An organizational change and potentially policy changes would be required.			✓	Not expected to substantively contribute to addressing the study area's inter-regional transportation problems and opportunities, as it would not necessarily significantly impact the amount or distribution of goods and passenger movements throughout the study area and would require significant organizational and policy changes.
	127. <b>Provide Choice and Opportunity to Benefit from Strengths of Each Mode:</b> Providing opportunities to choose alternative transportation modes, as well as information about the strengths of each one, could result in a more balanced distribution of travel.	✓	✓		Represents a core objective of the GTA West Corridor Planning and EA Study and will be pursued through the recommended transportation alternatives.
	128. <b>Improve Integration of Rail and Air Transportation Modes:</b> Integration of rail and air transportation could improve planning for future needs and thereby the efficiency and effectiveness of each mode, particularly to move goods. An overarching body or strategy could improve coordination of planning. Such an alternative may need to occur at a national level.		✓		Outside of the jurisdiction of MTO; further integration of planning for the modes of inter-regional travel recommended for consideration / further study by provincial and / or federal authorities.
GROUP #2	129. <b>Work with Municipalities to Develop Logistics Hubs near Airports / Ports / Rail Yards / Industrial Parks:</b> This alternative could increase use of other modes as hubs would be in close proximity to important locations for commerce and industry. Minimizing the distance between employment lands and transportation infrastructure could result in shorter trip lengths and potentially increased use of other modes.		✓		Being pursued by the Assessment of Access to Inter-modal Facilities research report. Many of Canada's key logistics hubs are located in the GTA West Corridor. One of this report's objectives is identification of roads where access to the facilities within these hubs could be improved.
	130. <b>High Speed Rail Link between Union Station-Toronto Pearson-Kitchener / Waterloo:</b> An extension of the planned Union Station-Toronto Pearson rail link westward would provide a transit option for airport travellers including tourists and employees of the airport and surrounding areas. This could increase the use of public transportation for tourists and commuters.		✓		Although this is not expected to substantively contribute to addressing inter-regional transportation problems and opportunities, given limited capacity to reduce future inter-regional road network travel demands, it could be pursued to address other land use, economic and transportation objectives.
	131. <b>Sixth Runway at Toronto Pearson:</b> It is recognized that the airport is anticipated to experience airside congestion and require an additional runway between 2013 and 2019, with maximum capacity reached under current forecasts by 2019. Environmental approval has been granted for an additional runway, but no definite plans for construction are in place. A sixth runway would alleviate future congestion problems at the airport.		✓		Being reviewed and pursued by others. The Greater Toronto Airports Association (GTAA) has recognized this issue and is working toward addressing Toronto Pearson's future capacity needs.
	132. <b>Expand Guelph Airfield for Goods Movement:</b> An airport within the GTA West corridor could alleviate some of the airside and landside congestion issues surrounding Toronto Pearson, as well as reduce some travel distances between airport and goods origin / destination by road.			✓	Not expected to substantively contribute to addressing inter-regional transportation problems and opportunities, given limited capacity to reduce future inter-regional road network travel demands (and given environmental considerations). The nearby Hamilton International Airport provides cargo facilities.

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	133. <b>Expand Brampton Flight Centre for Goods Movement:</b> As above, an airport within the GTA West corridor could alleviate some of the airside and landside congestion issues surrounding Toronto Pearson, as well as reduce some travel distances between airport and goods origin / destination by road.			✓	Not expected to substantively contribute to addressing inter-regional transportation problems and opportunities, given limited capacity to reduce future inter-regional road network travel demands (and given environmental considerations). The nearby Hamilton International Airport provides cargo facilities.
	134. <b>Helicopter Services:</b> Helicopter services could provide immediate transportation for passengers / goods within the study area. Such services would make use of the available air transportation infrastructure while minimizing use of the limited capacity on the inter-regional road network.			✓	Not expected to substantively contribute to addressing the study area's inter-regional transportation problems and opportunities, given limited capacity to reduce future inter-regional road network travel demands (and given environmental and cost considerations).
<b>FREIGHT INTER-MODAL</b>					
GROUP #1	135. <b>Improve Coordination Between Modes Including Goods Movement Logistics Working Groups:</b> This idea incorporates a variety of improvements for both people (transit) movement and goods (freight) movement, including regional transit structure amalgamation, coordination of GO / TTC schedules, and establishment of a logistics working groups between airports, marine, rail and trucking operations. The idea / alternative aims at better understanding the needs of various service providers / transportation modes in an attempt to improve their efficiency through better coordination and amalgamation. Goods movement logistics groups are believed to improve the efficiency of goods shipment resulting in a reduced amount of intra and inter-regional truck trips as well as trip lengths.		✓		Being pursued through Metrolinx's comprehensive strategy for goods movement. It is recommended that a survey of shipper requirements be considered as part of the strategy development.
	136. <b>Improved Coordination between GTHA Port Authorities:</b> Improved coordination between the Toronto, Hamilton and Oshawa Port Authorities could improve the distribution of goods throughout the GGH, resulting in optimized use of area marine and connecting transportation infrastructure. Such an initiative is expected to require significant organizational and policy changes.		✓		Further study by others will be required to determine the potential benefits and dis-benefits of improved port coordination, and policy / organizational changes would be needed beyond that in the immediate control of MTO.
	137. <b>Improve Loading / Routing Efficiency through Provision of Government-led Consolidation of Logistics Truck Industry:</b> This idea / alternative targets loading / routing efficiency by consolidating load brokering logistics, which could result in reduced trip making by empty-trucks through coordination and incentives. Some existing logistics firms are already focusing on the above-described consolidation.			✓	Not expected to substantively contribute to addressing the study area's inter-regional transportation problems and opportunities. This could benefit trucking efficiency and localized truck movements, and is being pursued by logistics companies.
	138. <b>Improve Distribution of Cargo Shipments between Airports:</b> Changes to the distribution of cargo shipments could improve ground transportation services and the use of existing infrastructure. Such a system could improve efficiency of door-to-door goods movements and remove some trucks from the road network. An organizational change and potentially policy changes would be required			✓	Not expected to substantively contribute to addressing the study area's inter-regional transportation problems and opportunities, as it would not necessarily significantly impact the amount or distribution of goods and passenger movements throughout the study area and would require significant organizational and policy changes.

<p style="text-align: center;"><b>Transportation Alternative</b></p> <p style="font-size: small;">* These alternatives will be re-ordered so that similar alternatives are listed together. This will be done in conjunction with addressing the Ministry's comments on the draft report.</p>	<p style="text-align: center;"><b>Potential to Substantively Contribute to Addressing the Identified Transportation Problems &amp; Opportunities</b></p>	<p style="text-align: center;"><b>Should be Further Considered as Part of the GTA West Study</b></p>	<p style="text-align: center;"><b>Should be Pursued as Part of Separate Study / Initiative</b></p>	<p style="text-align: center;"><b>Rationale</b></p>
<p><b>139. Improve Integration of Rail and Air Transportation Modes:</b> Integration of rail and air transportation could improve planning for future needs and thereby the efficiency and effectiveness of each mode, particularly to move goods. An overarching body or strategy could improve coordination of planning. Such an alternative may need to occur at a national level.</p>		✓		<p>Outside of the jurisdiction of MTO; further integration of planning for the modes of inter-regional travel recommended for consideration / further study by provincial and / or federal authorities.</p>
<p><b>140. Metrolinx Policy / Planning for Goods Movement:</b> Similar to The Big Move for transit, a policy and planning study should be undertaken for goods movement throughout the Greater Golden Horseshoe (GGH). Such an initiative would improve understanding of the needs of shippers and the measures that might be necessary to advance the use of non-road transportation modes.</p>		✓		<p>Being pursued through Metrolinx's comprehensive strategy for goods movement.</p>
<p><b>141. Expand Metrolinx Mandate and Service Area to Cover Transit, Freeways / Inter-Regional Roads, Rail, etc.:</b> This could ensure improved planning across the GGH, with improve integration between modes and emphasis on all modes of travel.</p>		✓		<p>Outside of the jurisdiction of MTO; Metrolinx mandate expansion would require policy changes and is recommended for further study by provincial and / or federal and municipal authorities.</p>
<p><b>142. Introduce Planning Policies to Promote Nodal (mixed use) Developments:</b> Land use planning can be used to avoid conflicts with the operations of inter-modal facilities (e.g., residential land uses in close proximity to inter-modal facilities). To minimize such conflicts, better land use planning policies must be in place, especially for areas with future potential inter-modal facilities. Improved planning could also create opportunities for compatible land uses such as industrial / logistics, increasing business opportunities.</p>		✓		<p>This represents an objective of the <i>Growth Plan</i> that is being pursued by the government of Ontario and local municipalities.</p>
<p><b>143. Situate Industrial Areas Near Rail Lines:</b> As discussed above, appropriate adjacent land uses are important to the operations of the rail network. Encouraging industrial uses near rail lines could minimize potential conflicts with operations and expansion, and could allow for goods produced in these industrial areas to be shipped by other modes.</p>		✓		<p>Although this is not expected to substantively contribute to addressing the study area's inter-regional transportation problems and opportunities, it could improve the efficiency of rail transportation and protect for its future growth. This is recommended for further study by Ontario government ministries and area municipalities.</p>
<p><b>144. Provide Choice and Opportunity to Benefit from Strengths of Each Mode:</b> Providing opportunities to choose alternative transportation modes, as well as information about the strengths of each one, could result in a more balanced distribution of travel.</p>	✓	✓		<p>Represents a core objective of the GTA West Corridor Planning and EA Study and will be pursued through the recommended transportation alternatives.</p>
<p><b>145. Understand Requirements and Match with Logistics and Economic Realities:</b> A better understanding of the needs of shippers, travelers and of logistics and economic realities could enable the choice of alternatives to the road network. Further information about goods movement, particularly from the viewpoint of shippers, would be beneficial in advancing transportation solutions.</p>		✓		<p>Being pursued through Metrolinx's comprehensive strategy for goods movement. It is recommended that a survey of shipper requirements be considered as part of the strategy development.</p>

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GROUP #1	146. Understand Growth in Goods Movement and Links to the Economy: As above, a better understanding of the growth in goods movement and its importance in the economy could raise awareness of the importance of goods movement and enable better transportation choices for meeting goods movement needs.		✓		As above, being pursued through Metrolinx's comprehensive strategy for goods movement.
	147. Achieve Sustainable Multi-Modal Transportation Systems, Balancing Economic, Social and Environmental Factors: A sustainable, balanced transportation system could make increased use of other modes where appropriate for moving people and goods, and could alleviate some congestion on the road network.	✓	✓		Represents a core objective of the GTA West Corridor Planning and EA Study and will be pursued through the recommended transportation alternatives.
	148. National Policy Targets for Modal Shift onto Rail / Marine: For goods movement, such an initiative could result in programs and practices to transfer some shipments onto other modes. Government mode shift targets would need to be accompanied by action plans to assist shippers and transportation service providers to achieve modal shift. Appropriate targets and timescales would need to be identified, as well as an implementation strategy. Other regulations and policies would be affected.		✓		Outside of the jurisdiction of MTO: recommended for consideration / further study by provincial and / or federal authorities. Ontario's current policy is to let the private marketplace determine modal choice. Shippers generally use the most convenient and cost effective mode for transporting good (within the policy framework).
	149. Improve Truck Access to Inter-modal Yards: This alternative could address an issue identified by interviews with major transportation service providers, and improve road connections to existing inter-modal and distribution facilities. The Vaughan Inter-modal terminal in particular has capacity for growth but requires road system improvements to support this.		✓		Access to the Vaughan inter-modal terminal is being addressed as part of the Highway 427 extension, and other projects will look at specific links to inter-modal facilities.
GROUP #2	150. Work with Municipalities to Develop Logistics Hubs near Airports / Ports / Rail Yards / Industrial Parks: This alternative could increase use of other modes as hubs would be in close proximity to important locations for commerce and industry. Minimizing the distance between employment lands and transportation infrastructure could result in shorter trip lengths and potentially increased use of non-road modes.		✓		Being pursued by the Assessment of Access to Inter-modal Facilities research report. Many of Canada's key logistics hubs are located in the GTA West Corridor. One of this report's objectives is identification of roads where access to the facilities within these hubs could be improved.
TRANSPORTATION DEMAND MANAGEMENT (TDM) / TRANSPORTATION SYSTEMS MANAGEMENT (TSM)					
GROUP #1	151. Implement employer-led TDM initiatives.	✓	✓		Address the current issues that are associated with the lack of full-time TDM staff at most of the municipalities.
	152. Make transit more affordable/convenient than car travel, e.g. integrated online fare and info system in real time, and improve passenger pricing for commuter / regional passenger.	✓	✓		Promote and increase incentives of using transit services.
	153. Overhaul and expedite incident clearance.	✓			This would help to minimize the duration of lane closures and the effects of "shock waves" on corridors.
	154. Use of shoulders as bus lanes during peak hours to allow transit vehicles to bypass queues.	✓	✓		This would help to enhance reliability of transit services and minimize delays.

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155. Implement contra-flow lanes and moveable barriers to accommodate peak flows.	✓	✓		This could improve the usage of existing facilities, and may be considered depending on feasibility of implementation.
156. Provide frequent updates on traffic conditions and alternate routes - driver info on PDAs, expanded FTMS, improved signing with info about other corridors, etc.	✓	✓		Provide real time information to motorists, as such, motorists could plan their route in advance or take appropriate alternative route, if needed.
157. Implement variable posted speeds on congested highways - speed harmonization.	✓			The use of variable posted speeds is intended to slow traffic in advance of the end of queue or slowdown area in order to avoid stop-and-go conditions and enhance throughput capacity on a corridor. This strategy has proven to be successful in European countries such as Germany and Holland.
158. Implement dedicated transit lanes to enhance reliability of transit services and minimize delays.	✓			This would help to enhance reliability of transit services and minimize delays.
159. Increase car ownership fees significantly but rebate for not using it during peaks across certain screenlines; thus reward is more effective than penalty (now being used in Holland).		✓		This idea is mainly to increase financial cost for peak hour driving – the policies to increase car ownership fees (e.g. taxes, increased gas prices, etc.) are major policy issues that are beyond the scope of this project.
160. Implement strong provincial TDM policies (incentives / penalties), e.g. telecommuting, living and working in same city, etc.	✓	✓		This would promote and increase incentives of using alternative modes.
161. Implement planning policies to create nodal (mixed use) developments to minimize the need of external commuter trips.		✓		This represents an objective of the <i>Growth Plan</i> that is already being pursued.
162. Coordinate land use planning with provincial highways to minimize length of trips (i.e. work to home / shops).		✓		This represents an objective of this study that is already being pursued.
163. Implement new / higher road toll charges to encourage desired use (e.g. more transit, off-peak trucking, etc.) to increase financial cost for peak hour driving.	✓	✓		Tolling is an implementation issue, and will be explored during later stages of the study for potential new infrastructure.
164. Incorporate active transportation at transit stations and on transit vehicles, e.g. bike racks, to promote and increase incentives of using alternative modes.	✓	✓		This will not substantively address inter-regional travel demand. Provisions for cyclists and other modes of active transportation at and to transit stations will reduce short distance vehicle demand.
165. Use shoulders as truck lanes during peak hours to allow truck vehicles to bypass queues and minimize delays.			✓	This idea is not anticipated to be operationally desirable, as it would require changing driver expectations and ultimately would result in pavement maintenance issues.
166. Optimize efficiency for signalization (e.g. loop detectors, synchronization) to better allocate the green time for each of the movements at intersections.		✓		This is a local solution and it would not resolve the inter-regional transportation issues.

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167. Legislate car license at age 25 to support transit culture (in 416 and 905 areas) among the younger generation.			✓	This idea is not considered practical.
168. Reduce travel demand by encouraging the use of alternative modes or telecommunicating.			✓	This represents a core objective of this study.
169. Implement the mandatory use of winter tires to improve winter transportation safety.		✓		This may improve winter transportation safety; however, it would not significantly resolve the inter-regional transportation issues.
170. Implement improvements for the safety of pedestrians / cyclists across transportation corridors to promote the use of alternative modes.		✓		MTO is currently reviewing the safety of pedestrians and cyclists across highway corridors and associated policies. There are also circumstances where pedestrian and cyclist safety could be addressed across municipal corridors, railways, canals and transportation facilities under the jurisdiction of other agencies.
171. Implement tolling tied to occupancy and / or congestion levels to increase financial cost for peak hour driving.		✓		Tolling is an implementation issue, and will be explored during later stages of the study on potential future new transportation corridors.
172. Improve understanding of social and environmental factors to promote and encourage the use of alternative modes.			✓	This represents a core objective of this study and is not considered to be an alternative.
173. Expand Metrolinx mandate and service area to cover transit, freeways (inter-regional roads), rail, etc., in order to create a seamless inter-regional transportation system that would better accommodate inter-regional travel demand, and continuously promote the benefits of using alternative modes.	✓	✓		Metrolinx is currently pursuing a mandate to improve inter-modal transportation within the broader area.
174. Understand and measure actual effectiveness of HOV in order to plan for future improvements.			✓	This represents a core objective of this study and is not considered to be an alternative.
175. Consider truck restrictions on certain roads.		✓		This may be considered during route planning stage if road expansion solution is selected. Not pursued at this stage of study.
176. Optimize the use of Highway 407.	✓	✓		This may contribute to addressing the transportation problem statement, but will require changes to provincial policies. Metrolinx is planning a transitway within the Highway 407 corridor.
177. Invent smaller, narrower cars.			✓	This idea is not considered practical.
178. Repatriate Highway 407 and remove tolls.			✓	This would require a policy change that is beyond the scope of this study.
179. Implement a GPS-based truck monitoring and tolling system.			✓	Tolling is an implementation issue, and will be explored during later stages of the study.
180. Implement a carbon tax to reduce auto use.		✓		This would require a policy change that is beyond the scope of this

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				study.
181. Consider future growth areas.	✓			This is a critical step in the transportation planning process.
182. Improve enforcement of HOV lanes.		✓		This is not expected to significantly address the problems and opportunities, but could provide a local solution and may be pursued as a system enhancement.
183. Acknowledge the role of and maintain heritage roads in their current condition.			✓	This would not significantly affect inter-regional travel, but could be considered by others.
184. Require trucks to use speed limiters.		✓		This has been implemented by MTO for most large trucks driven in Ontario.
185. Implement efficient grid truck routes.			✓	This is a local solution and is not expected to substantively contribute to addressing the Preliminary study area's inter-regional transportation problems and opportunities.
186. Consider innovative ways to reduce emissions through vehicle technologies.				This is beyond the terms of reference of this study. There are strict regulations and contract requirements in place.
187. Implement minor improvements to intersections (e.g. signal timings, lanes) and freeway segments (e.g. curves, weaves and speed change lanes).			✓	This is a local solution that may be incorporated into a larger array of solutions, however is not expected to resolve the inter-regional transportation problems and opportunities.
188. Increase truck load restrictions.			✓	This would result in significant maintenance impacts.
189. Discourage slow drivers (e.g. ticket drivers who drive "x" km below the speed limit when there is no congestion).			✓	This is not expected to substantively contribute to addressing the Preliminary study area's inter-regional transportation problems and opportunities.
190. Increase speed limits.			✓	This could result in safety issues, and may result in an increase in collisions and / or collision severity.
191. Reduce the speed limit along Highway 6.			✓	This is not expected to substantively contribute to addressing the Preliminary study area's inter-regional transportation problems and opportunities.
192. Provide regular and more frequent road maintenance.			✓	This is not expected to substantively contribute to addressing the Preliminary study area's inter-regional transportation problems and opportunities.
193. Provide enhanced and more focused driver training and testing.			✓	This is beyond the terms of reference of this study.

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	194. Implement tolls on all 400-series highways.	✓		✓	Tolling existing facilities is beyond the terms of reference of this study. However, this has the potential to address some of the transportation problems.
	195. Reduce the number of lanes to discourage auto use.			✓	This will not address future travel demands.
GROUP #2	196. Create new broad-band centres to facilitate telecommuting (i.e. reduction in the number of vehicular trips).		✓		This would help promote teleworking and reduce demand on existing systems, but is beyond the terms of reference of this study.
GROUP #3	197. Implement HOV lanes with carpool lots at all interchanges for 400-series freeways and key highways to promote and encourage motorists to car-pool and reduce the number of single occupancy vehicles.	✓	✓		This is already being addressed via MTO's HOV Plan for provincial highways and freeways.
	198. Separate trucks from other vehicles when implementing new infrastructure to separate slower-moving truck traffic from auto traffic.		✓		The feasibility of dedicated truck lanes or facilities is being investigated by MTO.
<b>ROADS AND HIGHWAYS</b>					
GRO UP #1	199. Better define the purpose, function, and differentiate between types of roads (e.g. agricultural use).		✓		If the route expansion solution is selected then this could be undertaken during latter phases of the study.
GROUP #3	200. Widening Mayfield Road.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
	201. "Super Arterials" (MTO-local partnership, Queen / Langstaff, Bovaird / Rutherford).	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
	202. Widen Britannia Tremaine eastward to reduce congestion on 401 (Milton Growth Plan development).	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
	203. Hwy 401 core / collector from Hanlan Expressway to Hwy 407.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
	204. Improve various existing roads to provide priority for transit.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
	205. Dedicated (new) lane on 407 Milton to Oshawa.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
	206. Widen Hwy 10 from Hwy 410 to Hwy 9.	✓			To be considered as potentially contributing to addressing the study

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				<p>area's inter-regional transportation problems and opportunities.</p>
<p>207. Widen from Hwy 401 to Hwy 9 to Hwy 400.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>208. Widen Hwy 401 through Milton.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>209. Widen Hwy 401 only through Niagara Escarpment to avoid new escarpment crossing and integrate with new corridor to east.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>210. Widen Hwy 401 between (west) Hwy 6 and Halton Hills / Brampton.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>211. Reconfiguration / improvements to Hwy 401 / Hwy 400 interchange.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>212. Widen Hwy 401 from Cambridge to Mississauga.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>213. Elevated Hwy 401 through Niagara Escarpment to make "double deck" elevated freeway.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>214. Widen Hwy 410, 427, 400, 401, and 407 beyond current program to avoid need for new corridor.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>215. Widen Hwy 7 Norval to Hwy 410.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>216. Widen Hwy 7 to Guelph.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>217. Widen Hwy 9 from Hwy 6 to Hwy 400.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>218. Widen Hwy 9 to Hwy 400.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>219. Widen Hwy 6 from Hamilton to Guelph.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>220. Widen Hwy 6 between Hwy 401 and Hwy 403.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>221. Hwy 6 (Hanlan) widen to 400 series facility.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>

<p style="text-align: center;"><b>Transportation Alternative</b></p> <p><i>* These alternatives will be re-ordered so that similar alternatives are listed together. This will be done in conjunction with addressing the Ministry's comments on the draft report.</i></p>	<p style="text-align: center;"><b>Potential to Substantively Contribute to Addressing the Identified Transportation Problems &amp; Opportunities</b></p>	<p style="text-align: center;"><b>Should be Further Considered as Part of the GTA West Study</b></p>	<p style="text-align: center;"><b>Should be Pursued as Part of Separate Study / Initiative</b></p>	<p style="text-align: center;"><b>Rationale</b></p>
222. Widen Hwy 124 to Guelph.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
223. Widen and reinstate Hwy 24 as provincial highway between Hwy 401 and Hwy 9.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
224. Widen Hwy 7 between Guelph and through to Brampton - as HOV lanes or bus lanes at peak times.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
225. Add HOV lane (Highway) 400.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
226. Add HOV lane on 401 (through widen) to Highway 6 (Hanlan).	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
227. Brampton - Vaughan highway with transit in median, Widen Hwy 7 between Guelph and through to Brampton - as HOV lanes or bus lanes at peak times.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
228. Dedicate Hwy 401 HOV lanes from Hwy 6 to Pearson Airport.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
229. Consider Highway 9 as a potential east-west corridor.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
230. Better use of parallel roadways.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
231. Better transitions from freeway to freeway, particularly at congestion points (e.g. Hwy 407 / Hwy 401).	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
232. Overpasses / interchanges for major arterial roads.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
233. Include transitways on major highways.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
234. Widen existing roadways (e.g. Highway 401) and potentially designate the new lanes as truck lanes to increase the capacity of the existing infrastructure.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
235. Convert existing east-west roadways to controlled access to improve operations.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
236. Improve connections to highways to reduce traffic on local roads.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.

Transportation Alternative		Potential to Substantively Contribute to Addressing the Identified Transportation Problems & Opportunities	Should be Further Considered as Part of the GTA West Study	Should be Pursued as Part of Separate Study / Initiative	Rationale
* These alternatives will be re-ordered so that similar alternatives are listed together. This will be done in conjunction with addressing the Ministry's comments on the draft report.					
	237. Provide better roadway access to inter-modal facilities since you still need trucks to transport goods to the rail / marine facilities.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
	238. Consider BRT / LRT along all new highway corridors.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
	239. Construct dedicated transit lanes.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
	240. Widen Hwy 401 between Hwy 8 and airport for HOV use and also truck use (i.e. 2 new lanes each direction).		✓		May be considered during route planning stage if freeway solution is selected. Not pursued at this stage of the study.
	241. Dedicated truck lanes with minimum truck volume requirements.		✓		The feasibility of "truck only" lanes and "truck only" facilities is being explored by the Ministry of Transportation.
	242. No new general purpose lanes (only BRT, HOV, truck only, etc.).			✓	Road capacity requirements will determine purpose of any new lanes.
	243. Remove at grade (west) intersection on Highway 6 (Hanlan) between Woodlawn Road and Hwy 401.			✓	This would not resolve the inter-regional transportation issues. More of a local solution.
	244. Improvements to the roadway corridors as identified in the Guelph-Wellington Transportation Study as critical for inter-regional transit and regional and US-Canada truck traffic.			✓	Suggested improvements in Guelph-Wellington corridor would not substantively improve movement of goods between Guelph and Vaughan.
	245. Create ramps for Nobleton and King Township from Highway 404.			✓	This is a localized solution which would not resolve inter-regional transportation issues.
	246. Repatriate 407 and install spine line, instate Shadow Toll.			✓	This would require a policy change that is beyond the scope of this study.
	247. Improve truck access to inter-modal yards (e.g. Hwy 427) ~ 427 EA planning addressing this will be completed by 2009.		✓		Access to the Vaughan inter-modal terminal is being addressed as part of the Highway 427 extension, and other projects will look at specific links to inter-modal facilities.
	248. Separate trucks into own ROW along Hwy 401.			✓	Specific use of new capacity is an implementation issue, which will be addressed later in the study.
GROUP #4	249. Extend Hwy 410 north to Hwy 9 - tie back to Hwy 10.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
	250. Construct new highway from 407 / 401 interchange north to Georgetown and west to Milton / Guelph.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.

<p style="text-align: center;"><b>Transportation Alternative</b></p> <p><i>* These alternatives will be re-ordered so that similar alternatives are listed together. This will be done in conjunction with addressing the Ministry's comments on the draft report.</i></p>	<p style="text-align: center;"><b>Potential to Substantively Contribute to Addressing the Identified Transportation Problems &amp; Opportunities</b></p>	<p style="text-align: center;"><b>Should be Further Considered as Part of the GTA West Study</b></p>	<p style="text-align: center;"><b>Should be Pursued as Part of Separate Study / Initiative</b></p>	<p style="text-align: center;"><b>Rationale</b></p>
251. New highway between Georgetown and Milton.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
252. New connection to Hwy 6 south of Guelph - new interchanges are currently being designed.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
253. New highway from Hwy 400 to Hwy 7 north of Guelph with connections to Hwy 427 and Hwy 410.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
254. New highway between Hwy 407 and Hwy 401 east of Milton, Ring highway from 407 / 401 to the top of Hwy 410, connecting easterly to Hwy 400, New highway between Hwy 407 and Hwy 401 at Winston Churchill Blvd with connection to Hwy 410 ~ new highway between Hwy 407 and Hwy 401 at Winston Churchill Blvd with connections to Hwy 427 and Hwy 410.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
255. Highway from Milton to Hwy 410 extension.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
256. Connection from Hwy 410 (north end) to Hwy 400 via Tullamore and Kleinburg.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
257. New Hwy from north edge of Guelph to north side of Acton -> Georgetown -> along south edge of greenbelt connecting to Hwy 410.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
258. New corridor to connect Vaughan to Guelph.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
259. South route - from Hwy 401 east of Hwy 6 inside the greenbelt north of Georgetown and south of Bolton connecting to Hwy 400 between Major Mack and King Road.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
260. New highway from 407 / 401 split in Mississauga to north of Guelph (new Hwy 7).	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
261. New highway from Hwy 400 westerly across York / Peel, NEC, connects to Hwy 124 then to Hwy 6 ~ new highway between Hwy 400 and Hwy 6 in Guelph via upgrading Mayfield Rd / Hwy 7.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
262. Hwy 7 bypass around Acton ~ new Hwy 7 alignment with bypass.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
263. Extend GTA West east to serve as east-west GTA bypass (do not connect to Hwy 407, rather compete with 407) ~ build GTA West extension north of 407.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.

<p style="text-align: center;"><b>Transportation Alternative</b></p> <p><i>* These alternatives will be re-ordered so that similar alternatives are listed together. This will be done in conjunction with addressing the Ministry's comments on the draft report.</i></p>	<p style="text-align: center;"><b>Potential to Substantively Contribute to Addressing the Identified Transportation Problems &amp; Opportunities</b></p>	<p style="text-align: center;"><b>Should be Further Considered as Part of the GTA West Study</b></p>	<p style="text-align: center;"><b>Should be Pursued as Part of Separate Study / Initiative</b></p>	<p style="text-align: center;"><b>Rationale</b></p>
264. Extend Highway 407 west.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
265. Operations at Vaughan Terminal can be increased by over 100% if Highway 427 is improved. CP sees a lot of growth west of Milton. Therefore, a new east-west corridor would help to link the rail service to the new businesses in this area. CP wants the flexibility for modal choice to be preserved for the future. For example, do not plan residential or big box land uses in inter-modal locations.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
266. Extend Highway 427 north to Highway 9.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
267. Create new road infrastructure north of the Greenbelt - north of Barrie to Sarnia.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
268. Create new road infrastructure from Woodstock to Alliston (road / rail).	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
269. Create new road infrastructure from the Kitchener / Waterloo area to King City; York Region to Kitchener.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
270. Create new road infrastructure from Highway 400 to Sarnia / Fort Erie.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
271. Create new road infrastructure around Highway 9.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
272. Connect big industries (but do not travel through small communities).	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
273. North-south linkage (e.g. Highway 401 - north to Georgetown); A Georgetown to Barrie linkage.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
274. Create a new Brampton-west corridor.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
275. Create a signature escarpment crossing.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
276. Expand Emergency Detour Routes (better options / signs).	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.
277. Keep highways out of agricultural areas.	✓			To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.

<p><b>Transportation Alternative</b></p> <p><i>* These alternatives will be re-ordered so that similar alternatives are listed together. This will be done in conjunction with addressing the Ministry's comments on the draft report.</i></p>	<p>Potential to Substantively Contribute to Addressing the Identified Transportation Problems &amp; Opportunities</p>	<p>Should be Further Considered as Part of the GTA West Study</p>	<p>Should be Pursued as Part of Separate Study / Initiative</p>	<p>Rationale</p>
<p>278. The Southern Ontario Gateway Council has flagged the interchange at Highway 401 and Highway 400 as a problem. The GTA West Corridor could be an important strategic alternative to the unpredictable flow in that area.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>279. Construct a new multi-use corridor for transit, automobiles, and trucks. Or construct a new corridor dedicated to truck traffic - this corridor should not be a toll highway since the cost is prohibitive.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>280. New GPL are tolled.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>281. Consider truck way (northern E-W redundant connection) along a new GTA West corridor.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>282. Government to interpret Greenbelt &amp; Escarpment Policies to better allow linear facilities such as new highways.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>283. Dedicated truck lanes with minimum truck volume requirements.</p>	<p>✓</p>			<p>To be considered as potentially contributing to addressing the study area's inter-regional transportation problems and opportunities.</p>
<p>284. Far north route from Hwy 6 to Hwy 400 north of King Road (outside the study area) and possible extension from Hwy 6 south to Hwy 401.</p>		<p>✓</p>		<p>May be considered during route planning stage if freeway solution is selected. Not pursued at this stage of the study.</p>
<p>285. Super Hwy 401 with bypass / twinning as required ~ connect GTA-W (Milton) to GTA West near Hwy 6.</p>		<p>✓</p>		<p>May be considered during route planning stage if freeway solution is selected. Not pursued at this stage of the study.</p>
<p>286. The GTA West Study should allow for extending the Corridor eastward to provide good highway connectivity to Markham and must give serious consideration to extending the GTA West Corridor beyond Highway 404 to the Region of Durham.</p>		<p>✓</p>		<p>Expansions to the study area may be considered if they will result in decreases to traffic volumes within the study area. Not pursued at this stage of the study.</p>
<p>287. Direct intra-city traffic around Guelph as opposed to through it (i.e. Highway 7).</p>		<p>✓</p>		<p>May be considered during route planning stage if freeway solution or roadway expansion is selected. Not pursued at this stage of the study.</p>
<p>288. Reroute Highway 7 north and link to a new highway to Kitchener.</p>		<p>✓</p>		<p>May be considered during route planning stage if freeway solution is selected. Not pursued at this stage of the study.</p>
<p>289. The study team should ensure that the problem statements include previously identified needs such as a connection of Highway 6 to Highway 24 and Highway 7 to Kitchener.</p>		<p>✓</p>		<p>The alternatives are assessed based on the study area's inter-regional transportation problems and opportunities in the draft Problems and Opportunities Report.</p>
<p>290. If a new road is needed put it no further north than the King / Vaughan Line.</p>			<p>✓</p>	<p>Route of new corridor will be determined later in the study - assessment will include transportation, environmental, community and economic factors.</p>

<p><b>Transportation Alternative</b></p> <p><i>* These alternatives will be re-ordered so that similar alternatives are listed together. This will be done in conjunction with addressing the Ministry's comments on the draft report.</i></p>	<p>Potential to Substantively Contribute to Addressing the Identified Transportation Problems &amp; Opportunities</p>	<p>Should be Further Considered as Part of the GTA West Study</p>	<p>Should be Pursued as Part of Separate Study / Initiative</p>	<p>Rationale</p>
<p>291. Create a highway linking Barrie with Guelph, which continues south to the Niagara border.</p>			<p>✓</p>	<p>This is beyond the scope of the current study, which seeks to improve connections in the GTA West study area.</p>
<p>292. Create a route that connects existing / abandoned quarries.</p>			<p>✓</p>	<p>Route of new corridor will be determined later in the study - current focus is on connecting communities.</p>
<p>293. The study team should consider a new road-based structure in Lake Ontario.</p>			<p>✓</p>	<p>Not expected to substantively contribute to addressing inter-regional transportation problems and opportunities.</p>
<p>294. Place freeway in townline tunnel.</p>			<p>✓</p>	<p>Route of new corridor is an implementation issue, which will be addressed later in the study. Tunnelling for a new freeway would likely be cost prohibitive.</p>
<p>295. "The SWEEP" (Strategic West Economic Expressway Project) - the Golden Horseshoe via Hwy 400 to Niagara border via Milton.</p>			<p>✓</p>	<p>This idea extends beyond the study area for this study. It is possible that if the recommendation for both this study and the GTA West study is a new corridor, the combination of the two recommendations would represent something similar to "The Sweep."</p>
<p>296. Concern from the southern portion of Wellington County regarding the location of the GTA West corridor and whether access would be provided to / from the smaller towns.</p>			<p>✓</p>	<p>Route of new corridor and access points is an implementation issue, which will be addressed later in the study. The purpose of a new corridor would be to provide additional capacity in areas with forecast capacity constraints for inter-regional travel.</p>

Table B-3: High Level Assessment of Groups #1 and #2 Alternatives

<p><b>FACTOR/CRITERIA</b></p>	<p><b>Group 1-Optimize Existing Network</b>  <b>Includes Roadway TSM / TDM:</b> Ramp Metering System (RMS), Variable Message Signs (VMS) to notify motorists of freeway conditions, Lane Control Signs (LCS) (i.e., speed harmonization), Incident Management, employee sponsored and provincial TDM initiatives <b>AND</b>  <b>Improved Transit/Rail Services:</b> Increased service frequency, fare integration, bus lanes on shoulders during peak periods, improved access to stations and incorporation of active transportation.</p>	<p><b>Group 2 – New/Improved Non-Roadway Infrastructure</b>  <b>Includes Transit Expansion:</b> Local transit (expand Zum, rapid transit on freeways and major arterial roads), BRT (links between Urban Growth Centres) <b>AND</b>  <b>Includes Rail Expansion:</b> GO Transit service (new service between Urban Growth Centres, service extension between Milton/Cambridge, Guelph/Waterloo) and regional rail service (i.e. new service from Bolton to Union Station and expansion along Georgetown corridor) <b>AND</b>  <b>Includes Inter-regional Transit Hubs:</b> Locations where transit and GO connect - expand bike and car parking lots.                      Includes Improvements to Rail Freight (which would lead to 10% diversion from truck to rail)</p>
<p><b>Factor: Community</b></p>		
<p><b>Existing and planned future land use and growth</b>                      Support for existing and planned future land use and growth including recognition of growth management plans and policies as articulated in the provincial policies (e.g., Provincial Policy Statement (PPS), Growth Plan for the Greater Golden Horseshoe (Growth Plan), Greenbelt Plan, , Niagara Escarpment Plan) and municipal official plans.</p>	<p>Supports Government Policy in optimizing the use of existing infrastructure.                      No change to footprint through NE Plan or Greenbelt Plan areas.                      This alternative does not provide sufficient improvements to the interregional transportation system to address goods movement linkages between intermodal facilities. Nor does it provide sufficient improvement to connections to major urban areas or employment lands. This alternative has limited ability to accommodate planned future growth and development pressures in Peel and York Regions.                      Does not provide increased goods movement linkages among intermodal facilities or communities in the Greater Golden Horseshoe (GGH).</p>	<p>Supports Government Policy in optimizing the use of existing infrastructure.                      Relatively minor change to footprint through NE or Greenbelt Plan areas.                      Has some potential to improve i connections to major urban areas or employment lands.                      This alternative has limited ability to accommodate planned future growth and development pressures in Peel and York Regions.                      Does not provide increased goods movement linkages among intermodal facilities or communities in the GGH.                      Inter-regional transit hubs can result in positive land use impacts because they tend to attract more accessible development patterns.                      Overall increase in transportation options may benefit those who are physically, economically and socially disadvantaged.                      Potential for improved walking and cycling connections.</p>
<p><b>Community Features</b>                      Potential to impact community features (i.e., land use, communities and resources).</p>	<p>Minimizes footprint impacts to community features and resources.</p>	<p>Has some potential to impact community features and resources in built-up areas where corridors are widened to accommodate transit or rail, or at transit hubs. These could include direct displacement and access impacts to commercial land uses, residential neighborhoods and community features adjacent to existing corridors.</p>
<p><b>Fragmentation of agricultural lands</b>                      Potential fragmentation of agricultural lands and estimated area/description of loss of agricultural lands.</p>	<p>Minimizes footprint impacts (i.e., fragmentation and loss of Class 1 land) in agricultural areas.</p>	<p>Has minimal potential to fragment agricultural lands. Fringe impacts may occur in agricultural areas where corridor widening is required.</p>
<p><b>Cultural Features</b>                      Potential to impact cultural features (i.e., properties of cultural heritage and archaeological significance (including above ground resources over 40 years of age).</p>	<p>Minimizes impacts to built heritage features that are located adjacent to existing roads. Low potential to impact archaeological resources or cultural landscapes based on minimal change to footprint.</p>	<p>Some potential to impact built heritage features that are located adjacent to existing roads and rail where wider footprint is needed to add transit, rail or inter-regional transit hub. Low potential to impact archaeological resources or cultural landscapes because most areas have been previously disturbed.</p>
<p><b>First Nations</b>                      Potential to impact lands of cultural or historical significance to First Nations.</p>	<p>Minimizes impacts to cultural resources of historical significance to First Nations. This will be confirmed through discussions with First Nations as part of the EA process.</p>	<p>Some potential impact to cultural resources of historical significance to First Nations. This will be confirmed through discussions with First Nations as part of the EA process.</p>

Table B-3: High Level Assessment of Groups #1 and #2 Alternatives

<p><b>FACTOR/CRITERIA</b></p>	<p><b>Group 1-Optimize Existing Network</b>  <b>Includes Roadway TSM / TDM:</b> Ramp Metering System (RMS), Variable Message Signs (VMS) to notify motorists of freeway conditions, Lane Control Signs (LCS) (i.e., speed harmonization), Incident Management, employee sponsored and provincial TDM initiatives <b>AND</b>  <b>Improved Transit/Rail Services:</b> Increased service frequency, fare integration, bus lanes on shoulders during peak periods, improved access to stations and incorporation of active transportation.</p>	<p><b>Group 2 – New/Improved Non-Roadway Infrastructure</b>  <b>Includes Transit Expansion:</b> Local transit (expand Zum, rapid transit on freeways and major arterial roads), BRT (links between Urban Growth Centres) <b>AND</b>  <b>Includes Rail Expansion:</b> GO Transit service (new service between Urban Growth Centres, service extension between Milton/Cambridge, Guelph/Waterloo) and regional rail service (i.e. new service from Bolton to Union Station and expansion along Georgetown corridor) <b>AND</b>  <b>Includes Inter-regional Transit Hubs:</b> Locations where transit and GO connect - expand bike and car parking lots.  Includes Improvements to Rail Freight (which would lead to 10% diversion from truck to rail)</p>
<p><b>Community SUMMARY</b></p>	<p><u>Advantages</u></p> <ul style="list-style-type: none"> <li>• Supports Government Policy in optimizing use of existing infrastructure</li> <li>• Minimizes impacts to Niagara Escarpment and Greenbelt lands</li> <li>• Minimizes impacts to community features little to no impact on agricultural lands, built heritage, and archaeological resources</li> </ul> <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> <li>• Does not sufficiently support planned future land use or growth</li> <li>• Limited ability to provide improved transit connections between Urban Growth Centres (i.e., Vaughan Corporate Centre, Downtown Brampton, Downtown Milton and Downtown Guelph)</li> <li>• Does not sufficiently address connections to “employment lands”.</li> <li>• Does not provide increased goods movement linkages among intermodal facilities or communities in the GGH</li> </ul>	<p><u>Advantages</u></p> <ul style="list-style-type: none"> <li>• Supports the Government Policy for optimizing use of existing infrastructure</li> <li>• Relatively minor impacts to Niagara Escarpment and Greenbelt lands</li> <li>• Can result in positive land use impacts as transit hubs tend to attract more accessible development patterns</li> <li>• Overall increase in transportation options may benefit those who are physically, economically and socially disadvantaged</li> <li>• Potential for improved walking and cycling connections</li> <li>• Some potential to provide improved connections between Urban Growth Centres (i.e., Vaughan Corporate Centre, Downtown Brampton, Downtown Milton and Downtown Guelph)</li> <li>• Little to no impact on agricultural lands, archaeological resources, and cultural landscapes</li> </ul> <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> <li>• Limited ability to support planned future land use or growth</li> <li>• Does not sufficiently address linkages to “employment lands”</li> <li>• Does not provide increased goods movement linkages among intermodal facilities and communities in the GGH</li> <li>• Some potential to impact community features and resources in built-up areas where corridors are widened to accommodate transit or rail, or at transit hubs</li> </ul>

Table B-3: High Level Assessment of Groups #1 and #2 Alternatives

FACTOR/CRITERIA	<b>Group 1</b> <b>Includes Roadway TSM / TDM:</b> Ramp Metering System (RMS), Variable Message Signs (VMS) to notify motorists of freeway conditions, Lane Control Signs (LCS) (i.e., speed harmonization), Incident Management, employee sponsored and provincial TDM programs <b>AND Improved Transit/Rail Services:</b> Increased service frequency, fare integration, bus lanes on shoulders during peak periods, improved access to stations and incorporation of active transportation.	<b>Group 2</b> <b>Includes Transit Expansion:</b> Local transit (expand Zum, rapid transit on freeways and major arterial roads), BRT (links between Urban Growth Centres) <b>AND</b> <b>Includes Rail Expansion:</b> GO service (new service between Urban Growth Centres, service extension between Milton/Cambridge, Guelph/Waterloo) and regional rail service (i.e. new service from Bolton to Union Station and expansion along Georgetown corridor) <b>AND</b> <b>Includes Inter-regional Transit Hubs:</b> Locations where transit and GO connect - expand bike and car parking lots.
<b>Factor: Economy</b>		
<b>Industry and trade</b> Qualitative description of how industry and trade are supported.	It is difficult to add any goods movement capacity through TDM. However, TSM initiatives such as Freeway Traffic Management System (FTMS) offers opportunities to improve the efficiency of the existing network. .  Does not fully address the nature of goods movement in and around the GTA, which is heavily oriented to “Just in Time” and short-haul delivery.  Limited ability to support increased trade through lack of improvement to movement of goods.  Limited ability to support existing or future industry.	Some ability to support increased trade over longer distances, as well as existing and future industry through rail expansion. However, the nature of goods movement in and around the GTA is heavily oriented to “Just In Time” and short-haul delivery.
<b>Tourism and recreation</b> Qualitative description of how provincial / regional / municipal tourism and recreation are supported.	Limited ability to service provincial/regional or municipal tourism.  Low potential to improve service for traffic going to “cottage country” or travelling around GTA to places east and west of Toronto.	Some potential for improved service to existing tourist facilities on rail or transit lines. Limited ability to service provincial or regional tourism for longer distance travel (i.e., traffic going to “cottage country” or travelling around GTA to places east and west of Toronto).
<b>Economic and agricultural development</b> Qualitative description of how the alternative supports or impacts agricultural operations and plans for future development.	Does not impact (or support) agricultural operations or plans for future development.	Minimal impacts to agricultural operations or plans for future development.
<b>Economy SUMMARY</b>	<u>Advantages</u> <ul style="list-style-type: none"> <li>Little to no impacts to agricultural operations</li> </ul> <u>Disadvantages</u>	<u>Advantages</u> <ul style="list-style-type: none"> <li>Some potential to improve service to existing and future industry and to improve trade over longer distances</li> <li>Potential but limited improvement for existing tourism operations</li> <li>Relatively minor impacts to agricultural operations</li> </ul>

	<ul style="list-style-type: none"> <li>• Does not support economic factors associated with industry and trade, tourism or agriculture</li> <li>• Limited ability to support increased trade through lack of improvement to movement of goods</li> <li>• Limited ability to support existing or future industry</li> <li>• Limited ability to service provincial/regional or municipal tourism or improve service for traffic going to areas beyond the GTA</li> <li>• Limited ability to improve connections between Urban Growth Centres</li> </ul> <p>Does not fully address the nature of goods movement around the GTA, which is heavily oriented to “Just in Time” and short-haul delivery</p>	<ul style="list-style-type: none"> <li>• Improves connections between Urban Growth Centres</li> </ul> <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> <li>• Does not fully address the nature of goods movement, which is heavily oriented to “Just in Time” and short-haul delivery</li> </ul>
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Table B-3: High Level Assessment of Groups #1 and #2 Alternatives

<p><b>FACTOR/CRITERIA</b></p>	<p><b>Group 1</b>  <b>Includes Roadway TSM / TDM:</b> Ramp Metering System (RMS), Variable Message Signs (VMS) to notify motorists of freeway conditions, Lane Control Signs (LCS) (i.e., speed harmonization), Incident Management, employee sponsored and provincial TDM programs <b>AND Improved Transit/Rail Services:</b> Increased service frequency, fare integration, bus lanes on shoulders during peak periods, improved access to stations and incorporation of active transportation.</p>	<p><b>Group 2</b>  <b>Includes Transit Expansion:</b> Local transit (expand Zum, rapid transit on freeways and major arterial roads), BRT (links between Urban Growth Centres) <b>AND</b>  <b>Includes Rail Expansion:</b> GO service (new service between Urban Growth Centres, service extension between Milton/Cambridge, Guelph/Waterloo) and regional rail service (i.e. new service from Bolton to Union Station and expansion along Georgetown corridor) <b>AND</b>  <b>Includes Inter-regional Transit Hubs:</b> Locations where transit and GO connect - expand bike and car parking lots.</p>
<p><b>Natural Environment</b></p>		
<p><b>Environmental protection policies</b>                      Support for or consistency with federal, provincial and municipal environmental protection policies (e.g. Greenbelt Plan, NEP, Oak Ridges Moraine (ORM) Conservation Plan).</p>	<p>Supports environmental federal, provincial and municipal environmental protection policies by minimizing footprint impacts.                      Supports the PPS on the protection of natural heritage, agricultural and cultural heritage/ archaeological resources.                      This alternative supports the Greenbelt policy, the NEP and the ORM in the protection of ecological features and functions..</p>	<p>Typically lower environmental impacts are associated with widening corridors (for transit or rail) through areas that are protected by environmental policies because of smaller footprint impacts and minimal fragmentation. Relatively minor impacts could occur where transit or rail improvements result in widening through NEP or Greenbelt Plan designated areas.                      This alternative supports the Greenbelt policy, the NEP, and the ORM in the protection of ecological features and functions..</p>
<p><b>Natural features and functions</b>                      Qualitative analysis of:</p> <ul style="list-style-type: none"> <li>• Potential impacts to major aquatic ecosystems (number or description of potentially impacted watercourses)</li> <li>• Potential impacts to major terrestrial ecosystems (area or description of terrestrial habitat potentially affected)</li> <li>• Potential impacts to sensitive groundwater features (qualitative description)</li> <li>• Potential impacts to areas that are sensitive to changes in surface water (qualitative description)</li> <li>• Description of potential to avoid or minimize impacts to environmental features.</li> </ul> <p><b>NOTE: Potential impacts to the Greenbelt, NEP and Oak Ridges Moraine (ORM) are addressed within environmental protection policies (see above)</b></p>	<p>Minimizes impacts to natural features and functions by minimizing footprint impacts.</p>	<p>Some impacts are expected to natural features and functions at corridors that require widening for increased transit or rail service. Most widening impacts are expected to be mitigated.</p>
<p><b>Greenhouse Gas and Air Quality</b>                      Qualitative assessment (using quantitative inputs) of:</p> <ul style="list-style-type: none"> <li>• Potential changes in greenhouse gas emissions and criteria air contaminants (CACs).</li> <li>• Potential changes in air quality on a regional level.</li> </ul>	<p>Minimal change to air quality, except where changes in frequency of transit or rail service would occur. Increased transit frequency (i.e., more buses or trains running on same routes) has relatively minor potential to increase emissions.</p>	<p>Widening corridors (for transit or rail) have some potential to increase emissions along existing major travel corridors where built-up areas (i.e., sensitive receptors) are located. The additional emissions are the result of increased volumes. Proximity to receptors increases exposure.</p>
<p><b>Resource Consumption</b>                      Ability to minimize resource consumption and potential for mineral and aggregate resource issues.</p>	<p>Minimal resource consumption or potential for mineral and aggregate resource related issues.</p>	<p>Widening alternatives potentially minimizes resource consumption and mineral and aggregate resource related issues.</p>

**Table B-3: High Level Assessment of Groups #1 and #2 Alternatives**

<p><b>Environmental SUMMARY</b></p>	<p><u>Advantages</u></p> <ul style="list-style-type: none"> <li>• Supports environmental protection policies</li> <li>• Minimizes footprint impacts at natural features or to natural functions</li> <li>• Minimizes impacts to greenhouse gas emissions (?) and air quality</li> <li>• Minimizes resource consumption</li> </ul>	<p><u>Advantages</u></p> <ul style="list-style-type: none"> <li>• Supports environmental protection policies</li> <li>• Potentially minimizes resource consumption</li> <li>• Minimizes footprint impacts at natural features or to natural functions where widening or new alignment is required</li> </ul> <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> <li>• Potential for minor impacts to air quality through built-up areas</li> </ul>																								
<p><b>FACTOR/CRITERIA</b></p>	<p>Group 1 Includes Roadway TSM / TDM (e.g., Ramp Metering System (RMS), Variable Message Signs (VMS), Lane Control Signs (LCS), Incident Management, improved provincial TDM programs) and Improved Transit/Rail Services (e.g., increased service frequency, fare integration, bus lanes on shoulders during peak periods, improved access to stations and incorporation of active transportation)</p>	<p>Group 2 Includes Group 1 and Transit and Rail Expansion (e.g., expand Zum, rapid transit on freeways and major arterial roads, rapid transit links, new GO services and regional rail services, inter-regional bus services, inter-regional transit hubs, etc.)</p>																								
<p><b>Factor: Transportation</b></p>																										
<p><b>Efficient Movement of People</b> <b>Potential to support the efficient movement of people between communities and regions</b></p> <p><b>Peak period performance of key inter-regional corridors – forecast volume/capacity issues at critical screenlines</b></p> <p><b>Potential to provide for higher order inter-regional transportation corridors</b></p> <p><b>Percentage of inter-regional system operating better than LOS D (auto lane km)</b></p> <p><b>Shift in use of local/regional roadways to inter-regional transportation system</b></p> <p><b>Reduction of auto hours on inter-regional transportation system operating at LOS D or worse</b></p>	<p>Limited improvement in efficiency of people movement. TDM/TSM measures will provide a limited reduction in travel demand and limited improvement in transportation system operations.</p> <p>No significant improvement (WB = westbound, EB = eastbound, V/C = volume / capacity)</p> <table border="0"> <tr> <td>East of Guelph WB</td> <td>- 0.92 V/C</td> </tr> <tr> <td>West of Milton WB</td> <td>- 0.99 V/C</td> </tr> <tr> <td>East of Winston Churchill (WC) Blvd WB</td> <td>- 0.77 V/C</td> </tr> <tr> <td>East of Hwy 10 WB</td> <td>- 0.89 V/C</td> </tr> <tr> <td>East of Hwy 50 WB</td> <td>- 0.80 V/C</td> </tr> <tr> <td>West of Hwy 400 WB</td> <td>- 1.09 V/C</td> </tr> </table> <p>(refer to notes section located on page 9 for V/C interpretation)</p> <p>No new higher order inter-regional transportation corridors</p> <p>Approximately 30% of the inter-regional transportation road system operate better than LOS D (good operating conditions)</p> <p>Approximately 35% of the auto traffic uses the inter-regional system - representing limited improvement.</p> <p>Limited improvement</p>	East of Guelph WB	- 0.92 V/C	West of Milton WB	- 0.99 V/C	East of Winston Churchill (WC) Blvd WB	- 0.77 V/C	East of Hwy 10 WB	- 0.89 V/C	East of Hwy 50 WB	- 0.80 V/C	West of Hwy 400 WB	- 1.09 V/C	<p>Limited improvement in efficiency of people movement. Non-roadway initiatives will provide improved transit linkages and services between population and employment centres, including BRT, GO Transit and connections for people movement.</p> <p>No significant improvement (WB = westbound, EB = eastbound, V/C = volume / capacity)</p> <table border="0"> <tr> <td>East of Guelph WB</td> <td>- 0.90 V/C</td> </tr> <tr> <td>West of Milton WB</td> <td>- 0.98 V/C</td> </tr> <tr> <td>East of Winston Churchill (WC) Blvd WB</td> <td>- 0.76 V/C</td> </tr> <tr> <td>East of Hwy 10 WB</td> <td>- 0.88 V/C</td> </tr> <tr> <td>East of Hwy 50 WB</td> <td>- 0.79 V/C</td> </tr> <tr> <td>West of Hwy 400 WB</td> <td>- 1.08 V/C</td> </tr> </table> <p>(refer to notes section located on page 9 for V/C interpretation)</p> <p>Provides new higher order inter-regional transit corridors</p> <p>Approximately 30% of the inter-regional transportation road system operate better than LOS D (good operating conditions)</p> <p>Approximately 35% of the auto traffic uses the inter-regional system - representing limited improvement.</p> <p>Limited improvement</p>	East of Guelph WB	- 0.90 V/C	West of Milton WB	- 0.98 V/C	East of Winston Churchill (WC) Blvd WB	- 0.76 V/C	East of Hwy 10 WB	- 0.88 V/C	East of Hwy 50 WB	- 0.79 V/C	West of Hwy 400 WB	- 1.08 V/C
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**Table B-3: High Level Assessment of Groups #1 and #2 Alternatives**

<p><b>Efficient Movement of Goods</b>  <b>Potential to support efficient movement of goods between urban growth centres, international gateways, economic centres and regional inter-modal facilities and communities</b></p> <p><b>Peak Period performance of key inter-regional corridors – forecast volume/capacity issues at critical screenlines</b></p> <p><b>Potential to provide linkages between inter-modal facilities and provide for higher order goods movement</b></p> <p><b>Percentage of inter-regional system operating better than LOS D (vehicle lane km)</b></p> <p><b>Shift in use of local/regional roadways to inter-regional transportation system</b></p> <p><b>Reduction of truck hours on inter-regional transportation system operating at LOS D or worse</b></p>	<p>Limited improvement in efficiency of goods movement. TDM, TSM and incident management strategies will provide a limited improvement in traffic operations on the inter-regional transportation network, which will allow trucks to better access communities, employment areas and inter-modal facilities in Brampton and Vaughan.</p> <p>No significant improvement (WB = westbound, EB = eastbound, V/C = volume / capacity)                  East of Guelph WB - 0.92 V/C                  West of Milton WB - 0.99 V/C                  East of WC Blvd WB - 0.77 V/C                  East of Hwy 10 WB - 0.89 V/C                  East of Hwy 50 WB - 0.80 V/C                  West of Hwy 400 WB - 1.09 V/C</p> <p>No new higher order goods movement linkages</p> <p>Approximately 19% of the inter-regional transportation road sections operate better than LOS D (good operating conditions)</p> <p>Approximately 36% of the vehicle traffic uses the inter-regional system – representing limited improvement</p> <p>Limited improvement</p>	<p>Limited improvement in efficiency of goods movement. Non-roadway initiatives will help to improve traffic operations and allow trucks to better access communities, employment areas and inter-modal facilities in Brampton and Vaughan.</p> <p>No significant improvement (WB = westbound, EB = eastbound, V/C = volume / capacity)                  East of Guelph WB - 0.90 V/C                  West of Milton WB - 0.98 V/C                  East of WC Blvd WB - 0.76 V/C                  East of Hwy 10 WB - 0.88 V/C                  East of Hwy 50 WB - 0.79 V/C                  West of Hwy 400 WB - 1.08 V/C</p> <p>No new higher order goods movement linkages</p> <p>Approximately 19% of the inter-regional transportation road sections operate better than LOS D (good operating conditions)</p> <p>Approximately 36% of the vehicle traffic uses the inter-regional system - representing limited improvement</p> <p>Limited improvement</p>								
<p><b>2031 PM Peak Hour Conditions</b></p> <table border="1"> <tr><td style="background-color: #90EE90;"></td><td>LOS C</td></tr> <tr><td style="background-color: #FFFF00;"></td><td>LOS D</td></tr> <tr><td style="background-color: #FF00FF;"></td><td>LOS E</td></tr> <tr><td style="background-color: #FF0000;"></td><td>LOS F</td></tr> </table>		LOS C		LOS D		LOS E		LOS F		
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	LOS E									
	LOS F									

**Table B-3: High Level Assessment of Groups #1 and #2 Alternatives**

<p><b>System reliability/redundancy</b>  <b>Potential to support system reliability and provide redundancy for travel (people and goods) between regions and communities during adverse conditions</b></p> <p><b>Availability of alternate routes/facilities for inter-regional transportation between regions, communities and terminals</b></p> <p><b>Potential to improve transportation system reliability</b></p>	<p>Limited support for system reliability and redundancy</p> <p>No new alternate routes for inter-regional transportation</p> <p>Minor improvement to transportation system reliability through optimization of system and improved transit services</p>	<p>Limited support for system reliability and redundancy</p> <p>Provides new/expanded transit and rail services for inter-regional transportation; no new roadway routes</p> <p>Minor improvement to transportation system reliability through optimization of system and moderate improvement for people movement through new/expanded transit services</p>
<p><b>Safety</b>  <b>Potential to improve traffic safety based on opportunity to reduce congestion on the area road network</b></p> <p><b>Potential to improve response times for emergency service providers due to reduced congestion on the inter-regional road network (average speed)</b></p> <p><b>Potential to reduce collisions due to improved network LOS and decreased conflicts between travel modes</b></p>	<p>Limited improvement in transportation system operations and safety.</p> <p>Minor safety benefits from TDM/TSM and incident management strategies (average speed = 49 km/h)</p> <p>Minor potential to reduce collisions with optimization and limited improvement in network LOS</p>	<p>Limited improvement in transportation system operations and safety.</p> <p>Minor safety benefits from TDM/TSM and minor reduction in truck traffic (average speed = 49 km/h)</p> <p>Minor potential to reduce collisions with optimization, minor reduction in truck traffic and limited improvement in network LOS</p>
<p><b>Modal integration, balance and choice for movement of people (commuters, recreation/tourist)</b>  <b>Potential to improve modal integration, balance and choice for person trips between communities, employment centers and major transit hubs</b></p> <p><b>Potential to increase attractiveness/effectiveness of existing, new and improved transit services</b></p> <p><b>Provision of higher order inter-regional transit services</b></p> <p><b>Provision of linkages between inter-regional and regional/community (local) transit systems</b></p> <p><b>Bus operational performance on inter-regional road network</b></p> <p><b>Availability/provision of alternate travel modes for tourism/recreational travel</b></p> <p><b>Provision of/allowance for active transportation measures (e.g., bike lanes, bike racks on buses/trains)</b></p>	<p>Limited potential to improve modal integration, balance and choice for people movement</p> <p>Minor potential to increase attractiveness/effectiveness of transit, through increased frequency and reliability</p> <p>No new higher order inter-regional transit services</p> <p>Improves integration between inter-regional and local transit (scheduling, fares, etc.)</p> <p>Limited improvement to bus operational performance through minor improvements to inter-regional road network operations</p> <p>No new alternate travel modes for tourism/recreational travel</p> <p>Improves accessibility of transit stations for active transportation, including access to facilities, storage amenities at facilities and on transit vehicles</p>	<p>Major potential to improve modal integration, balance and choice for people movement</p> <p>Major potential to increase attractiveness/effectiveness of transit, through new services and increased frequency and reliability</p> <p>Provides for new higher order inter-regional transit services</p> <p>Improves integration between inter-regional and local transit (scheduling, fares, etc.), on existing and new/expanded services</p> <p>Limited improvement to bus operational performance through minor improvements to inter-regional road network operations</p> <p>Provides new alternate travel modes for tourism/recreational travel</p> <p>Improves accessibility of transit stations for active transportation, including access to facilities, storage amenities at facilities and on transit vehicles, on existing and new/expanded services</p>

**Table B-3: High Level Assessment of Groups #1 and #2 Alternatives**

<p><b>Modal integration, balance and choice for movement of goods</b>  <b>Potential to improve modal integration, balance and choice for goods movement between ports and terminals, communities and employment centres.</b></p> <p><b>Potential to improve accessibility of inter-modal centres, ports and terminals</b></p>	<p>Limited potential to improve modal integration and choice for goods movement</p> <p>Minor improvement to inter-regional road network operations improves accessibility of inter-modal facilities</p>	<p>Minor potential to improve modal integration and choice for goods movement</p> <p>Minor improvement to inter-regional road network operations and minor reduction in truck traffic improve accessibility of inter-modal facilities</p>
<p><b>Linkages to Population and Employment Centers</b>  <b>Potential to improve accessibility to Urban Growth Centers, Gateway Economic Centres and Gateway Economic Zones for people and goods movement based on higher order network continuity and connectivity</b></p> <p><b>Availability/provision of higher order linkages between Urban Growth Centers, Gateway Economic Centres and Gateway Economic Zones</b>  <b>Accessibility of Urban Growth Centers, Gateway Economic Centres and Gateway Economic Zones</b></p>	<p>Limited potential to improve accessibility to Urban Growth Centres for people and goods movement</p> <p>No new linkages between Urban Growth Centres</p> <p>Limited improvement with optimization of the network and improved frequency and integration on existing transit services</p>	<p>Moderate potential to improve non-roadway accessibility between Urban Growth Centres for people movement</p> <p>New higher order linkages to Urban Growth Centres and to the GTA</p> <p>Improves transit accessibility to Urban Growth Centres and to the GTA with new/expanded transit services, optimization of the network and improved existing transit services</p>
<p><b>Recreation and Tourism Travel</b>  <b>Potential to support recreation and tourism travel within and to/from the study area</b></p> <p><b>Directness of routes between population centers, international gateways and tourist/recreation destinations</b></p> <p><b>Peak period (summer/weekend) transportation system performance on key inter-regional corridors – forecast volume/capacity issues at critical screenlines</b></p> <p><b>Percentage of inter-regional system operating better than LOS D (vehicle lane km)</b>  <b>Diversion of summer recreational trips from local and regional roadways.</b></p>	<p>Limited potential to support recreation and tourism travel</p> <p>No potential to improve directness of routes to tourist/ recreation destinations.</p> <p>Limited improvement (WB = westbound, EB = eastbound, V/C = volume / capacity)              East of Guelph WB - 1.01 V/C              West of Milton WB - 1.09 V/C              East of WC Blvd WB - 0.85 V/C              East of Hwy 10 WB - 0.97 V/C              East of Hwy 50 WB - 0.88 V/C              West of Hwy 400 WB - 1.15 V/C</p> <p>Approximately 12% of the inter-regional transportation road sections operate better than LOS D (good operating conditions)</p> <p>Limited potential to divert summer/ recreational trips from local/ regional roads with optimization of inter-regional network and improved transit services</p>	<p>Moderate potential to support recreation and tourism travel</p> <p>Moderate potential to improve directness of transit routes and services to tourist destinations within and outside of the study area, including the GTA ; limited improvements for travel to tourist destinations in northern Ontario</p> <p>Limited improvement (WB = westbound, EB = eastbound, V/C = volume / capacity)              East of Guelph WB - 0.99 V/C              West of Milton WB - 1.08 V/C              East of WC Blvd WB - 0.84 V/C              East of Hwy 10 WB - 0.96 V/C              East of Hwy 50 WB - 0.87 V/C              West of Hwy 400 WB - 1.14 V/C</p> <p>Approximately 13% of the inter-regional transportation road sections operate better than LOS D (good operating conditions)</p> <p>Moderate potential to divert summer/ recreational trips from local/regional roads; some shift to transit and some to inter-regional roads with minor reduction in truck traffic, with new/expanded transit services , improved existing transit and optimization of inter-regional network</p>

Table B-3: High Level Assessment of Groups #1 and #2 Alternatives

<p><b>Constructability</b>  <b>Potential to ease implementation considering: relative costs; relative property impacts; feasibility/difficulty; and requirements environmental mitigation</b></p>	<p>No significant constructability issues; no new infrastructure requirements beyond MTO planned MTO planned works</p>	<p>Minor constructability issues associated with new transit services; no major infrastructure requirements beyond MTO planned works</p>
<p><b>Transportation SUMMARY</b></p>	<p><u>Advantages</u></p> <ul style="list-style-type: none"> <li>• Optimizes use of existing infrastructure</li> <li>• No significant constructability issues; minor delays on inter-regional road network beyond MTO programmed works</li> <li>• Limited improvement to efficiency of people and goods movement</li> <li>• Limited improvement to transportation system operations, reliability, redundancy and safety</li> <li>• Minor potential to improve modal integration for people and goods movement</li> <li>• Limited improvement to accessibility of Urban Growth Centres</li> <li>• Limited potential to support recreation and tourism travel</li> </ul> <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> <li>• Fails to address transportation problems and opportunities in the GTA West Preliminary Study Area</li> </ul>	<p><u>Advantages</u></p> <ul style="list-style-type: none"> <li>• Major potential to improve modal integration for people movement</li> <li>• Significant improvement to transit linkages between Urban Growth Centres</li> <li>• Moderate potential to improve recreation and tourism travel, with new and improved transit services</li> <li>• Minor constructability issues; minor delays on inter-regional road network beyond MTO programmed works</li> <li>• Limited improvement to efficiency of people and goods movement</li> <li>• Limited improvement to transportation system operations, reliability, redundancy and safety</li> <li>• Limited potential to improve modal integration for goods movement</li> </ul>

**Notes:**

Congested conditions occur at a vehicle/capacity (v/c) ratio  $\geq 0.90$

Congestion Type	Level of Service	Approximate v/c (volume/capacity)	Description
Minor	LOS A-C	$< 0.79$	Non-recurring congestion*
Moderate	LOS D	$0.80 \leq 0.89$	Unstable conditions
Major	LOS E-F	$\geq 0.90$	Congested conditions (stop-and-go)

\*Traffic conditions may be adversely affected by incidents, collisions, weather and construction/ maintenance activities

“Higher order transportation corridor” is a new corridor separate from existing Rights-of-Way that could be used for one or several transportation modes (e.g., automobile, Bus Rapid Transit, Light Rapid Transit, etc.)

Table B-4: High Level Assessment of Group #3 Alternatives

FACTOR/CRITERIA	Alternative 3-1 Freeway Widening Widen Highways 401, 407, 410, 400 and 427 extension	Alternative 3-2 Freeway and Arterial Road Widening Widen Highways 401, 407, 410, 400 and 427 extension AND Widen Highway 9 (north of study area), Highway 7 through or construct a bypass around Rockwood, Acton, and Georgetown, Widen Kirby Road, Mayfield Road, Trafalgar Road (RR3) and Charleston Road, Airport Road and Regional Rd 124	Alternative 3-3 Freeway and Arterial Road Widening Widen Highways 401, 407, 410, 400 and 427 extension AND Widen Kirby Road, Mayfield Road and Trafalgar Road (RR 3)
<b>Factor: Community</b>			
<p><b>Existing and planned future land use and growth</b> Support for existing and planned future land use and growth including recognition of growth management plans and policies as articulated in the provincial policies (e.g., PPS, Growth Plan, Greenbelt Plan, NE Plan) and municipal official plans.</p>	<p>Widening existing freeways supports the PPS on optimizing use of existing infrastructure. This alternative includes widening of Highway 401 through designated NEC and Greenbelt lands.</p> <p>This alternative does not sufficiently support planned future land use or growth as identified in the Growth Plan. However, by widening existing highways, the alternative provides some indirect improvement to the connections between Urban Growth Centres (i.e., Vaughan Corporate Centre, Downtown Brampton, Downtown Milton and Downtown Guelph).</p> <p>This alternative has limited ability to accommodate planned future growth and development pressures in Peel and York Regions</p> <p>Nuisance/proximity impacts (increased noise, illumination etc.) may occur in built-up areas.</p>	<p>Widening existing freeways and arterial roads supports the PPS by optimizing the use of existing infrastructure. This alternative has a longer length through designated NEC and Greenbelt lands, along Highway 401, Highway 7, Highway 9, Airport Road and Charleston Side Road.</p> <p>This alternative also crosses the Oak Ridges Moraine along Highway 9.</p> <p>This alternative does not support planned future land use or growth as identified in the Growth Plan. By widening existing highways and municipal roads, the alternative provides improved connections between Urban Growth Centres (i.e., Vaughan Corporate Centre, Downtown Brampton, Downtown Milton and Downtown Guelph). It has limited ability to accommodate planned future growth and development pressures in Peel and York Regions although it does provide improved access to future employment areas in Brampton and Caledon.</p> <p>Some municipal road widening may not be consistent with municipal plans, policies, transportation master plans and/or Official Plans.</p> <p>Nuisance/proximity impacts (increased noise, illumination etc.) may occur in built-up areas.</p>	<p>Widening existing freeways and arterial roads supports the PPS by optimizing the use of existing infrastructure. This alternative includes widening of Highway 401 through designated NEC and Greenbelt lands.</p> <p>This alternative does not support planned future land use or growth as identified in the Growth Plan. However, by widening existing highways and municipal roads, it provides improved connections between Urban Growth Centres. (i.e., Vaughan Corporate Centre, Downtown Brampton, Downtown Milton and Downtown Guelph). It has limited ability to accommodate planned future growth and development pressures in Peel and York Regions although it does provide improved access to future employment areas in Brampton and Caledon.</p> <p>Some municipal road widening may not be consistent with municipal plans, policies, transportation master plans and/or Official Plans.</p> <p>Nuisance/proximity impacts (increased noise, illumination etc.) may occur in built-up areas.</p>
<p><b>Community Features</b> Potential to impact community features (i.e., land use, communities and resources).</p>	<p>Widening existing freeways has some potential to impact community features and resources in built-up areas such as Milton, Mississauga, Brampton, Woodbridge and Vaughan. These include direct displacement and access impacts to commercial land uses, residential neighbourhoods and community features adjacent to existing freeways.</p>	<p>Widening existing freeways and arterial roads has significant potential to negatively impact community features and resources in built-up areas in and around Rockwood, Acton, Georgetown, and Brampton (along Mayfield Road) as well as Stewarttown and Ashgrove (along Trafalgar Road). Potential bypasses would reduce impacts in some communities. This alternative also has potential to negatively impact the communities of Mono Mills, Caledon and Erin, along the segment that uses Highway 9, Airport Road, Charleston Side Road and Regional Road 124. Potential impacts include direct displacement and access impacts to commercial land uses, residential neighbourhoods and community features adjacent to existing roads. These types of direct impacts may be difficult to mitigate.</p>	<p>Widening existing freeways and arterial roads has considerable potential to impact community features and resources in built-up areas such as Milton, Mississauga, Brampton, Woodbridge and Vaughan. Potential bypasses may reduce impacts in some communities. This alternative also has potential to negatively impact community features in Stewarttown and Ashgrove, on Trafalgar Road. Potential impacts include direct displacement and access impacts to commercial land uses, residential neighbourhoods and community features adjacent to existing roads. These types of direct impacts may be difficult to mitigate.</p>
<p><b>Fragmentation of agricultural lands</b> Potential fragmentation of agricultural lands and estimated area/description of loss of agricultural lands.</p>	<p>Widening existing freeways has minimal potential to fragment agricultural lands. Fringe impacts may occur in agricultural areas. This alternative results in minimal loss of agricultural lands along existing freeways.</p>	<p>Widening existing freeways and arterial roads has minimal potential to fragment agricultural lands. Fringe impacts may occur in agricultural areas. This alternative results in minor loss of agricultural lands in Wellington County, along Highway 7 and RR 124.</p>	<p>Widening existing freeways and arterial roads has minimal potential to fragment agricultural lands. Fringe impacts may occur in agricultural areas. This alternative results in minimal loss of agricultural lands south of Georgetown, along Trafalgar Road.</p>

**Table B-4: High Level Assessment of Group #3 Alternatives**

<p><b>Cultural Features</b> Potential to impact cultural features (i.e., properties of cultural heritage and archaeological significance (including above ground resources over 40 years of age).</p>	<p>Widening existing freeways has some potential to impact built heritage features that are located adjacent to existing highways. There is relatively low potential to impact archaeological resources or cultural landscapes because most areas have been previously disturbed.</p>	<p>This alternative has a high potential to impact built heritage features and cultural landscapes associated with villages such as Rockwood, Acton, Erin, Caledon etc. There is relatively low potential to impact archaeological resources because most areas have been previously disturbed.</p>	<p>Widening existing freeways and arterial roads has some potential to impact built heritage features that are located adjacent to existing highways. There is relatively low potential to impact archaeological resources or cultural landscapes because most areas have been previously disturbed. This alternative has some potential to impact built heritage resources in Stewarttown and Ashgrove.</p>
<p><b>First Nations</b> Potential to impact lands of cultural or historical significance to First Nations.</p>	<p>Widening existing freeways has some potential to impact to cultural resources of historical significance to First Nations. This will be confirmed through discussions with First Nations as part of the EA process.</p>	<p>Widening existing freeways and arterial roads has some potential to impact cultural resources of historical significance to First Nations. This will be confirmed through discussions with First Nations as part of the EA process.</p>	<p>Widening existing freeways and arterial roads has some potential to impact cultural resources of historical significance to First Nations. This will be confirmed through discussions with First Nations as part of the EA process.</p>
<p><b>Community SUMMARY</b></p>	<p><u>Advantages</u></p> <ul style="list-style-type: none"> <li>• Supports the Government Policy by optimizing the use of existing infrastructure</li> <li>• Relatively minor impacts to Niagara Escarpment and Greenbelt lands</li> <li>• Low potential to impact agricultural operations and results in less loss of agricultural lands because most impacts are on the fringe (of what?)</li> <li>• Low potential to impact archaeological resources because most areas have been previously disturbed</li> <li>• Group 3-1 has minimal impact on community features, because it uses Provincial highways</li> <li>• Groups 3-2 and 3-3 provide improved access to future employment areas in Brampton and Caledon</li> <li>• Potential to improve linkages and accessibility between the urban areas in the GTA West Corridor</li> </ul> <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> <li>• Limited ability to support planned future land use or growth as identified in Government Policy</li> <li>• Group 3-2 has potential for significant direct (i.e., displacement and access) impacts to land uses and community features in places such as Rockwood, Acton, Georgetown, Erin, Caledon, etc., although bypasses may reduce impacts</li> <li>• Group 3-2 has potential for significant direct impacts (i.e., displacement/loss) to built heritage features along existing roads and in communities named above, although bypasses may reduce impacts</li> <li>• Groups 3-2 and 3-3 include major municipal widenings that may not be consistent with municipal plans, policies, transportation master plans and/or Official Plans</li> </ul>		

**Table B-4: High Level Assessment of Group #3 Alternatives**

FACTOR/CRITERIA	Alternative 3-1	Alternative 3-2	Alternative 3-3
Factor: Economy			
<p><b>Industry and trade</b> Qualitative description of how industry and trade are supported.</p>	<p>Widening existing transportation corridors would service existing and future industry located close to existing provincial highways.</p> <p>Additional capacity on existing highways would reduce congestion and facilitate goods movement and trade.</p>	<p>Widening existing transportation corridors would service existing and future industry located close to existing provincial highways.</p> <p>Upgraded Highways 9 and 7 and widened arterial roads would provide limited additional support for new industry along upgraded routes.</p> <p>Additional capacity on existing highways and municipal roads would reduce congestion and facilitate goods movement and trade. Potential bypasses around Rockwood, Acton, Georgetown, Erin, Caledon or Mono Mills may reduce exposure for businesses in existing built-up areas. However, a new bypass could potentially open up lands for new business or light industrial expansion.</p>	<p>Widening existing transportation corridors would service existing and future industry located close to existing provincial highways.</p> <p>Upgraded arterial roads would provide limited additional support for new industry along upgraded routes.</p> <p>Additional capacity on existing highways and municipal roads would reduce congestion and facilitate goods movement and trade.</p>
<p><b>Tourism and recreation</b> Qualitative description of how provincial / regional / municipal tourism and recreation are supported.</p>	<p>Widening existing transportation corridors would service existing tourism operations currently close to existing provincial highways.</p> <p>Additional capacity on existing highways would reduce congestion and facilitate improved travel for tourism and recreational purposes.</p>	<p>Widening existing transportation corridors would service existing tourism operations currently close to existing provincial highways.</p> <p>Improved access to Highways 9 and 7 would improve tourism opportunities for new and existing tourist attractions in northern sections of the study area.</p> <p>Additional capacity on existing highways and municipal roads would reduce congestion and facilitate improved travel for tourism and recreational purposes.</p>	<p>Widening existing transportation corridors would service existing tourism operations currently close to existing provincial highways.</p> <p>Widened arterial roads may improve tourism opportunities for new and existing tourist attractions in Peel or York Regions.</p> <p>Additional capacity on existing highways and municipal roads would reduce congestion and facilitate improved travel for tourism and recreational purposes.</p>
<p><b>Economic and agricultural development</b> Qualitative description of how the alternative supports or impacts agricultural operations and plans for future development.</p> <p><b>NOTE – Direct impacts resulting in fragmentation of agricultural operations or loss of Class 1 lands is dealt with under the Community Factor.</b></p>	<p>Widening existing transportation corridors could impact existing agricultural operations through “fringe” property impacts (such as.....provide examples and apply other sections where applicable).</p>	<p>Widening existing transportation corridors could impact existing agricultural operations through property access impacts, direct property “fringe” impacts and indirect proximity impacts.</p> <p>Impacts are potentially significant along Regional Road 124 through Wellington County and Highway 7 and Trafalgar Road through the study area.</p>	<p>Widening existing transportation corridors could impact existing agricultural operations through property access impacts, direct property “fringe” impacts and indirect proximity impacts.</p> <p>Impacts are potentially significant along Regional Road 124 through Wellington County and Highway 7 and Trafalgar Road through the study area.</p>
<p><b>Urban Growth Centre Connections</b> Provision of connections to Urban Growth Centres identified in provincial policy.</p>	<p>Limited improvement to connections between Urban Growth Centres (i.e., Vaughan Corporate Centre, Downtown Brampton, Downtown Milton and Downtown Guelph). However, by widening existing highways, the alternative provides some indirect improvement to the connections.</p>	<p>Limited improvement to connections between Urban Growth Centres (i.e., Vaughan Corporate Centre, Downtown Brampton, Downtown Milton and Downtown Guelph). However, by widening existing highways and municipal roads, the alternative provides some indirect improvement to the connections.</p>	<p>Limited improvement to connections between Urban Growth Centres (i.e., Vaughan Corporate Centre, Downtown Brampton, Downtown Milton and Downtown Guelph). However, by widening existing highways, the alternative provides some indirect improvement to the connections.</p>

**Table B-4: High Level Assessment of Group #3 Alternatives**

<p><b>FACTOR/CRITERIA</b></p>	<p><b>Alternative 3-1</b></p> <p>Freeway Widening Widen Highways 401, 407, 410, 400 and 427 extension</p>	<p><b>Alternative 3-2</b></p> <p>Freeway and Arterial Road Widening Widen Highways 401, 407, 410, 400 and 427 extension AND Widen Highway 9 (north of study area), Highway 7 through or construct a bypass around Rockwood, Acton, and Georgetown, Widen Kirby Road, Mayfield Road, Trafalgar Road (RR3) and Charleston Road, Airport Road and Regional Rd 124</p>	<p><b>Alternative 3-3</b></p> <p>Freeway and Arterial Road Widening Widen Highways 401, 407, 410, 400 and 427 extension AND Widen Kirby Road, Mayfield Road and Trafalgar Road (RR 3)</p>
<p><b>Economy SUMMARY</b></p>	<p><u>Advantages</u></p> <ul style="list-style-type: none"> <li>• Some ability to service future industry along existing travel corridors</li> <li>• Additional capacity reduces congestion and facilitates goods movement and trade</li> <li>• Provides improved access to tourism /recreation operations along existing travel corridors</li> <li>• Additional capacity reduces congestion and facilitates improved travel for tourism and recreational purposes</li> <li>• Groups 3-2 and 3-3 may improve tourism opportunities for new and existing attractions in northern sections of Study Area</li> <li>• Relatively minor impacts to agricultural operations</li> <li>• Group 3-2 - a new bypass (around Rockwood, Acton, Georgetown, Erin, Caledon and/or Mono Mills) could potentially open up lands for new business or light industrial expansion</li> </ul> <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> <li>• Limited ability to improve connections between Urban Growth Centres (i.e., Vaughan Corporate Centre, Downtown Brampton, Downtown Milton and Downtown Guelph)</li> <li>• Potential bypasses around Rockwood, Acton, Georgetown Erin, Caledon and Mono Mills may reduce exposure for businesses in existing built-up areas</li> <li>• Groups 3-2 and 3-3 could impact agricultural operations through property access, “fringe” impacts and indirect proximity impacts</li> </ul>		

Table B-4: High Level Assessment of Group #3 Alternatives

FACTOR/CRITERIA	Alternative 3-1	Alternative 3-2	Alternative 3-3
<p><b>Environment</b></p> <p><b>Environmental protection policies</b> Support for or consistency with federal, provincial and municipal environmental protection policies.</p>	<p>Supports the PPS on the protection of Natural Heritage, Agricultural and Cultural Heritage/Archaeological resources.</p> <p>Typically lower environmental impacts are associated with widening alternatives through areas that are protected by environmental policies because of smaller footprint impacts and minimal fragmentation. This alternative crosses Greenbelt Plan and NEC lands at Highway 401 west of Milton.</p>	<p>Supports the PPS on the protection of Natural Heritage, Agricultural and Cultural Heritage/Archaeological resources.</p> <p>Typically lower environmental impacts are associated with widening alternatives through areas that are protected by environmental policies because of smaller footprint impacts and minimal fragmentation. However, this alternative includes widening segments in four different locations (i.e., at Kirby Road, Charleston Road, Highway 7 and Highway 401) through both Greenbelt Plan and NEC designated areas. It also includes road widening through the Oak Ridges Moraine (along Highway 9).</p>	<p>Supports the PPS on the protection of Natural Heritage, Agricultural and Cultural Heritage/Archaeological resources.</p> <p>Typically lower environmental impacts are associated with widening alternatives through areas that are protected by environmental policies because of smaller footprint impacts and minimal fragmentation. This alternative crosses Greenbelt Plan and NEC lands at Highway 401 (west of Milton), at Kirby Road and on Highway 7 in Georgetown.</p>
<p><b>Natural features and functions</b></p> <p>Qualitative analysis of:</p> <ul style="list-style-type: none"> <li>Potential impacts to major aquatic ecosystems (number or description of potentially impacted watercourses)</li> <li>Potential impacts to major terrestrial ecosystems (area or description of terrestrial habitat potentially affected)</li> <li>Potential impacts to sensitive groundwater features (qualitative description)</li> <li>Potential impacts to areas that are sensitive to changes in surface water (qualitative description)</li> <li>Description of potential to avoid or minimize impacts to environmental features.</li> </ul> <p><b>NOTE: Potential impacts to the Greenbelt, NEC and ORM are dealt with in Environmental Protection Policies (see above)</b></p>	<p>This corridor alternative has some potential to impact the following environmental features within the following routes:</p> <p><u>Highway 401 Widening</u></p> <ul style="list-style-type: none"> <li>Approximately 42 watercourse crossings (i.e., intermittent and permanent) including Mountsberg Creek, Mullet Creek, Sixteen Mile Creek and unnamed tributaries of Bronte Creek, Sixteen Mile Creek, Middle Sixteen Middle Creek, East Sixteen Mile Creek, Credit River, and Cooksville Creek</li> <li>2 Evaluated Wetland Complexes consisting of the Badenoch-Moffat and Guelph Junction Wetland Complexes</li> <li>2 significant ecological areas (i.e., unevaluated individual wetland features)</li> <li>1 ANSI known as Exhumed Silurian Reef</li> <li>2 Environmentally Sensitive Area known as Guelph junction Woods, Meadowvale Station Woods</li> <li>Directly within Wellhead Protection Zones (i.e., 2, 10 and 100 years)</li> <li>Mountsberg Wildlife Area ESA</li> </ul> <p><u>Highway 407 Widening</u></p> <ul style="list-style-type: none"> <li>Approximately 36 watercourse crossings (i.e., intermittent and permanent) including Etobicoke Creek East Branch, Mimico Creek, West Humber Creek, Humber River, Albion Creek, Highway 50 Tributary, Plunketts Creek, Robinson Creek, Mullet Creek and unnamed tributaries of East Sixteen Mile Creek, Credit River, Etobicoke Creek, and Mimico Creek</li> <li>1 significant ecological area (i.e., unevaluated individual wetland feature)</li> </ul>	<p>This corridor alternative has some potential to impact the following environmental features within the following routes:</p> <p>All impacted environmental features in Alternative 3-1</p> <p>AND</p> <p><u>Highway 9 Widening (only MNR data used)</u></p> <ul style="list-style-type: none"> <li>Approximately 20 watercourse crossings (i.e., intermittent and permanent) including the Holland River, unnamed tributaries of the Humber River and the Holland River</li> <li>2 Evaluated Wetland Complexes known as the Pottageville and the Ballycroy Wetland Complexes</li> <li>Approximately 2 significant ecological areas (i.e., unevaluated individual wetland features)</li> <li>2 ANSIs known as the Pottageville Swamp and the Humber Headwaters</li> <li>2 Environmentally Sensitive Area known as an unidentified ESA and the Holland Marsh Lowlands</li> <li>Directly within a 25 year Wellhead protection Zone in the ORM known as Palgrave # 2-4</li> </ul> <p><u>Highway 7 Widening</u></p> <ul style="list-style-type: none"> <li>Approximately 22 watercourse crossings (i.e., intermittent and permanent) including unnamed tributaries of Blue Springs Creek and Black Creek</li> <li>Approximately 3 Evaluated Wetland Complexes consisting of Clyde Creek, Eramosa River – Blue Springs Creek, and Acton – Silver Creek Wetland Complexes. There are an additional 2 potential individual wetlands within the CVC jurisdiction of this corridor</li> </ul>	<p>This corridor alternative has some potential to impact the following environmental features within the following routes:</p> <p>All impacted environmental features in Alternative 3-1</p> <p>AND</p> <p><u>Kirby Road Widening</u></p> <ul style="list-style-type: none"> <li>Approximately 17 watercourse crossings (i.e., intermittent and permanent) including the Main Humber River and unnamed tributaries</li> <li>3 significant ecological areas (i.e., unevaluated individual wetland features)</li> <li>1 Environmentally Sensitive Area known as the East Humber River</li> <li>Directly within the Kleinburg Wellhead Protection Zones (i.e., 25 years)</li> </ul> <p><u>Mayfield Road Widening</u></p> <ul style="list-style-type: none"> <li>Approximately 21 watercourse crossings (i.e., intermittent and permanent) including Clarkway Drive Tributary, Gore Road Tributary, Salt Creek, Cambells Cross Creek, Etobicoke Creek West Branch, Silver Creek and unnamed tributaries of Fletchers Creek, and the Credit River</li> <li>1 Evaluated Wetland Complex known as the Heart Lake Wetland Complex</li> <li>1 significant ecological area (i.e., unevaluated individual wetland feature)</li> <li>3 ANSIs known as Brampton Buried Esker, Heart Lake</li> </ul>

Table B-4: High Level Assessment of Group #3 Alternatives

FACTOR/CRITERIA	Alternative 3-1	Alternative 3-2	Alternative 3-3
	<p>Freeway Widening Widen Highways 401, 407, 410, 400 and 427 extension</p> <p><u>Highway 410 Widening</u></p> <ul style="list-style-type: none"> <li>Approximately 21 watercourse crossings (i.e., intermittent and permanent) including Etobicoke Creek West Branch, Etobicoke Creek East Branch, Spring Creek, and unnamed tributaries of Little Etobicoke Creek, Etobicoke Creek, and Spring Creek.</li> </ul> <p><u>Highway 400 Widening</u></p> <ul style="list-style-type: none"> <li>Approximately 22 watercourse crossings (i.e., intermittent and permanent) including Black Creek, East Humber River and unnamed tributaries of the East Humber River</li> <li>2 significant ecological areas (i.e., unevaluated individual wetland features)</li> <li>1 ANSI known as Strange Till Plain and 1 Candidate ANSI known as Happy Valley</li> <li>2 Environmentally Sensitive Areas known as Kettleby Infiltration Area and Happy Valley Infiltration Area. High infiltration rates which contribute to water quality/quantity in high quality reaches.</li> </ul> <p><u>Highway 427 Widening</u></p> <ul style="list-style-type: none"> <li>Approximately 14 watercourse crossings (i.e., intermittent and permanent) including Albion Creek, Highway 50 Tributary, Rainbow Creek and Robinson Creek</li> </ul> <p>Potential impact to Species at Risk.</p>	<p>Freeway and Arterial Road Widening Widen Highways 401, 407, 410, 400 and 427 extension AND Widen Highway 9 (north of study area), Highway 7 through or construct a bypass around Rockwood, Acton, and Georgetown, Widen Kirby Road, Mayfield Road, Trafalgar Road (RR3) and Charleston Road, Airport Road and Regional Rd 124</p> <ul style="list-style-type: none"> <li>1 ANSI known as Eramosa River Valley</li> <li>1 Environmentally Sensitive Area known as Snow's Creek Woods</li> <li>Directly within Wellhead protection Zones (i.e., 2, 10 and 100 years)</li> </ul> <p><u>Mayfield Road Widening</u></p> <ul style="list-style-type: none"> <li>Approximately 21 watercourse crossings (i.e., intermittent and permanent) including Clarkway Drive Tributary, Gore Road Tributary, Salt Creek, Cambells Cross Creek, Etobicoke Creek West Branch, Silver Creek and unnamed tributaries of Fletchers Creek, and the Credit River</li> <li>1 Evaluated Wetland Complex known as the Heart Lake Wetland Complex. There are an additional potential individual wetland within the CVC jurisdiction of this corridor</li> <li>1 significant ecological area (i.e., unevaluated individual wetland feature)</li> <li>3 ANSIs known as Brampton Buried Esker, Heart Lake Forest &amp; Bog and Georgetown Credit Valley</li> <li>2 Environmentally Sensitive Areas known as Georgetown Credit River Valley and Heart Lake Woodlands</li> </ul> <p><u>Kirby Road Widening</u></p> <ul style="list-style-type: none"> <li>Approximately 17 watercourse crossings (i.e., intermittent and permanent) including the Main Humber River and unnamed tributaries</li> <li>3 significant ecological areas (i.e., unevaluated individual wetland features)</li> <li>1 Environmentally Sensitive Area known as the East Humber River</li> <li>Directly within the Kleinburg Wellhead Protection Zones (i.e., 25 years)</li> </ul> <p><u>Trafalgar Road Widening</u></p> <ul style="list-style-type: none"> <li>Approximately 7 watercourse crossings (i.e., intermittent and permanent) including unnamed tributaries of Black Creek and Middle Sixteen Mile Creek</li> <li>1 significant ecological area (i.e., unevaluated individual wetland features)</li> <li>1 Environmentally Sensitive Area known as the Hungry Hallow Ravine</li> <li>Directly within the Wellhead Protection Zones (i.e., 2, 10 and 100 years)</li> </ul> <p><u>Regional Road 124 Widening</u></p>	<p>Freeway and Arterial Road Widening Widen Highways 401, 407, 410, 400 and 427 extension AND Widen Kirby Road, Mayfield Road and Trafalgar Road</p> <p>Forest &amp; Bog and Georgetown Credit Valley</p> <ul style="list-style-type: none"> <li>2 Environmentally Sensitive Areas known as Georgetown Credit River Valley and Heart Lake Woodlands</li> </ul> <p><u>Trafalgar Road Widening</u></p> <ul style="list-style-type: none"> <li>Approximately 7 watercourse crossings (i.e., intermittent and permanent) including unnamed tributaries of Black Creek and Middle Sixteen Mile Creek</li> <li>1 significant ecological area (i.e., unevaluated individual wetland feature)</li> <li>1 Environmentally Sensitive Area known as the Hungry Hallow Ravine</li> <li>Directly within the Wellhead Protection Zones (i.e., 2, 10 and 100 years).</li> </ul> <p>Potential impact to Species at Risk.</p>

Table B-4: High Level Assessment of Group #3 Alternatives

FACTOR/CRITERIA	Alternative 3-1 Freeway Widening Widen Highways 401, 407, 410, 400 and 427 extension	Alternative 3-2 Freeway and Arterial Road Widening Widen Highways 401, 407, 410, 400 and 427 extension AND Widen Highway 9 (north of study area), Highway 7 through or construct a bypass around Rockwood, Acton, and Georgetown, Widen Kirby Road, Mayfield Road, Trafalgar Road (RR3) and Charleston Road, Airport Road and Regional Rd 124	Alternative 3-3 Freeway and Arterial Road Widening Widen Highways 401, 407, 410, 400 and 427 extension AND Widen Kirby Road, Mayfield Road and Trafalgar Road
		<ul style="list-style-type: none"> <li>• Approximately 28 watercourse crossings (i.e., intermittent and permanent) including Caledon Creek and unnamed tributaries of Caledon Creek</li> <li>• 8 Evaluated Wetland Complexes known as the Speersville Wetland, Credit River at Alton, West Credit River, Eramosa River – Blue Springs, Speed – Lutteral – Swan Creek, Guelph North-East, Guelph Southwest, and Ellis Creek Wetland Complexes.</li> <li>• Approximately 4 significant ecological areas (i.e., unevaluated individual wetland features)</li> <li>• 3 ANSIs known as Guelph Drumlin Field, Eramosa River Valley, and Humber Headwaters</li> <li>• 2 Environmentally Sensitive Area known as Binkham Swamp and Brisbane Swamp</li> <li>• Directly within the Caledon Village # 3 and #3A Wellhead Protection Zones (i.e., 25 years). Also within a 2 year Wellhead Protection Zone further west.</li> </ul> <p>Potential impact to Species at Risk.</p>	
<p><b>Air Quality</b> Qualitative assessment (using quantitative inputs) of:</p> <ul style="list-style-type: none"> <li>• Potential changes in greenhouse gas emissions and criteria air contaminants (CACs).</li> <li>• Potential changes in air quality on a regional level.</li> </ul>	<p>Widening existing roads/highways results in increased emissions along existing major travel corridors where built-up areas (i.e., sensitive receptors) are located. The additional emissions are the result of increased traffic volumes. Proximity to receptors increases exposure.</p>	<p>Widening existing roads/highways results in increased emissions along existing major travel corridors where built-up areas (i.e., sensitive receptors) are located. The additional emissions are the result of increased traffic volumes. Proximity to receptors increases exposure.</p>	<p>Widening existing roads/highways results in increased emissions along existing major travel corridors where built-up areas (i.e., sensitive receptors) are located. The additional emissions are the result of increased traffic volumes. Proximity to receptors increases exposure.</p>
<p><b>Resource Consumption</b> Ability to minimize resource consumption and potential for mineral and aggregate resource issues.</p>	<p>In relation to new highway corridors, widening alternatives require less resource consumption.</p>	<p>In relation to new highway corridors, widening alternatives require less resource consumption. However, this alternative has the longest length of roadway widening.</p>	<p>In relation to new highway corridors, widening alternatives require less resource consumption.</p>
<p><b>Environment SUMMARY</b></p>	<p><u>Advantages</u></p> <ul style="list-style-type: none"> <li>• Support the Government Policy on the protection of Natural Heritage, Agricultural and Cultural Heritage/Archaeological resources</li> <li>• Minimizes fragmentation of environmental protection policy areas (i.e., Niagara Escarpment Plan, Greenbelt and Oak Ridges Moraine)</li> <li>• Potential for less resource consumption (for widening alternatives) or mineral and aggregate resource related issues</li> </ul> <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> <li>• Widening Highway 400 would impact Oak Ridges Moraine</li> <li>• Increased emissions along existing major travel corridors in built-up areas, where sensitive receptors are located. Proximity to receptors increases exposure</li> <li>• Impacts many environmental features. Although footprint widening may be considered less severe than fragmentation of natural areas, frequency of crossings and ability to mitigate through design may be restricted because of property constraints and design limitations imposed by existing infrastructure.</li> </ul>		

Table B-4: High Level Assessment of Group #3 Alternatives

FACTOR/CRITERIA	Alternative 3-1	Alternative 3-2	Alternative 3-3
<b>Factor: Transportation</b>			
<p><b>Efficient movement of people</b>  <b>Potential to support the efficient movement of people between communities and regions</b></p> <p>Peak period performance of key inter-regional corridors – forecast volume/capacity issues at critical screenlines</p> <p>Potential to provide for higher order inter-regional transportation corridors</p> <p>Percentage of inter-regional system operating better than LOS D (auto lane km)</p> <p>Shift in use of local/regional roadways to inter-regional transportation system</p> <p>Reduction of auto hours on inter-regional transportation system operating at LOS D or worse</p>	<p>Generally addresses the required infrastructure supply at critical screenlines to accommodate forecast vehicle traffic, except for the Hwy 400 Screenline which operates in a congested state:</p> <p>East of Guelph WB - 0.76 V/C  West of Milton WB - 0.85 V/C  East of WC Blvd WB - 0.74 V/C  East of Hwy 10 WB - 0.88 V/C  East of Hwy 50 WB - 0.72 V/C  West of Hwy 400 WB - 0.93 V/C</p> <p>No new inter-regional transportation corridors beyond those provided in Group 2</p> <p>Approximately 43% of the inter-regional transportation system operate better than LOS D for auto trips (lane / km).</p> <p>Approximately 38% of auto traffic uses the inter-regional system - representing no increase from Groups 1 &amp; 2.</p> <p>Approximately 31% less auto hours are spent on the inter-regional transportation system for lane km operating at LOS D or worse in comparison to Group 1 &amp; 2.</p>	<p>Generally addresses the required infrastructure supply at critical screenlines to accommodate forecast vehicle traffic, except for the Hwy 400 Screenline which operates in a congested state:</p> <p>East of Guelph WB - 0.85 V/C  West of Milton WB - 0.82 V/C  East of WC Blvd WB - 0.76 V/C  East of Hwy 10 WB - 0.90 V/C  East of Hwy 50 WB - 0.68 V/C  West of Hwy 400 WB - 0.96 V/C</p> <p>No new inter-regional transportation corridors beyond those provided in Group 2</p> <p>Approximately 49% of the inter-regional transportation system operate better than LOS D for auto trips (lane / km).</p> <p>Approximately 41% of auto traffic uses the inter-regional system - representing an increase over Groups 1 &amp; 2.</p> <p>Approximately 22% less auto hours are spent on the inter-regional transportation system for lane km operating at LOS D or worse in comparison to Group 1 &amp; 2.</p>	<p>Generally addresses the required infrastructure supply at critical screenlines to accommodate forecast vehicle traffic, except for the Hwy 400 Screenline which operates in a congested state:</p> <p>East of Guelph WB - 0.76 V/C  West of Milton WB - 0.85 V/C  East of WC Blvd WB - 0.77 V/C  East of Hwy 10 WB - 0.90 V/C  East of Hwy 50 WB - 0.69 V/C  West of Hwy 400 WB - 0.96 V/C</p> <p>No new inter-regional transportation corridors beyond those provided in Group 2</p> <p>Approximately 46% of the inter-regional transportation system operate better than LOS D for auto trips (lane / km).</p> <p>Approximately 41% of auto traffic uses the inter-regional system - representing an increase over Groups 1 &amp; 2.</p> <p>Approximately 25% less auto hours are spent on the inter-regional transportation system for lane km operating at LOS D or worse in comparison to Group 1 &amp; 2.</p>
<p><b>Efficient movement of goods</b>  <b>Potential to support efficient movement of goods between urban growth centres, international gateways, economic centres and regional inter-modal facilities and communities</b></p> <p>Peak Period performance of key inter-regional corridors – forecast</p>	<p>Generally addresses the required infrastructure supply at critical screenlines to accommodate forecast vehicle traffic, except for the Hwy 400 Screenline which operates in a congested state:</p> <p>East of Guelph WB - 0.76 V/C</p>	<p>Generally addresses the required infrastructure supply at critical screenlines to accommodate forecast vehicle traffic, except for the Hwy 400 Screenline which operates in a congested state:</p> <p>East of Guelph WB - 0.85 V/C</p>	<p>Generally addresses the required infrastructure supply at critical screenlines to accommodate forecast vehicle traffic, except for the Hwy 400 Screenline which operates in a congested state:</p> <p>East of Guelph WB - 0.76 V/C</p>

Table B-4: High Level Assessment of Group #3 Alternatives

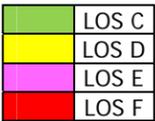
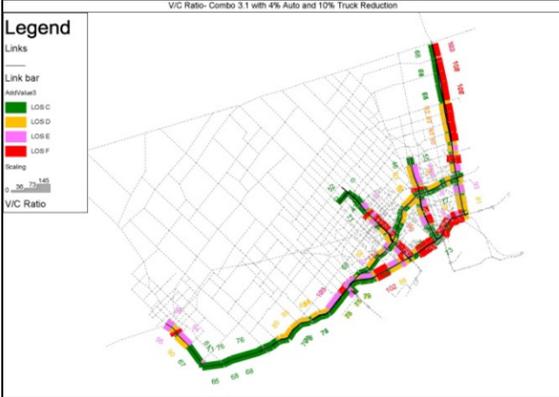
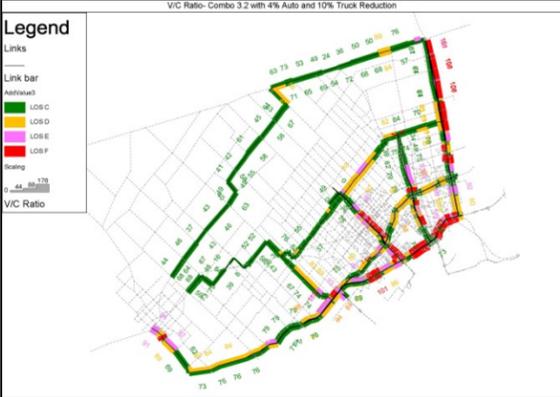
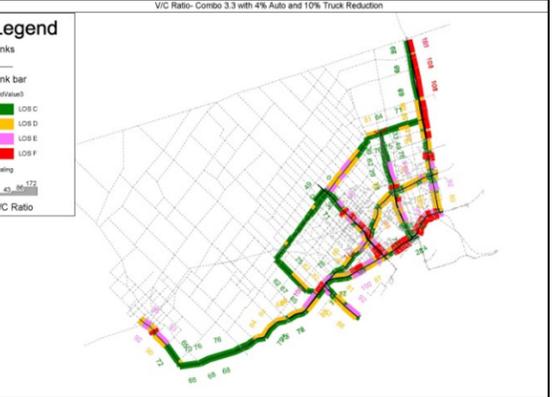
FACTOR/CRITERIA	Alternative 3-1	Alternative 3-2	Alternative 3-3
<p>volume/capacity issues at critical screenlines</p> <p>Potential to provide linkages between inter-modal facilities and provide for higher order goods movement</p> <p>Percentage of inter-regional system operating better than LOS D (vehicle lane km)</p> <p>Shift in use of local/regional roadways to inter-regional transportation system</p> <p>Reduction of truck hours on inter-regional transportation system operating at LOS D or worse</p>	<p>Includes Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways in the GTA West area to provide additional capacity</p> <ul style="list-style-type: none"> <li>- Highway 401, Highway 410, Highway 400, Highway 427, 407ETR</li> </ul> <p>West of Milton WB - 0.85 V/C                      East of WC Blvd WB - 0.74 V/C                      East of Hwy 10 WB - 0.88 V/C                      East of Hwy 50 WB - 0.72 V/C                      West of Hwy 400 WB - 0.93 V/C</p> <p>Widening of existing inter-regional transportation system corridors improves linkages between inter-modal facilities                      No new high order goods movement corridors</p> <p>Approximately 26% of the inter-regional transportation system operates better than LOS D for vehicle trips (lane / km).</p> <p>Approximately 39% of vehicle traffic uses the inter-regional system - representing no increase from the Groups 1 &amp; 2.</p> <p>Approximately 32% less truck hours are spent on the inter-regional transportation system for lane km operating at LOS D or worse in comparison to Group 1 &amp; 2.</p>	<p>Includes Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways, Inter-regional Roads (Regional / County Roads) and the construction of local bypasses to provide additional capacity</p> <ul style="list-style-type: none"> <li>- Highway 401, Highway 410, Highway 400, Highway 427, 407ETR</li> <li>- County Road 124 / Hwy 9, Highway 7, Kirby Road, Mayfield Road, Trafalgar Road, Local Bypasses in several locations</li> </ul> <p>West of Milton WB - 0.82 V/C                      East of WC Blvd WB - 0.76 V/C                      East of Hwy 10 WB - 0.90 V/C                      East of Hwy 50 WB - 0.68 V/C                      West of Hwy 400 WB - 0.96 V/C</p> <p>Widening of existing inter-regional transportation system corridors improves linkages between inter-modal facilities                      No new high order goods movement corridors</p> <p>Approximately 35% of the inter-regional transportation system operates better than LOS D for vehicle trips (lane / km).</p> <p>Approximately 42% of vehicle traffic uses the inter-regional system - representing an increase over Groups 1 &amp; 2.</p> <p>Approximately 24% less truck hours are spent on the inter-regional transportation system for lane km operating at LOS D or worse in comparison to Group 1 &amp; 2.</p>	<p>Includes Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways, Arterial Roads (Regional / County Roads) and the construction of local bypasses to provide additional capacity</p> <ul style="list-style-type: none"> <li>- Highway 401, Highway 410, Highway 400, Highway 427, 407ETR</li> <li>- Kirby Road, Mayfield Road, Trafalgar Road, Local Bypasses in several locations</li> </ul> <p>West of Milton WB - 0.85 V/C                      East of WC Blvd WB - 0.77 V/C                      East of Hwy 10 WB - 0.90 V/C                      East of Hwy 50 WB - 0.69 V/C                      West of Hwy 400 WB - 0.96 V/C</p> <p>Widening of existing inter-regional transportation system corridors improves linkages between inter-modal facilities                      No new high order goods movement corridors</p> <p>Approximately 28% of the inter-regional transportation system operates better than LOS D for vehicle trips (lane / km).</p> <p>Approximately 42% of vehicle traffic uses the inter-regional system - representing an increase over Groups 1 &amp; 2.</p> <p>Approximately 28% less truck hours are spent on the inter-regional transportation system for lane km operating at LOS D or worse in comparison to Group 1 &amp; 2.</p>
<p><b>2031 PM Peak Hour Conditions</b></p> 			

Table B-4: High Level Assessment of Group #3 Alternatives

<p><b>FACTOR/CRITERIA</b></p>	<p><b>Alternative 3-1</b></p> <p>Includes Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways in the GTA West area to provide additional capacity</p> <p>- Highway 401, Highway 410, Highway 400, Highway 427, 407ETR</p>	<p><b>Alternative 3-2</b></p> <p>Includes Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways, Inter-regional Roads (Regional / County Roads) and the construction of local bypasses to provide additional capacity</p> <p>- Highway 401, Highway 410, Highway 400, Highway 427, 407ETR</p> <p>- County Road 124 / Hwy 9, Highway 7, Kirby Road, Mayfield Road, Trafalgar Road, Local Bypasses in several locations</p>	<p><b>Alternative 3-3</b></p> <p>Includes Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways, Arterial Roads (Regional / County Roads) and the construction of local bypasses to provide additional capacity</p> <p>- Highway 401, Highway 410, Highway 400, Highway 427, 407ETR</p> <p>- Kirby Road, Mayfield Road, Trafalgar Road, Local Bypasses in several locations</p>
<p><b>System reliability/redundancy</b></p> <p><b>Potential to support system reliability and reduce redundancy for travel (people and goods) between regions and communities during congested adverse conditions</b></p> <p>Availability of alternate routes/facilities for inter-regional transportation between regions, communities and terminals</p> <p>Potential to improve transportation system reliability</p>	<p>Moderate support for system reliability and redundancy, with added roadway capacity, new/expanded transit and network optimization</p> <p>No new alternate routes for inter-regional transportation beyond new transit corridors provided for in Group 2; provides increased inter-regional road capacity on limited alternate routes in the eastern portion of the study area</p> <p>Potential to improve transportation system reliability with increased inter-regional road and transit capacity</p>	<p>Moderate support for system reliability and redundancy, with added roadway capacity, new/expanded transit and network optimization</p> <p>No new alternate routes for inter-regional transportation beyond new transit corridors provided for in Group 2; provides increased inter-regional road capacity on multiple alternate routes across the study area</p> <p>Potential to improve transportation system reliability with increased inter-regional road and transit capacity</p>	<p>Moderate support for system reliability and redundancy, with added roadway capacity, new/expanded transit and network optimization</p> <p>No new alternate routes for inter-regional transportation beyond new transit corridors provided for in Group 2; provides increased inter-regional road capacity on alternate routes in the eastern portion of the study area</p> <p>Potential to improve transportation system reliability with increased inter-regional road and transit capacity</p>
<p><b>Safety</b></p> <p><b>Potential to improve traffic safety based on opportunity to reduce congestion on the area road network</b></p> <p>Potential to improve response times for emergency service providers due to reduced congestion on the inter-regional road network (average speed)</p> <p>Potential to reduce collisions due to improved network LOS and decreased conflicts between travel modes</p>	<p>Major improvement to transportation system operations and safety</p> <p>Provides safety and response time benefits due to improvement in transportation system congestion from increased road capacity (average speed = 63 km/h)</p> <p>Major potential to reduce collisions due to improved network performance</p>	<p>Major improvement to transportation system operations and safety</p> <p>Provides safety and response time benefits due to improvement in transportation system congestion from increased road capacity on alternate routes (average speed = 59 km/h)</p> <p>Major potential to reduce collisions due to improved network performance</p>	<p>Major improvement to transportation system operations and safety</p> <p>Provides safety and response time benefits due to improvement in transportation system congestion from increased road capacity on alternate routes (average speed = 61 km/h)</p> <p>Major potential to reduce collisions due to improved network performance</p>
<p><b>Modal integration, balance and choice for movement of people (commuters, recreation/tourist)</b></p> <p><b>Potential to improve modal integration, balance and choice for person trips between communities, employment centers and major transit hubs</b></p> <p>Potential to increase attractiveness/effectiveness of existing, new and improved transit services</p> <p>Provision of higher order inter-regional transit services</p>	<p>Moderate potential to improve modal integration, balance and choice for people movement</p> <p>Moderate potential to increase attractiveness/ effectiveness of transit from new transit services and improvements in Groups 1 and 2, with addition of widened freeways for bus services</p> <p>Higher order inter-regional transit services are provided through Group 2, and potential for improved transit operations along inter-regional freeways</p>	<p>Moderate potential to improve modal integration, balance and choice for people movement</p> <p>Moderate potential to increase attractiveness/ effectiveness of transit from new transit services and improvements in Groups 1 and 2, with addition of widened freeways and arterials for bus services</p> <p>Higher order inter-regional transit services are provided through Group 2, and potential for improved transit operations along inter-regional freeways and arterials</p>	<p>Moderate potential to improve modal integration, balance and choice for people movement</p> <p>Moderate potential to increase attractiveness/ effectiveness of transit from new transit services and improvements in Groups 1 and 2, with addition of widened freeways and arterials for bus services</p> <p>Higher order inter-regional transit services are provided through Group 2, and potential for improved transit operations along inter-regional freeways and arterials</p> <p>Potential to improve linkages between inter-regional and</p>

Table B-4: High Level Assessment of Group #3 Alternatives

FACTOR/CRITERIA	Alternative 3-1	Alternative 3-2	Alternative 3-3
<p>Provision of linkages between inter-regional and regional/community (local) transit systems</p> <p>Bus operational performance on inter-regional road network</p> <p>Availability/provision of alternate travel modes for tourism/recreational travel</p> <p>Provision of/allowance for active transportation measures (e.g., bike lanes, bike racks on buses/trains)</p>	<p>Includes Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways in the GTA West area to provide additional capacity</p> <p>- Highway 401, Highway 410, Highway 400, Highway 427, 407ETR</p> <p>Potential to improve linkages between inter-regional and local transit with new station location and service connections on widened inter-regional corridors, and improved integration through measures in Groups 1 and 2</p> <p>Improves bus operational performance with improved road network operations</p> <p>Potential to provide alternate travel modes for tourism/recreational travel on new bus and rail services</p> <p>Improves accessibility for active transportation, including access to facilities, storage amenities at facilities and on transit vehicles, on existing and new/expanded services as in Groups 1 and 2</p>	<p>Includes Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways, Inter-regional Roads (Regional / County Roads) and the construction of local bypasses to provide additional capacity</p> <p>- Highway 401, Highway 410, Highway 400, Highway 427, 407ETR</p> <p>- County Road 124 / Hwy 9, Highway 7, Kirby Road, Mayfield Road, Trafalgar Road, Local Bypasses in several locations</p> <p>Potential to improve linkages between inter-regional and local transit with new station location and service connections on widened inter-regional corridors, and improved integration through measures in Groups 1 and 2</p> <p>Improves bus operational performance with improved road network operations</p> <p>Potential to provide alternate travel modes for tourism/recreational travel on new bus and rail services</p> <p>Improves accessibility for active transportation, including access to facilities, storage amenities at facilities and on transit vehicles, on existing and new/expanded services as in Groups 1 and 2</p>	<p>Includes Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways, Arterial Roads (Regional / County Roads) and the construction of local bypasses to provide additional capacity</p> <p>- Highway 401, Highway 410, Highway 400, Highway 427, 407ETR</p> <p>- Kirby Road, Mayfield Road, Trafalgar Road, Local Bypasses in several locations</p> <p>local transit with new station location and service connections on widened inter-regional corridors, and improved integration through measures in Groups 1 and 2</p> <p>Improves bus operational performance with improved road network operations</p> <p>Potential to provide alternate travel modes for tourism/recreational travel on new bus and rail services</p> <p>Improves accessibility for active transportation, including access to facilities, storage amenities at facilities and on transit vehicles, on existing and new/expanded services as in Groups 1 and 2</p>
<p><b>Modal integration, balance and choice for movement of goods</b></p> <p><b>Potential to improve modal integration, balance and choice for goods movement between ports and terminals, communities and employment centres.</b></p> <p>Potential to improve accessibility of inter-modal centres, ports and terminals</p>	<p>Moderate potential to improve modal integration and choice for goods movement</p> <p>Improvements to inter-regional road network operations with increased roadway capacity improves accessibility of inter-modal facilities</p>	<p>Moderate potential to improve modal integration and choice for goods movement</p> <p>Improvements to inter-regional road network operations with increased roadway capacity on multiple alternate routes improves accessibility of inter-modal facilities</p>	<p>Moderate potential to improve modal integration and choice for goods movement</p> <p>Improvements to inter-regional road network operations with increased roadway capacity improves accessibility of inter-modal facilities</p>

Table B-4: High Level Assessment of Group #3 Alternatives

FACTOR/CRITERIA	Alternative 3-1	Alternative 3-2	Alternative 3-3
<p><b>Linkages to Population and Employment Centers</b>  <b>Potential to improve accessibility to Urban Growth Centers, Gateway Economic Centres and Gateway Economic Zones for people and goods movement based on higher order network continuity and connectivity</b></p> <p>Availability/provision of higher order linkages between Urban Growth Centers, Gateway Economic Centres and Gateway Economic Zones</p> <p>Accessibility of Urban Growth Centers, Gateway Economic Centres and Gateway Economic Zones</p>	<p>Includes Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways in the GTA West area to provide additional capacity                      - Highway 401, Highway 410, Highway 400, Highway 427, 407ETR</p> <p>Major potential to improve accessibility between Urban Growth Centres for people and goods movement</p> <p>No provision of new higher order linkages between Urban Growth Centers beyond transit services in Group 2</p> <p>Improves accessibility to Urban Growth Centres and the GTA with additional inter-regional road capacity and transportation network operation improvements; limited improvements to roadway linkages to Guelph</p>	<p>Includes Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways, Inter-regional Roads (Regional / County Roads) and the construction of local bypasses to provide additional capacity                      - Highway 401, Highway 410, Highway 400, Highway 427, 407ETR                      - County Road 124 / Hwy 9, Highway 7, Kirby Road, Mayfield Road, Trafalgar Road, Local Bypasses in several locations</p> <p>Major potential to improve accessibility between Urban Growth Centres for people and goods movement</p> <p>No provision of new higher order linkages between Urban Growth Centers beyond transit services in Group 2</p> <p>Improves accessibility to Urban Growth Centres and the GTA with additional inter-regional road capacity and transportation network operation improvements throughout the study area</p>	<p>Includes Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways, Arterial Roads (Regional / County Roads) and the construction of local bypasses to provide additional capacity                      - Highway 401, Highway 410, Highway 400, Highway 427, 407ETR                      - Kirby Road, Mayfield Road, Trafalgar Road, Local Bypasses in several locations</p> <p>Major potential to improve accessibility between Urban Growth Centres for people and goods movement</p> <p>No provision of new higher order linkages between Urban Growth Centers beyond transit services in Group 2</p> <p>Improves accessibility to Urban Growth Centres and the GTA with additional inter-regional road capacity and transportation network operation improvements; limited improvements to roadway linkages to Guelph</p>
<p><b>Recreation and Tourism Travel</b>  <b>Potential to support recreation and tourism travel within and to/from the study area</b></p> <p>Directness of routes between population centers, international gateways and tourist/recreation destinations</p> <p>Peak period (summer/weekend) transportation system performance on key inter-regional corridors – forecast volume/capacity issues at critical screenlines</p> <p>Percentage of inter-regional system operating better than LOS D (vehicle lane km) during summer/weekends</p>	<p>Major potential to support recreation and tourism travel</p> <p>Provides potential to improve directness of routes to tourist destinations within and outside of the study area, including the GTA and toward northern Ontario, with increased road capacity and new/expanded transit services</p> <p>Several of the critical screenlines are approaching capacity, namely the Hwy 400, Hwy 10 and West of Milton screenlines:                      East of Guelph WB - 0.83 V/C                      West of Milton WB - 0.93 V/C                      East of WC Blvd WB - 0.82 V/C                      East of Hwy 10 WB - 0.96 V/C                      East of Hwy 50 WB - 0.79 V/C                      West of Hwy 400 WB - 0.98 V/C</p> <p>Approximately 13% of the inter-regional transportation system operate better than LOS D for auto trips (lane / km).</p> <p>Potential to divert summer/ recreational trips from local/regional roads with increased freeway capacity on</p>	<p>Major potential to support recreation and tourism travel</p> <p>Provides potential to improve directness of routes to tourist destinations within and outside of the study area, including the GTA and toward northern Ontario, with increased road capacity and new/expanded transit services</p> <p>Several of the critical screenlines are approaching capacity, namely the Hwy 400, Hwy 10 and West of Milton screenlines:                      East of Guelph WB - 0.93 V/C                      West of Milton WB - 0.90 V/C                      East of WC Blvd WB - 0.84 V/C                      East of Hwy 10 WB - 0.98 V/C                      East of Hwy 50 WB - 0.75 V/C                      West of Hwy 400 WB - 1.01 V/C</p> <p>Approximately 24% of the inter-regional transportation system operate better than LOS D for auto trips (lane / km).</p> <p>Potential to divert summer/ recreational trips from local/regional roads with increased freeway and arterial</p>	<p>Major potential to support recreation and tourism travel</p> <p>Provides potential to improve directness of routes to tourist destinations within and outside of the study area, including the GTA and toward northern Ontario, with increased road capacity and new/expanded transit services</p> <p>Several of the critical screenlines are approaching capacity, namely the Hwy 400, Hwy 10 and West of Milton screenlines:                      East of Guelph WB - 0.83 V/C                      West of Milton WB - 0.93 V/C                      East of WC Blvd WB - 0.85 V/C                      East of Hwy 10 WB - 0.99 V/C                      East of Hwy 50 WB - 0.76 V/C                      West of Hwy 400 WB - 1.01 V/C</p> <p>Approximately 15% of the inter-regional transportation system operate better than LOS D for auto trips (lane / km).</p> <p>Potential to divert summer/ recreational trips from local/regional roads with increased freeway and arterial capacity on alternate routes</p>

Table B-4: High Level Assessment of Group #3 Alternatives

FACTOR/CRITERIA	Alternative 3-1	Alternative 3-2	Alternative 3-3
Diversion of summer recreational trips from local and regional roadways.	alternate routes	capacity on multiple routes throughout the study area	

**Transportation SUMMARY**

- Advantages
- Generally addresses people and goods movement transportation demands in the GTA West Preliminary Study Area
  - Major improvement to efficiency of people and goods movement, with improved inter-regional transportation system operations
  - Major improvement to transportation system operations and safety
  - Moderate improvement to transportation system reliability and redundancy
  - Moderate potential to improve modal integration for people and goods movement
  - Potential to improve linkages and accessibility between urban areas in the GTA West Corridor
  - Major improvement to recreation and tourism travel and directness of routes to tourist/ recreation destinations in the GTA and northern Ontario
- Disadvantages
- Significant constructability and staging issues
  - No new inter-regional transportation corridors
  - 3-1 and 3-3 provide limited roadway redundancy improvements
  - 3-1 and 3-3 provide limited roadway improvements to Guelph

**Notes:**

Congested conditions occur at a vehicle/capacity (v/c) ratio  $\geq 0.90$

Congestion Type	Level of Service	Approximate v/c (volume/capacity)	Description
Minor	LOS A-C	< 0.79	Non-recurring congestion*
Moderate	LOS D	0.80 $\leq$ 0.89	Unstable conditions
Major	LOS E-F	$\geq 0.90$	Congested conditions (stop-and-go)

\*Traffic conditions may be adversely affected by incidents, collisions, weather and construction/ maintenance activities

“Higher order transportation corridor” is a new corridor separate from existing Rights-of-Way that could be used for one or several transportation modes (e.g., automobile, Bus Rapid Transit, Light Rapid Transit, etc.)

Table B-5: High Level Assessment of Group #4 Alternatives

FACTOR/CRITERIA	Alternative 4-1	Alternative 4-2	Alternative 4-3	Alternative 4-4	Alternative 4-5
<b>Factor: Community</b>					
<p><b>Existing and planned future land use and growth</b></p> <p>Support for existing and planned future land use and growth including recognition of growth management plans and policies as articulated in the provincial policies (e.g., PPS, Growth Plan, Greenbelt Plan, NEC Plan) and municipal official plans.</p>	<p>Widening existing freeways supports the PPS by optimizing use of existing infrastructure. This alternative includes widening of Highway 401 through designated NEC and Greenbelt lands. The new corridor section between Highway 400 and a N/S link to Highway 427 crosses the Greenbelt Plan area in the vicinity of the Humber River. Other Greenbelt Plan areas are crossed north of Brampton.</p> <p>This alternative supports planned future land use and growth as identified in the Growth Plan and, in conjunction with widening the existing highway system, provides improved connections between some Urban Growth Centres (i.e., Vaughan Corporate Centre and Downtown Brampton). This alternative also accommodates planned future growth and addresses development pressures in Peel and York Regions.</p> <p>This alternative does not serve the Milton/Halton Hills growth areas and therefore only partly addresses growth pressures and the Growth Plan.</p> <p>New corridors may result in increased nuisance impacts such as noise and illumination to areas closest to the new facility.</p>	<p>Widening existing freeways supports the PPS by optimizing use of existing infrastructure. This alternative includes widening of Highway 401 through designated NEC lands. The new corridor section between Highway 400 and a N/S link to Highway 427 crosses the Greenbelt Plan area in the vicinity of the Humber River. Other Greenbelt Plan areas are crossed north of Brampton and near Georgetown.</p> <p>This alternative supports planned future land use and growth as identified in the Growth Plan and, in conjunction with widening the existing highway system, provides improved connections between some Urban Growth Centres (i.e., Vaughan Corporate Centre and Downtown Brampton). This alternative also accommodates planned future growth and addresses development pressures in Peel and York.</p> <p>This alternative does not serve the Milton/Halton Hills growth areas and therefore only partly addresses growth pressures and the Growth Plan.</p> <p>New corridors may result in increased nuisance impacts such as noise and illumination to areas closest to the new facility.</p>	<p>Widening existing freeways supports the PPS by optimizing use of existing infrastructure. This alternative includes widening of Highway 401 through designated NEC lands. The new corridor section between Highway 400 and a N/S link to Highway 427 crosses the Greenbelt Plan area in the vicinity of the Humber River. Other Greenbelt Plan areas are crossed north of Brampton, near Georgetown and Milton.</p> <p>This alternative supports planned future land use and growth as identified in the Growth Plan and, in conjunction with widening the existing highway system, provides improved connections between several Urban Growth Centres (i.e., Vaughan Corporate Centre, Downtown Brampton and Downtown Milton). This alternative also accommodates planned future growth and addresses development pressures in Peel, York and north Halton (i.e., in Milton).</p> <p>New corridors may result in increased nuisance impacts such as noise and illumination to areas closest to the new facility.</p>	<p>Widening existing freeways supports the PPS by optimizing use of existing infrastructure. This alternative includes widening of Highway 401 and a new transportation corridor through designated NEC lands and the Greenbelt Plan area. The new corridor section between Highway 400 and a N/S link to Highway 427 crosses the Greenbelt Plan area in the vicinity of the Humber River. Other Greenbelt Plan areas are crossed north of Brampton and across the centre of the study area, north of Georgetown (near Cheltenham and Ballinafad).</p> <p>This alternative supports planned future land use and growth as identified in the Growth Plan and, in conjunction with widening the existing highway system, provides improved connections between all Urban Growth Centres (i.e., Vaughan Corporate Centre, Downtown Brampton, Downtown Milton and Downtown Guelph). This alternative also accommodates planned future growth and addresses development pressures in Peel and York.</p> <p>New corridors may result in increased nuisance impacts such as noise and illumination to areas closest to the new facility.</p>	<p>Widening existing freeways supports the PPS by optimizing use of existing infrastructure. This alternative includes widening of Highway 401 and a new transportation corridor through designated NEC lands and the Greenbelt Plan area. The new corridor section between Highway 400 and a N/S link to Highway 427 crosses the Greenbelt Plan Area in the vicinity of the Humber River. Other Greenbelt Plan areas are crossed north of Brampton, south of Georgetown (near Norval) and in areas further west near Speyside, Scotch Block and Brookville.</p> <p>This alternative supports planned future land use and growth as identified in the Growth Plan and, in conjunction with widening the existing highway system, provides improved connections between all Urban Growth Centres (i.e., Vaughan Corporate Centre, Downtown Brampton, Downtown Milton and Downtown Guelph). This alternative also accommodates planned future growth and addresses development pressures in Peel and York.</p> <p>New corridors may result in increased nuisance impacts such as noise and illumination to areas closest to the new facility.</p>
<p><b>Community Features</b></p> <p>Potential to impact community features (i.e., land use, communities and resources).</p>	<p>The new corridor section from Highway 400 to Highway 410 has minimal impact on existing community features and land uses in York and north Peel. It has minor direct impacts to land uses, communities and resources and minimizes impact to access etc.</p> <p>This new corridor alternative has some potential to change or affect the “rural” character of Kleinburg, Bolton, Tullmore and Mayfield West. The impacts of a new corridor in areas that are currently rural can be reduced through avoidance of the most sensitive areas and mitigation.</p>	<p>The new corridor section from Highway 400 to Highway 407/401 has minimal impact on existing community features and land uses in north Peel and Halton. It has minor direct impacts to land uses, communities and resources and minimizes impact to access etc.</p> <p>This new corridor alternative has some potential to change or affect the “rural” character of Kleinburg, Bolton, Tullmore and Mayfield West. The impacts of a new corridor in areas that are currently rural can be reduced through avoidance of the most sensitive areas and mitigation.</p>	<p>The new corridor section from Highway 400 to Highway 401 in Milton has minimal impact on existing community features in north Peel and Halton. It has some direct impact to land uses, communities and resources and minimizes impact to access etc.</p> <p>This new corridor alternative has some potential to change or affect the “rural” character of Kleinburg, Bolton, Tullmore and Mayfield West. The impacts of a new corridor in areas that are currently rural can be reduced through avoidance of the most sensitive areas and mitigation.</p>	<p>The new corridor from Highway 400 to Guelph, north of Georgetown has minimal direct impacts to community features adjacent to existing roads in the study area. However, there is some potential to negatively impact rural communities that are currently not close to major transportation corridors or in built-up areas, such as Cheltenham and Ballinafad as well as Kleinburg, Bolton, Tullmore and Mayfield West. The impacts of a new corridor in areas that are currently rural can be reduced through avoidance of the most sensitive areas and mitigation.</p>	<p>The new corridor from Highway 400 to Guelph, south of Georgetown will reduce direct impacts to community features adjacent to existing roads in the study area. However, there is some potential to negatively impact rural communities that are currently not close to major transportation corridors or in built-up areas, such as Norval, Speyside and Brookville as well as Kleinburg, Bolton, Tullmore and Mayfield West. The impacts of a new corridor in areas that are currently rural can be reduced through avoidance of the most sensitive areas and mitigation.</p>

Table B-5: High Level Assessment of Group #4 Alternatives

<p><b>Fragmentation of agricultural lands</b> Potential fragmentation of agricultural lands and estimated area/description of loss of agricultural lands.</p>	<p>Although new corridors in general can result in greater fragmentation and loss of agricultural lands, the new corridor section from Highway 400 to Highway 410 does not cross large areas of land designated for future agricultural use.</p>	<p>Although new corridors in general can result in greater fragmentation and loss of agricultural lands, the new corridor section from Highway 400 to Highway 410 does not cross large areas of land designated for future agricultural uses. Some agricultural areas and Class 1 soils associated with the Peel Plain are impacted.</p>	<p>New corridors generally result in greater fragmentation and loss of agricultural lands. Although the section of new corridor in Peel and York Regions is not designated for future agricultural uses, there is some potential fragmentation and loss of Class 1 agricultural lands south and west of Georgetown, towards Milton.</p>	<p>New corridors generally result in greater fragmentation and loss of agricultural lands. This corridor impacts agricultural operations, potentially results in fragmentation of farms and results in loss of Class 1 agricultural lands in Wellington County north of Highway 7.</p>	<p>New corridors generally result in greater fragmentation and loss of agricultural lands. However, the new corridor section from Milton westerly (towards Guelph) is not in Class 1 agricultural lands. The area of impact is Class 3 agricultural lands and is therefore not considered sensitive from an agricultural perspective.</p>
<p><b>Cultural Features</b> Potential to impact cultural features (i.e., properties of cultural heritage and archaeological significance (including above ground resources over 40 years of age).</p>	<p>New corridors have more potential to avoid built heritage features, but also have more potential to impact archaeological resources in previously undisturbed areas and impact cultural landscapes. The new corridor between Highway 400 and Highway 427 extension has potential to impact archaeological resources associated with the Humber Valley.  All new corridor alternatives cross the Humber River, a designated Canadian Heritage River and the site of the Toronto Carrying Place Trail, a trail of historical significance in King Township. A new crossing of the Humber River and associated trails can be designed to minimize impacts.</p>	<p>New corridors have more potential to avoid built heritage features, but also have more potential to impact archaeological resources in previously undisturbed areas and impact cultural landscapes. The new corridor between Highway 400 and Highway 427 extension has potential to impact archaeological resources associated with the Humber Valley.  All new corridor alternatives cross the Humber River, a designated Canadian Heritage River and the site of the Toronto Carrying Place Trail, a trail of historical significance in King Township. A new crossing of the Humber River and associated trails can be designed to minimize impacts. This alternative also has potential to impact cultural features in the vicinity of Norval.</p>	<p>New corridors have more potential to avoid built heritage features, but also have more potential to impact archaeological resources in previously undisturbed areas and impact cultural landscapes. The new corridor between Highway 400 and Highway 427 extension has potential to impact archaeological resources associated with the Humber Valley.  All new corridor alternatives cross the Humber River, a designated Canadian Heritage River and the site of the Toronto Carrying Place Trail, a trail of historical significance in King Township. A new crossing of the Humber River and associated trails can be designed to minimize impacts. This alternative also has potential to impact cultural features in the vicinity of Norval.</p>	<p>New corridors have more potential to avoid built heritage features, but also have more potential to impact archaeological resources in previously undisturbed areas and impact cultural landscapes. The new corridor between Highway 400 and Highway 427 extension has potential to impact archaeological resources associated with the Humber Valley.  All new corridor alternatives cross the Humber River, a designated Canadian Heritage River and the site of the Toronto Carrying Place Trail, a trail of historical significance in King Township. A new crossing of the Humber River and associated trails can be designed to minimize impacts. This alternative also has potential to impact cultural resources in the vicinity of Cheltenham and Ballinafad.</p>	<p>New corridors have more potential to avoid built heritage features, but also have more potential to impact archaeological resources in previously undisturbed areas and impact cultural landscapes. The new corridor between Highway 400 and Highway 427 extension has potential to impact archaeological resources associated with the Humber Valley.  All new corridor alternatives cross the Humber River, a designated Canadian Heritage River and the site of the Toronto Carrying Place Trail, a trail of historical significance in King Township. A new crossing of the Humber River and associated trails can be designed to minimize impacts. This alternative also has potential to impact cultural resources in the vicinity of Norval, Speyside, Scotch Block and Brookville.</p>
<p><b>First Nations</b> Potential to impact lands of cultural or historical significance to First Nations.</p>	<p>New corridors have more potential to impact lands of cultural or historical significance to First Nations. The significance of these features will be confirmed through discussions with First Nations as part of the EA process.</p>	<p>New corridors have more potential to impact lands of cultural or historical significance to First Nations. The significance of these features will be confirmed through discussions with First Nations as part of the EA process.</p>	<p>New corridors have more potential to impact lands of cultural or historical significance to First Nations. The significance of these features will be confirmed through discussions with First Nations as part of the EA process.</p>	<p>New corridors have more potential to impact lands of cultural or historical significance to First Nations. The significance of these features will be confirmed through discussions with First Nations as part of the EA process.</p>	<p>New corridors have more potential to impact lands of cultural or historical significance to First Nations. The significance of these features will be confirmed through discussions with First Nations as part of the EA process.</p>
<p><b>Community SUMMARY</b></p>	<p><u>Advantages</u></p> <ul style="list-style-type: none"> <li>• Major potential to improve linkages and accessibility between the urban areas in the GTA West Corridor</li> <li>• Support planned future land use and growth as identified in the Government Policy</li> <li>• Address development pressures in Peel and York Regions</li> <li>• Less impacts on community features, land uses and built-up areas</li> <li>• Less impacts on built heritage features in communities throughout Study Area</li> </ul> <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> <li>• Cross varying portions of Niagara Escarpment Plan and Greenbelt designated areas. Alternatives 4-4 and 4-5 cross the largest sections of Niagara Escarpment Plan lands and Greenbelt</li> <li>• Potential to change or affect the “rural” character of some communities (i.e., Kleinburg, Bolton, Tullmore and Mayfield West). Potential increased nuisance impacts (i.e., noise, illumination etc.) in areas closest to new corridor</li> <li>• Potential fragmentation of agricultural operations and loss of Class 1 lands</li> <li>• New crossing of Humber River has potential to impact Canadian Heritage River and Trails (including Toronto Carrying Place Trail) – although impacts can be minimized through design and span of new structures</li> <li>• Potential impacts to archaeological resources in previously undisturbed areas</li> <li>• Potential to impact cultural features near Norval (Alternatives 4-2 and 4-3), Ballinafad and Cheltenham (Alternative 4-4) and Speyside, Scotch Block and Brookville (Alternative 4-5)</li> <li>• Groups 4-1 and 4-2 have limited ability to serve Milton/Halton Hills growth areas</li> </ul>				

Table B-5: High Level Assessment of Group #4 Alternatives

FACTOR/CRITERIA	Alternative 4-1 New Route and Freeway Widening Widen Highways 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 to Highway 410	Alternative 4-2 New Route and Freeway Widening Widen Highways 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 to Highway 407 in Mississauga	Alternative 4-3 New Route and Freeway Widening Widen Highways 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 to Highway 401 in Milton	Alternative 4-4 New Route and Freeway Widening Widen Highways 6, 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 in Vaughan to Guelph (north of Georgetown)	Alternative 4-5 New Route and Freeway Widening Widen Highways 6, 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 in Vaughan to Highway 6 (south of Georgetown and Guelph)
<b>Factor: Economy</b>					
<b>Industry and trade</b> Qualitative description of how industry and trade are supported.	<p>Widening existing transportation corridors would service existing and future industrial areas close to existing provincial highways.</p> <p>This new corridor alternative would potentially provide improved access to industrial areas in York and Peel Regions and support new industrial areas in the north GTA. It would also improve the efficiency of movement of goods and potentially benefit trade through reduction in congestion and improved access to CP inter-modal terminal in Vaughan and CN inter-modal terminal in Brampton.</p>	<p>Widening existing transportation corridors would service existing and future industrial areas close to existing provincial highways.</p> <p>This new corridor alternative would potentially provide improved access to industrial areas in York, Peel and Halton Regions and support new industrial areas in northwestern parts of the GTA. It would also improve the efficiency of movement of goods and potentially benefit trade through reduction in congestion and improved access to CP inter-modal terminal in Vaughan and CN inter-modal terminal in Brampton.</p>	<p>Widening existing transportation corridors would service existing and future industrial areas close to existing provincial highways.</p> <p>This new corridor alternative would potentially provide improved access to industrial areas in York, Peel and Halton Regions and support new industrial areas in northwestern parts of the GTA. It would also improve the efficiency of movement of goods and potentially benefit trade through reduction in congestion and improved access to CP inter-modal terminal in Vaughan and CN inter-modal terminal in Brampton and improved access to the CP intermodal facility in Milton, on Trafalgar Road. Furthermore, the nature of the economic activity in these areas is likely to require more road capacity than the areas served by other alternatives.</p> <p>This alternative serves industry and trade well because it connects the major existing and emerging nodes that are the focus of the logistics/wholesale trade sectors for growth in Halton. It also supports improved access to these areas for the labour force (i.e., 100,000 jobs over next 20 years).</p>	<p>Widening existing transportation corridors would service existing and future industrial areas close to existing provincial highways.</p> <p>This new corridor alternative would potentially provide improved access to industrial areas in York, Peel and Wellington County and support new industrial areas north of the GTA. It would also improve the efficiency of movement of goods and potentially benefit trade through reduction in congestion and improved access to CP intermodal terminal in Vaughan and CN intermodal terminal in Brampton.</p>	<p>Widening existing transportation corridors would service existing and future industrial areas close to existing provincial highways.</p> <p>This new corridor alternative would enhance the area's economic competitiveness by improving access to existing and planned industrial areas and inter-modal facilities, taking pressure off municipal roads, reducing the cost of congestion, and enhancing transportation system efficiency and reliability/redundancy for growth centres throughout the study area, from Vaughan to Guelph and on to Kitchener-Waterloo.</p> <p>It would also improve the efficiency of movement of goods and potentially benefit trade.</p> <p>Furthermore, the nature of the economic activity in these areas is likely to require more road capacity than the areas served by other alternatives.</p> <p>This alternative serves industry and trade well because it connects the major existing and emerging nodes that are the focus of the logistics/wholesale trade sectors for growth in Halton. It also supports improved access to these areas for the labour force (i.e., 100,000 jobs over next 20 years). Furthermore, the nature of the economic activity in these areas is likely to require more road capacity than the areas served by other alternatives.</p>
<b>Tourism and recreation</b> Qualitative description of how provincial / regional / municipal tourism and recreation are supported.	<p>Widening existing transportation corridors would service existing tourism operations currently accessible by existing provincial highways.</p> <p>A new corridor supports improved road connection for intra-provincial tourism, including to Highway 400 and "cottage country" and supports improved road connections for international tourism arriving from Lester B. Pearson International Airport. Some existing tourist / recreational attractions may be impacted although impacts can be minimized through the route selection process.</p>	<p>Widening existing transportation corridors would service existing tourism operations currently accessible by existing provincial highways.</p> <p>A new corridor supports improved road connection for intra-provincial tourism, including to Highway 400 and "cottage country" and supports improved road connections for international tourism arriving from Lester B. Pearson International Airport. Some existing tourist / recreational attractions may be impacted although impacts can be minimized through the route selection process.</p> <p>This alternative provides additional potential to connect the tourist traffic in north GTA with</p>	<p>Widening existing transportation corridors would service existing tourism operations currently accessible by existing provincial highways.</p> <p>A new corridor supports improved road connection for intra-provincial tourism, including to Highway 400 and "cottage country" and supports improved road connections for international tourism arriving from Lester B. Pearson International Airport. Some existing tourist / recreational attractions may be impacted although impacts can be minimized through the route selection process.</p> <p>This alternative provides additional potential to connect tourist traffic in north</p>	<p>Widening existing transportation corridors would service existing tourism operations currently accessible by existing provincial highways.</p> <p>A new corridor supports improved road connection for intra-provincial tourism, including to Highway 400 and "cottage country". Some existing tourist / recreational attractions may be impacted although impacts can be minimized through the route selection process.</p> <p>This alternative provides significantly improved access to eco-recreational areas (i.e., Forks of the Credit, Palgrave, Albion Hills, Terra Cotta, Elora Gorge etc.), many of which are located along</p>	<p>Widening existing transportation corridors would service existing tourism operations currently accessible by existing provincial highways.</p> <p>A new corridor supports improved road connection for intra-provincial tourism, including to Highway 400 and "cottage country" and supports improved road connections for international tourism arriving from Lester B. Pearson International Airport. Some existing tourist / recreational attractions may be impacted although impacts can be minimized through the route selection process.</p> <p>This alternative provides improved connections to areas south of Guelph, but does not provide a direct link to the Greater Golden Horseshoe south of the study area.</p>

Table B-5: High Level Assessment of Group #4 Alternatives

FACTOR/CRITERIA	Alternative 4-1	Alternative 4-2	Alternative 4-3	Alternative 4-4	Alternative 4-5
	<p>New Route and Freeway Widening Widen Highways 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 to Highway 410</p>	<p>New Route and Freeway Widening Widen Highways 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 to Highway 407 in Mississauga</p>	<p>New Route and Freeway Widening Widen Highways 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 to Highway 401 in Milton</p>	<p>New Route and Freeway Widening Widen Highways 6, 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 in Vaughan to Guelph (north of Georgetown)</p>	<p>New Route and Freeway Widening Widen Highways 6, 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 in Vaughan to Highway 6 (south of Georgetown and Guelph)</p>
<p><b>Economic and agricultural development</b> Qualitative description of how the alternative supports or impacts agricultural operations and plans for future development.  <b>NOTE – Direct impacts resulting in fragmentation of agricultural operations or loss of Class 1 lands is dealt with under the Community Factor.</b></p>	<p>Widening transportation corridors could impact existing agricultural operations through property access impacts.  A new corridor has potential to fragment linked operations and change or restrict access. Impacts could partially be mitigated through aligning routes along existing lot lines to avoid fragmentation of existing and linked operations.  This alternative has the some potential to impact agricultural areas in Peel Region.</p>	<p>Widening transportation corridors could impact existing agricultural operations through property access impacts.  A new corridor has potential to fragment linked operations and change or restrict access. Impacts could partially be mitigated through aligning routes along existing lot lines to avoid fragmentation of existing and linked operations.  This alternative has the some potential to impact agricultural areas in Peel and Halton Regions.</p>	<p>Widening transportation corridors could impact existing agricultural operations through property access impacts.  A new corridor has potential to fragment linked operations and change or restrict access. Impacts could partially be mitigated through aligning routes along existing lot lines to avoid fragmentation of existing and linked operations.  This alternative has the some potential to impact agricultural areas in Peel and Halton Regions.</p>	<p>Widening transportation corridors could impact existing agricultural operations through property access impacts.  A new corridor has potential to fragment linked operations and change or restrict access. Impacts could partially be mitigated through aligning routes along existing lot lines to avoid fragmentation of existing and linked operations.  This alternative has the some potential to impact agricultural areas in Peel and Halton Regions as well as Wellington County, west of the escarpment.</p>	<p>Widening transportation corridors could impact existing agricultural operations through property access impacts.  A new corridor has potential to fragment linked operations and change or restrict access. Impacts could partially be mitigated through aligning routes along existing lot lines to avoid fragmentation of existing and linked operations.  This alternative has the some potential to impact agricultural areas in Peel and Halton Regions as well as Wellington County – although agricultural activities are limited west of the escarpment in this alternative.</p>
<p><b>Urban Growth Centre Connections</b> Provision of connections to Urban Growth Centres identified in provincial policy.</p>	<p>This alternative, in conjunction with widening the existing highway system, provides improved connections between some Urban Growth Centres (i.e., Vaughan Corporate Centre and Downtown Brampton).</p>	<p>This alternative provides, in conjunction with widening the existing highway system, improved connections between some Urban Growth Centres (i.e., Vaughan Corporate Centre and Downtown Brampton).</p>	<p>This alternative, in conjunction with widening the existing highway system, provides improved connections between several Urban Growth Centres (i.e., Vaughan Corporate Centre, Downtown Brampton and Downtown Milton).</p>	<p>This alternative, in conjunction with widening the existing highway system, provides improved connections between all Urban Growth Centres (i.e., Vaughan Corporate Centre, Downtown Brampton, Downtown Milton and Downtown Guelph).</p>	<p>This alternative, in conjunction with widening the existing highway system, provides improved connections between all Urban Growth Centres (i.e., Vaughan Corporate Centre, Downtown Brampton, Downtown Milton and Downtown Guelph).</p>
<p><b>Economy SUMMARY</b></p>	<p><u>Advantages</u></p> <ul style="list-style-type: none"> <li>• New corridors provide economic opportunities for industry and improved trade</li> <li>• Provide improved access to CP inter-modal terminal in Vaughan and CN inter-modal terminal in Brampton</li> <li>• Connect major existing and emerging nodes that are the focus of the logistics/wholesale trade sectors for growth in Halton and provide improved access to these areas for the labour force.</li> <li>• Alternative 4-4 provides significantly improved access to eco-recreational areas (many of which are located along the Niagara Escarpment)</li> <li>• Alternative 4-5 would enhance the area's economic competitiveness by improving access to existing and planned industrial areas and inter-modal facilities, taking pressure off municipal roads, reducing the cost of congestion, and enhancing transportation system efficiency and reliability/redundancy for growth centres throughout the Study Area, from Vaughan to Guelph and on to Kitchener-Waterloo</li> <li>• Provide service to existing and future industry</li> <li>• Support improved connections for intra-provincial and international tourism, including to/from Lester B. Pearson International Airport</li> <li>• Improve connections between Urban Growth Centres through network redundancy</li> </ul> <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> <li>• Potential impacts on linked agricultural operations although route selection process and mitigation could reduce impacts</li> </ul>				

Table B-5: High Level Assessment of Group #4 Alternatives

FACTOR/CRITERIA	Alternative 4-1	Alternative 4-2	Alternative 4-3	Alternative 4-4	Alternative 4-5
Factor: Environment					
<p><b>Environmental protection policies</b></p> <p>Support for or consistency with federal, provincial and municipal environmental protection policies.</p>	<p>Typically higher environmental impacts are associated with new corridor alternatives through areas that are protected by environmental policies because the new corridor alternative has a larger footprint and there is more potential for fragmentation. However, some impacts can be avoided and/or mitigated through route location and design features that will be confirmed in future study phases.</p> <p>This alternative crosses some land designated by the Greenbelt Plan (in York and Peel) and avoids NEC designated areas.</p>	<p>Typically higher environmental impacts are associated with new corridor alternatives through areas that are protected by environmental policies because the new corridor alternative has a larger footprint and there is more potential for fragmentation. However, some impacts can be avoided and/or mitigated through route location and design features that will be confirmed in future study phases.</p> <p>This alternative crosses some land designated by the Greenbelt Plan (in York and Peel) and avoids NEC designated areas.</p>	<p>Typically higher environmental impacts are associated with new corridor alternatives through areas that are protected by environmental policies because the new corridor alternative has a larger footprint and there is more potential for fragmentation. However, some impacts can be avoided and/or mitigated through route location and design features that will be confirmed in future study phases.</p> <p>This alternative crosses some land designated by the Greenbelt Plan (in York and Peel) and avoids NEC designated areas.</p>	<p>Typically higher environmental impacts are associated with new corridor alternatives through areas that are protected by environmental policies because the new corridor alternative has a larger footprint and there is more potential for fragmentation. However, some impacts can be avoided and/or mitigated through route location and design features that will be confirmed in future study phases.</p> <p>This alternative crosses a large area designated by the Greenbelt Plan (in York, Peel and Wellington County) and NEC designated lands north of Georgetown.</p>	<p>Typically higher environmental impacts are associated with new corridor alternatives through areas that are protected by environmental policies because the new corridor alternative has a larger footprint and there is more potential for fragmentation. However, some impacts can be avoided and/or mitigated through route location and design features that will be confirmed in future study phases.</p> <p>This alternative crosses a large area designated by the Greenbelt Plan (in York, Peel, Halton and Wellington County) and NEC designated lands south of Georgetown.</p>
<p><b>Natural features and functions</b></p> <p>Qualitative analysis of:</p> <ul style="list-style-type: none"> <li>Potential impacts to major aquatic ecosystems (number or description of potentially impacted watercourses)</li> <li>Potential impacts to major terrestrial ecosystems (area or description of terrestrial habitat potentially affected)</li> <li>Potential impacts to sensitive groundwater features (qualitative description)</li> <li>Potential impacts to areas that are sensitive to changes in surface water (qualitative description)</li> <li>Description of potential to avoid or minimize impacts to environmental features.</li> </ul> <p><b>NOTE: Potential impacts to the Greenbelt, NEC and ORM are dealt with in</b></p>	<p>This corridor alternative has some potential to impact the following environmental features within the following routes:</p> <p>All impacted environmental features in Alternative 3-1</p> <p>AND</p> <p><u>Highway 400 to 410 New Corridor</u></p> <ul style="list-style-type: none"> <li>Many watercourse crossings (i.e., intermittent and permanent) within the West Humber Watershed. Impacted watercourses include Etobicoke Creek West Branch, Robinson Creek, Clarkway Drive Tributary, Gore Road Tributary, Salt Creek, East Humber River, Main Humber River, and Cambells Cross Creek</li> <li>2 Evaluated Wetland Complexes consisting of the Heart Lake and the Tormore Wetland Complexes</li> <li>Several unevaluated wetland features</li> <li>2 ANSI's known as Humber River Valley-Kleinburg and Gooseville Moraine</li> <li>2 Environmentally Sensitive Areas known as the King Creek Forest and the East Humber River</li> </ul>	<p>This corridor alternative has some potential to impact the following environmental features within the following routes:</p> <p>All impacted environmental features in Alternative 3-1</p> <p>AND</p> <p><u>Highway 400 to 407 New Corridor</u></p> <ul style="list-style-type: none"> <li>Many watercourse crossings (i.e., intermittent and permanent) within the Humber and Etobicoke Watersheds. Impacted watercourses include Etobicoke Creek West Branch, Robinson Creek, Clarkway Drive Tributary, Gore Road Tributary, Salt Creek, East Humber River, Main Humber River, Cambells Cross Creek, Mullet Creek, Levi's Creek and unnamed tributaries of the Credit River, Levi's Creek, and East Sixteen Mile Creek</li> <li>Approximately 6 Evaluated Wetland Complexes consisting of the Heart Lake, Tormore, Hungry Hallow, Levi Creek Headwaters, Credit River at Heritage Road, and Norval Wetland Complexes</li> </ul>	<p>This corridor alternative has some potential to impact the following environmental features within the following routes:</p> <p>All impacted environmental features in Alternative 3-1</p> <p>AND</p> <p><u>Highway 400 to 401 New Corridor</u></p> <ul style="list-style-type: none"> <li>Many watercourse crossings (i.e., intermittent and permanent) within the Humber and Etobicoke Watersheds. Impacted watercourses include Etobicoke Creek West Branch, Robinson Creek, Clarkway Drive Tributary, Gore Road Tributary, Salt Creek, East Humber River, Main Humber River, Cambells Cross Creek, Mullet Creek, Levi's Creek, Middle Sixteen Mile Creek, and unnamed tributaries of the Credit River, Levi's Creek, Sixteen Mile Creek, East Sixteen Mile Creek and Middle Sixteen Mile Creek</li> <li>Approximately 6 Evaluated Wetland Complexes consisting of the Heart Lake, Tormore, Hungry Hallow, Levi Creek Headwater Wetland, Credit River</li> </ul>	<p>This corridor alternative has some potential to impact the following environmental features within the following routes:</p> <p>All impacted environmental features in Alternative 3-1</p> <p>AND</p> <p><u>Highway 6 Widening</u></p> <ul style="list-style-type: none"> <li>Approximately 5 watercourse crossings</li> <li>1 Evaluated Wetland known as the Mill Creek Wetland Complex</li> </ul> <p><u>Highway 124 Widening</u></p> <ul style="list-style-type: none"> <li>Approximately 10 watercourse crossings</li> <li>1 Evaluated Wetland Complex known as the Guelph Southwest Wetland Complex</li> <li>Directly within Wellhead protection Zones (i.e., 2 and 25 years)</li> </ul> <p><u>Highway 400 to Guelph New Corridor</u></p> <ul style="list-style-type: none"> <li>Many watercourse crossings (i.e., intermittent and permanent) within the West Humber Watershed. Impacted watercourses include Rogers Creek, Snows Creek, Etobicoke Creek West Branch, Robinson Creek, Clarkway Drive</li> </ul>	<p>This corridor alternative has some potential to impact the following environmental features within the following routes:</p> <p>All impacted environmental features in Alternative 3-1</p> <p>AND</p> <p><u>Highway 6 Widening</u></p> <ul style="list-style-type: none"> <li>Approximately 5 watercourse crossings</li> <li>1 Evaluated Wetland known as the Mill Creek Wetland Complex</li> </ul> <p><u>Highway 400 to Highway 6 New Corridor</u></p> <ul style="list-style-type: none"> <li>Many watercourse crossings (i.e., intermittent and permanent) within the West Humber Watershed. Impacted watercourses include Mountsberg Creek, Middle Sixteen Mile Creek, Levi's Creek, Etobicoke Creek, Etobicoke Creek West Branch, Robinson Creek, Clarkway Drive Tributary, Gore Road Tributary, Salt Creek, East Humber River, Main Humber River, Cambells Cross Creek and unnamed tributaries of Credit River, Fletchers Creek, Sixteen Mile Creek, Middle Sixteen Mile Creek, Etobicoke Creek, Blue Springs Creek, and Bronte Creek</li> <li>Approximately 16 Evaluated Wetland Complexes consisting of Arkell-Corwhin, Arkell Bog, Ashgrove West, Badenoch-Moffat, Churchville-</li> </ul>

Table B-5: High Level Assessment of Group #4 Alternatives

FACTOR/CRITERIA	Alternative 4-1 New Route and Freeway Widening Widen Highways 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 to Highway 410	Alternative 4-2 New Route and Freeway Widening Widen Highways 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 to Highway 407 in Mississauga	Alternative 4-3 New Route and Freeway Widening Widen Highways 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 to Highway 401 in Milton	Alternative 4-4 New Route and Freeway Widening Widen Highways 6, 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 in Vaughan to Guelph (north of Georgetown)	Alternative 4-5 New Route and Freeway Widening Widen Highways 6, 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 in Vaughan to Highway 6 (south of Georgetown and Guelph)
<b>Environmental Protection Policies (see above)</b>	<ul style="list-style-type: none"> <li>Approximately 5 Species at Risk with ranges within the limits of the new corridor</li> <li>Wellhead protection Zones within the Kleinburg/Vaughan area (i.e., 2, 10, 25 and 150 years)</li> </ul>	<ul style="list-style-type: none"> <li>Several unevaluated wetland features</li> <li>3 ANSI's known as Humber River Valley-Kleinburg, Gooseville Moraine and Georgetown Credit Valley</li> <li>3 Environmentally Sensitive Areas known as the King Creek Forest, East Humber River and Georgetown Credit River Valley</li> <li>Approximately 5 Species at Risk with ranges within the limits of the new corridor</li> <li>Wellhead protection Zones within the Kleinburg/Vaughan area (i.e., 2, 10, 25 and 150 years)</li> </ul>	<ul style="list-style-type: none"> <li>at Heritage Road, and Norval Wetland Complexes</li> <li>Several unevaluated wetland features</li> <li>3 ANSI's known as Humber River Valley-Kleinburg, Gooseville Moraine and Georgetown Credit Valley</li> <li>3 Environmentally Sensitive Areas known as the King Creek Forest, East Humber River and Georgetown Credit River Valley</li> <li>Approximately 8 Species at Risk with ranges within the limits of the new corridor</li> <li>Wellhead protection Zones within the Kleinburg/Vaughan area (i.e., 2, 10, 25 and 150 years)</li> </ul>	<ul style="list-style-type: none"> <li>Tributary, Gore Road Tributary, Salt Creek, East Humber River, Main Humber River, Cambells Cross Creek and unnamed tributaries of Fletchers Creek, Credit River, Etobicoke Creek, Black Creek and Silver Creek</li> <li>Approximately 13 Evaluated Wetland Complexes consisting of Acton-Silver Creek, Ballinafad Ridge, Ballinafad Woods, Caledon Mountain, Cheltenham, Eramosa River – Blue Springs Creek, Guelph North-East, Heart Lake, Marden South, South Osprunge – Highway 25 Swamp, Speed-Lutteral-Swan Creek, Tormore, and Winston Churchill Boulevard Wetland Complexes</li> <li>Several unevaluated wetland features</li> <li>6 ANSI's known as Humber River Valley-Kleinburg, Gooseville Moraine Terra Cotta Forest, Silver Creek Valley, Eramosa River Valley, and Guelph Drumlin Field</li> <li>5 Environmentally Sensitive Areas known as the King Creek Forest, East Humber River, Terra Cotta Woods, Silver Creek Valley, and Acton Swamp III</li> <li>Approximately 11 Species at Risk with ranges within the limits of the new corridor</li> <li>Wellhead protection Zones within the Kleinburg/Vaughan area (i.e., 2, 10, 25 and 150 years) as well as within Wellington County (i.e., 2 and 25 years)</li> </ul>	<ul style="list-style-type: none"> <li>Norval, Credit River at Heritage Road, East Oakville Swamp, Guelph Junction, Halton Escarpment, Heart Lake, Levi Creek Headwaters, Mill Creek, North Mansewood, Norval, Scotch Block, and Tormore Wetland Complexes.</li> <li>Several unevaluated wetland features)</li> <li>7 ANSI's known as Humber River Valley-Kleinburg, Gooseville Moraine, Speyside Forest, Halton Forest North, Halton Forest South, Brookville Swamp, and Galt Moraine at Corwhin</li> <li>3 Environmentally Sensitive Areas known as the King Creek Forest, East Humber River, and Hilton Falls Complex</li> <li>Approximately 13 Species at Risk with ranges within the limits of the new corridor</li> <li>Wellhead protection Zones within the Kleinburg/Vaughan area (i.e., 2, 10, 25 and 150 years) as well as within Wellington County (i.e., 2 and 25 years)</li> </ul>
<b>Air Quality</b> Qualitative assessment (using quantitative inputs) of: <ul style="list-style-type: none"> <li>Potential changes in greenhouse gas emissions and criteria air contaminants (CACs).</li> <li>Potential changes in air quality on a regional level.</li> </ul>	New transportation corridors have potential to reduce traffic volumes in existing built-up highway corridors and promote more free flow travel conditions, although the next generation of vehicles (i.e., electric hybrids etc.) do not emit while idling or accelerating and thus are immune to changes in traffic flow. There is some potential to increase separation distance between new corridors and built-up areas, which may be beneficial in terms of local pollutant exposure. No significant increase in GHG emissions is	New transportation corridors have potential to reduce traffic volumes in existing built-up highway corridors and promote more free flow travel conditions, although the next generation of vehicles (i.e., electric hybrids etc.) do not emit while idling or accelerating and thus are immune to changes in traffic flow. There is some potential to increase separation distance between new corridors and built-up areas, which may be beneficial in terms of local pollutant exposure. No significant increase in GHG emissions is	New transportation corridors have potential to reduce traffic volumes in existing built-up highway corridors and promote more free flow travel conditions, although the next generation of vehicles (i.e., electric hybrids etc.) do not emit while idling or accelerating and thus are immune to changes in traffic flow. There is some potential to increase separation distance between new corridors and built-up areas, which may be beneficial in terms of local pollutant exposure. No significant increase in GHG emissions is	New transportation corridors have potential to reduce traffic volumes in existing built-up highway corridors and promote more free flow travel conditions, although the next generation of vehicles (i.e., electric hybrids etc.) do not emit while idling or accelerating and thus are immune to changes in traffic flow. There is some potential to increase separation distance between new corridors and built-up areas, which may be beneficial in terms of local pollutant exposure. No significant increase in GHG emissions is	New transportation corridors have potential to reduce traffic volumes in existing built-up highway corridors and promote more free flow travel conditions, although the next generation of vehicles (i.e., electric hybrids etc.) do not emit while idling or accelerating and thus are immune to changes in traffic flow. There is some potential to increase separation distance between new corridors and built-up areas, which may be beneficial in terms of local pollutant exposure. No significant increase in GHG emissions is anticipated from highway widening options or new transportation corridors since GHG emissions are a

Table B-5: High Level Assessment of Group #4 Alternatives

FACTOR/CRITERIA	Alternative 4-1 New Route and Freeway Widening Widen Highways 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 to Highway 410	Alternative 4-2 New Route and Freeway Widening Widen Highways 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 to Highway 407 in Mississauga	Alternative 4-3 New Route and Freeway Widening Widen Highways 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 to Highway 401 in Milton	Alternative 4-4 New Route and Freeway Widening Widen Highways 6, 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 in Vaughan to Guelph (north of Georgetown)	Alternative 4-5 New Route and Freeway Widening Widen Highways 6, 401, 407, 410, 400 and 427 extension AND New Corridor connecting Highway 400 in Vaughan to Highway 6 (south of Georgetown and Guelph)
	anticipated from highway widening options or new transportation corridors since GHG emissions are a regional/global issue and much of the traffic is only being diverted in from other roadways.	anticipated from highway widening options or new transportation corridors since GHG emissions are a regional/global issue and much of the traffic is only being diverted in from other roadways.	anticipated from highway widening options or new transportation corridors since GHG emissions are a regional/global issue and much of the traffic is only being diverted in from other roadways.	anticipated from highway widening options or new transportation corridors since GHG emissions are a regional/global issue and much of the traffic is only being diverted in from other roadways.	regional/global issue and much of the traffic is only being diverted in from other roadways.
<b>Resource Consumption</b> Ability to minimize resource consumption and potential for mineral and aggregate resource issues.	This new corridor alternative will require slightly more resources than freeway widening alternatives.	This new corridor alternative will require more resources than freeway widening alternatives.	This new corridor alternative will require more resources than freeway widening alternatives.	This new corridor alternative will require significantly more resources than freeway widening alternatives, based on its length.	This new corridor alternative will require significantly more resources than freeway widening alternatives, based on its length. This alternative will impact Halton Shale.
<b>Environment SUMMARY</b>	<p><u>Advantages</u></p> <ul style="list-style-type: none"> <li>New corridors offer some opportunities to increase separation distance between built-up areas and transportation corridor</li> <li>New corridors offer some opportunities to minimize impacts at environmentally sensitive features through route selection phases and design of new crossings, structures, etc.</li> </ul> <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> <li>Widening Highway 400 would impact Oak Ridges Moraine</li> <li>New corridor alternatives have potential to impact and result in loss of and fragmentation of lands designated by Greenbelt and Niagara Escarpment Plans</li> <li>Alternatives 4-4 and 4-5 have the most potential to impact. including disruption to wildlife movement/corridors and impacts to SAR associated with Niagara Escarpment, and result in loss of and fragment lands designated by Greenbelt and Niagara Escarpment Plans</li> <li>Potential to impact many significant Environmentally Sensitive Areas, Areas of Natural and Scientific Interest, wetlands, groundwater recharge areas etc. especially those west of Georgetown, although some features can be avoided through route selection process and design of crossings</li> </ul>				
<ul style="list-style-type: none"> <li>New corridor alternatives have most potential to impact surface water conditions Alternatives 4-4 and 4-5 have potential for major resource consumption, based on their length</li> </ul>					
<ul style="list-style-type: none"> <li>Alternative 4-5 impacts Halton shale</li> </ul>					

Table B-5: High Level Assessment of Group #4 Alternatives

FACTOR/CRITERIA	Alternative 4-1  Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2  Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 410	Alternative 4-2  Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2  Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 401 / HPBATS Corridor	Alternative 4-3  Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2  Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 401 in Milton area	Alternative 4-4  Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2  Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Guelph (north)	Alternative 4-5  Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2  Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Guelph (south)
<b>Factor: Transportation</b>					
<p><b>Efficient movement of people</b> <b>Potential to support the efficient movement of people between communities and regions</b></p> <p>Peak period performance of key inter-regional corridors – forecast volume/capacity issues at critical screenlines</p> <p>Potential to provide for higher order inter-regional transportation corridors</p> <p>Percentage of inter-regional system operating better than LOS D (auto lane km)</p> <p>Shift in use of local/regional roadways to inter-regional transportation system</p> <p>Reduction of auto hours on inter-regional transportation system operating at LOS D or worse</p>	<p>Generally addresses the required infrastructure supply at critical screenlines to accommodate forecast vehicle traffic, except for the Hwy 400 Screenline which will be operating in a congested state:</p> <p>East of Guelph WB - 0.76 V/C West of Milton WB - 0.84 V/C East of WC Blvd WB - 0.78 V/C East of Hwy 10 WB - 0.90 V/C East of Hwy 50 WB - 0.69 V/C West of Hwy 400 WB - 0.93 V/C</p> <p>Provides new higher order inter-regional transportation corridor over a short distance</p> <p>Approximately 40% of the inter-regional transportation system operate better than LOS D for auto trips (lane / km)</p> <p>Approximately 38% of the auto traffic uses the inter-regional system - representing an increase over Group 1 &amp; 2</p> <p>Approximately 26% less auto hours are spent on the inter-regional transportation system for lane km operating at LOS D or worse in comparison to Group 1 &amp; 2</p>	<p>Generally addresses the required infrastructure supply at critical screenlines to accommodate forecast vehicle traffic, except for the Hwy 400 Screenline which will be operating in a congested state:</p> <p>East of Guelph WB - 0.76 V/C West of Milton WB - 0.85 V/C East of WC Blvd WB - 0.73 V/C East of Hwy 10 WB - 0.90 V/C East of Hwy 50 WB - 0.69 V/C West of Hwy 400 WB - 0.93 V/C</p> <p>Provides new higher order inter-regional transportation corridor over a short distance</p> <p>Approximately 39% of the inter-regional transportation system operate better than LOS D for auto trips (lane / km)</p> <p>Approximately 39% of the auto traffic uses the inter-regional system - representing an increase over Group 1 &amp; 2</p> <p>Approximately 24% less auto hours are spent on the inter-regional transportation system for lane km operating at LOS D or worse in comparison to Group 1 &amp; 2</p>	<p>Generally addresses the required infrastructure supply at critical screenlines to accommodate forecast vehicle traffic, except for the Hwy 400 Screenline which will be operating in a congested state:</p> <p>East of Guelph WB - 0.78 V/C West of Milton WB - 0.80 V/C East of WC Blvd WB - 0.73 V/C East of Hwy 10 WB - 0.90 V/C East of Hwy 50 WB - 0.71 V/C West of Hwy 400 WB - 0.94 V/C</p> <p>Provides new higher order inter-regional transportation corridor over a long distance east of the NEC.</p> <p>Approximately 39% of the inter-regional transportation system operate better than LOS D for auto trips (lane / km)</p> <p>Approximately 39% of the auto traffic uses the inter-regional system - representing an increase over Group 1 &amp; 2</p> <p>Approximately 23% less auto hours are spent on the inter-regional transportation system for lane km operating at LOS D or worse in comparison to Group 1 &amp; 2</p>	<p>Generally addresses the required infrastructure supply at critical screenlines to accommodate forecast vehicle traffic, except for the Hwy 400 Screenline which will be operating in a congested state:</p> <p>East of Guelph WB - 0.71 V/C West of Milton WB - 0.78 V/C East of WC Blvd WB - 0.74 V/C East of Hwy 10 WB - 0.90 V/C East of Hwy 50 WB - 0.71 V/C West of Hwy 400 WB - 0.94 V/C</p> <p>Provides new higher order inter-regional transportation corridor over the full study area.</p> <p>Approximately 44% of the inter-regional transportation system operate better than LOS D for auto trips (lane / km)</p> <p>Approximately 40% of the auto traffic uses the inter-regional system - representing an increase over Group 1 &amp; 2</p> <p>Approximately 23% less auto hours are spent on the inter-regional transportation system for lane km operating at LOS D or worse in comparison to Group 1 &amp; 2</p>	<p>Generally addresses the required infrastructure supply at critical screenlines to accommodate forecast vehicle traffic, except for the Hwy 400 Screenline which will be operating in a congested state:</p> <p>East of Guelph WB - 0.70 V/C West of Milton WB - 0.80 V/C East of WC Blvd WB - 0.73 V/C East of Hwy 10 WB - 0.90 V/C East of Hwy 50 WB - 0.71 V/C West of Hwy 400 WB - 0.94 V/C</p> <p>Provides new higher order inter-regional transportation corridor over the full study area.</p> <p>Approximately 41% of the inter-regional transportation system operate better than LOS D for auto trips (lane / km)</p> <p>Approximately 39% of the auto traffic uses the inter-regional system representing an increase of 13% over Group 1 &amp; 2.</p> <p>Approximately 21% less auto hours are spent on the inter-regional transportation system for lane km operating at LOS D or worse in comparison to Group 1 &amp; 2</p>
<p><b>Efficient movement of goods</b> <b>Potential to support efficient movement of goods between urban</b></p>	<p>Generally addresses the required</p>	<p>Generally addresses the required</p>	<p>Generally addresses the required</p>	<p>Generally addresses the required</p>	<p>Generally addresses the required</p>

Table B-5: High Level Assessment of Group #4 Alternatives

FACTOR/CRITERIA	Alternative 4-1	Alternative 4-2	Alternative 4-3	Alternative 4-4	Alternative 4-5
<p><b>growth centres, international gateways, economic centres and regional inter-modal facilities and communities</b></p> <p>Peak Period performance of key inter-regional corridors – forecast volume/capacity issues at critical screenlines</p> <p>Potential to provide linkages between inter-modal facilities and provide for higher order goods movement</p> <p>Percentage of inter-regional system operating better than LOS D (vehicle lane km)</p> <p>Shift in use of local/regional roadways to inter-regional transportation system</p> <p>Reduction of truck hours on inter-regional transportation system operating at LOS D or worse</p>	<p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 410</p> <p>infrastructure supply at critical screenlines to accommodate forecast vehicle traffic, except for the Hwy 400 Screenline which will be operating in a congested state:</p> <p>East of Guelph WB - 0.76 V/C West of Milton WB - 0.84 V/C East of WC Blvd WB - 0.78 V/C East of Hwy 10 WB - 0.90 V/C East of Hwy 50 WB - 0.69 V/C West of Hwy 400 WB - 0.93 V/C</p> <p>Provides new higher order inter-regional transportation corridor that can provide for goods movement linkages</p> <p>Approximately 22% of the inter-regional transportation system operate better than LOS D for vehicle trips (lane / km)</p> <p>Approximately 39% of the truck traffic uses the inter-regional system - representing an increase over Groups 1 &amp; 2</p> <p>Approximately 28% less truck hours are spent on the inter-regional transportation system for lane km operating at LOS D or worse in comparison to Group 1 &amp; 2</p>	<p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 401 / HPBATS Corridor</p> <p>infrastructure supply at critical screenlines to accommodate forecast vehicle traffic, except for the Hwy 400 Screenline which will be operating in a congested state:</p> <p>East of Guelph WB - 0.76 V/C West of Milton WB - 0.85 V/C East of WC Blvd WB - 0.73 V/C East of Hwy 10 WB - 0.90 V/C East of Hwy 50 WB - 0.69 V/C West of Hwy 400 WB - 0.93 V/C</p> <p>Provides new higher order inter-regional transportation corridor that can provide for goods movement linkages</p> <p>Approximately 23% of the inter-regional transportation system operate better than LOS D for vehicle trips (lane / km)</p> <p>Approximately 40% of the truck traffic uses the inter-regional system - representing an increase over Groups 1 &amp; 2</p> <p>Approximately 26% less truck hours are spent on the inter-regional transportation system for lane km operating at LOS D or worse in comparison to Group 1 &amp; 2</p>	<p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 401 in Milton area</p> <p>infrastructure supply at critical screenlines to accommodate forecast vehicle traffic, except for the Hwy 400 Screenline which will be operating in a congested state:</p> <p>East of Guelph WB - 0.78 V/C West of Milton WB - 0.80 V/C East of WC Blvd WB - 0.73 V/C East of Hwy 10 WB - 0.90 V/C East of Hwy 50 WB - 0.71 V/C West of Hwy 400 WB - 0.94 V/C</p> <p>Provides new higher order inter-regional transportation corridor that can provide for goods movement linkages</p> <p>Approximately 25% of the inter-regional transportation system operate better than LOS D for vehicle trips (lane / km)</p> <p>Approximately 40% of the truck traffic uses the inter-regional system - representing an increase over Groups 1 &amp; 2</p> <p>Approximately 28% less truck hours are spent on the inter-regional transportation system for lane km operating at LOS D or worse in comparison to Group 1 &amp; 2</p>	<p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Guelph (north)</p> <p>infrastructure supply at critical screenlines to accommodate forecast vehicle traffic, except for the Hwy 400 Screenline which will be operating in a congested state:</p> <p>East of Guelph WB - 0.71 V/C West of Milton WB - 0.78 V/C East of WC Blvd WB - 0.74 V/C East of Hwy 10 WB - 0.90 V/C East of Hwy 50 WB - 0.71 V/C West of Hwy 400 WB - 0.94 V/C</p> <p>Provides new higher order inter-regional transportation corridor that can provide for goods movement linkages</p> <p>Approximately 25% of the inter-regional transportation system operate better than LOS D for vehicle trips (lane / km)</p> <p>Approximately 41% of the truck traffic uses the inter-regional system - representing an increase over Groups 1 &amp; 2</p> <p>Approximately 27% less truck hours are spent on the inter-regional transportation system for lane km operating at LOS D or worse in comparison to Group 1 &amp; 2</p>	<p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Guelph (south)</p> <p>infrastructure supply at critical screenlines to accommodate forecast vehicle traffic, except for the Hwy 400 Screenline which will be operating in a congested state:</p> <p>East of Guelph WB - 0.70 V/C West of Milton WB - 0.80 V/C East of WC Blvd WB - 0.73 V/C East of Hwy 10 WB - 0.90 V/C East of Hwy 50 WB - 0.71 V/C West of Hwy 400 WB - 0.94 V/C</p> <p>Provides new higher order inter-regional transportation corridor that can provide for goods movement linkages</p> <p>Approximately 23% of the inter-regional transportation system operate better than LOS D for vehicle trips (lane / km)</p> <p>Approximately 41% of the truck traffic uses the inter-regional system - representing an increase over Groups 1 &amp; 2</p> <p>Approximately 26% less truck hours are spent on the inter-regional transportation system for lane km operating at LOS D or worse in comparison to Group 1 &amp; 2</p>

Table B-5: High Level Assessment of Group #4 Alternatives

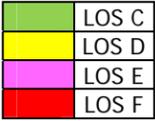
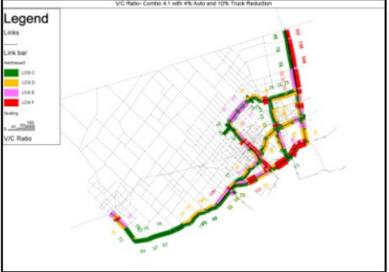
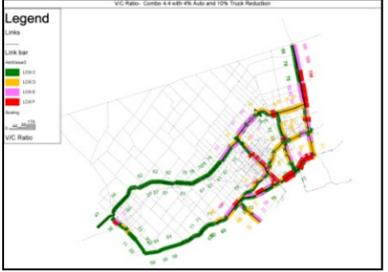
<p><b>FACTOR/CRITERIA</b></p>	<p><b>Alternative 4-1</b></p> <p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 410</p>	<p><b>Alternative 4-2</b></p> <p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 401 / HPBATS Corridor</p>	<p><b>Alternative 4-3</b></p> <p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 401 in Milton area</p>	<p><b>Alternative 4-4</b></p> <p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Guelph (north)</p>	<p><b>Alternative 4-5</b></p> <p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Guelph (south)</p>
<p><b>2031 PM Peak Hour Conditions</b></p> 					
<p><b>System reliability/redundancy</b></p> <p><b>Potential to support system reliability and reduce redundancy for travel (people and goods) between regions and communities during congested adverse conditions</b></p> <p>Availability of alternate routes/facilities for inter-regional transportation between regions, communities and terminals</p> <p>Potential to improve transportation system reliability</p>	<p>Major support for system reliability and redundancy, with a new transportation corridor, added roadway capacity, new/expanded transit and network optimization</p> <p>New alternate corridor between Hwy 400 and 410, plus new transit corridors in Group 2 and increased roadway capacity throughout the study area</p> <p>Potential to improve transportation system reliability with new inter-regional corridor over a short distance and increased road and transit capacity</p>	<p>Major support for system reliability and redundancy, with a new transportation corridor, added roadway capacity, new/expanded transit and network optimization</p> <p>New alternate corridor between Hwy 400 and 401/407, plus new transit corridors in Group 2 and increased roadway capacity throughout the study area</p> <p>Potential to improve transportation system reliability with new inter-regional corridor over a short distance and increased road and transit capacity</p>	<p>Major support for system reliability and redundancy, with a new transportation corridor, added roadway capacity, new/expanded transit and network optimization</p> <p>New alternate corridor between Hwy 400 and 401 at Milton, plus new transit corridors in Group 2 and increased roadway capacity throughout the study area</p> <p>Potential to improve transportation system reliability with new inter-regional corridor east of Milton and increased road and transit capacity</p>	<p>Major support for system reliability and redundancy, with a new transportation corridor, added roadway capacity, new/expanded transit and network optimization</p> <p>New alternate corridor between Hwy 400 and Highway 6 at Guelph, plus new transit corridors in Group 2 and increased roadway capacity throughout the study area</p> <p>Potential to improve transportation system reliability with new inter-regional corridor across the entire study area and increased road and transit capacity</p>	<p>Major support for system reliability and redundancy, with a new transportation corridor, added roadway capacity, new/expanded transit and network optimization</p> <p>New alternate corridor between Hwy 400 and Highway 6 north of Hwy 401, plus new transit corridors in Group 2 and increased roadway capacity throughout the study area</p> <p>Potential to improve transportation system reliability with new inter-regional corridor across the entire study area and increased road and transit capacity</p>
<p><b>Safety</b></p> <p><b>Potential to improve traffic safety based on opportunity to reduce congestion on the area road network</b></p> <p>Potential to improve response times for emergency service providers due to reduced congestion on the inter-regional road network (average</p>	<p>Major improvement to transportation system operations and safety</p> <p>Provides safety and response time benefits due to improvement in transportation system congestion from new corridor between Hwy 400 and 410</p>	<p>Major improvement to transportation system operations and safety</p> <p>Provides safety and response time benefits due to improvement in transportation system congestion from new corridor between Hwy 400 and</p>	<p>Major improvement to transportation system operations and safety</p> <p>Provides safety and response time benefits due to improvement in</p>	<p>Major improvement to transportation system operations and safety</p> <p>Provides safety and response time benefits due to improvement in transportation system congestion from new corridor between Hwy 400</p>	<p>Major improvement to transportation system operations and safety</p> <p>Provides safety and response time benefits due to improvement in transportation system congestion from new corridor between Hwy 400</p>

Table B-5: High Level Assessment of Group #4 Alternatives

FACTOR/CRITERIA	Alternative 4-1	Alternative 4-2	Alternative 4-3	Alternative 4-4	Alternative 4-5
<p>speed)</p> <p>Potential to reduce collisions due to improved network LOS and decreased conflicts between travel modes</p>	<p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 410</p> <p>and increased road capacity (average speed = 60 km/h)</p> <p>Major potential to reduce collisions due to improved network performance</p>	<p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 401 / HPBATS Corridor</p> <p>401/407and increased road capacity (average speed = 61 km/h)</p> <p>Major potential to reduce collisions due to improved network performance</p>	<p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 401 in Milton area</p> <p>transportation system congestion from new corridor between Hwy 400 and 401 at Milton and increased road capacity (average speed = 61 km/h)</p> <p>Major potential to reduce collisions due to improved network performance</p>	<p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Guelph (north)</p> <p>and Hwy 6 at Guelph and increased road capacity (average speed = 61 km/h)</p> <p>Major potential to reduce collisions due to improved network performance</p>	<p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Guelph (south)</p> <p>and Hwy 6 north of Hwy 401 and increased road capacity (average speed = 61 km/h)</p> <p>Major potential to reduce collisions due to improved network performance</p>
<p><b>Modal integration, balance and choice for movement of people (commuters, recreation/tourist)</b></p> <p><b>Potential to improve modal integration, balance and choice for person trips between communities, employment centers and major transit hubs</b></p> <p>Potential to increase attractiveness/effectiveness of existing, new and improved transit services</p> <p>Provision of higher order inter-regional transit services</p> <p>Provision of linkages between inter-regional and regional/community (local) transit systems</p>	<p>Major potential to improve modal integration, balance and choice for people movement</p> <p>Moderate potential to increase attractiveness/ effectiveness of transit from new transit services and improvements in Groups 1 and 2, with addition of new corridor over a short distance for transit and widened freeways for bus services</p> <p>Potential for new higher order inter-regional transit on new corridor, with higher order inter-regional transit services provided through Group 2, and potential for improved transit operations along inter-regional freeways</p> <p>Potential to improve linkages between inter-regional and local transit with new station location and service connections on new and widened inter-regional corridors, and improved integration through measures in Groups 1 and 2</p> <p>Improves bus operational performance</p>	<p>Major potential to improve modal integration, balance and choice for people movement</p> <p>Moderate potential to increase attractiveness/ effectiveness of transit from new transit services and improvements in Groups 1 and 2, with addition of new corridor over a short distance for transit and widened freeways for bus services</p> <p>Potential for new higher order inter-regional transit on new corridor, with higher order inter-regional transit services provided through Group 2, and potential for improved transit operations along inter-regional freeways</p> <p>Potential to improve linkages between inter-regional and local transit with new station location and service connections on new and widened inter-regional corridors, and improved integration through measures in Groups 1 and 2</p> <p>Improves bus operational performance</p>	<p>Major potential to improve modal integration, balance and choice for people movement</p> <p>Moderate potential to increase attractiveness/ effectiveness of transit from new transit services and improvements in Groups 1 and 2, with addition of new corridor east of Milton for transit and widened freeways for bus services</p> <p>Potential for new higher order inter-regional transit on new corridor, with higher order inter-regional transit services provided through Group 2, and potential for improved transit operations along inter-regional freeways</p> <p>Potential to improve linkages between inter-regional and local transit with new station location and service connections on new and widened inter-regional corridors, and improved integration through measures in Groups 1 and 2</p> <p>Improves bus operational performance</p>	<p>Major potential to improve modal integration, balance and choice for people movement</p> <p>Moderate potential to increase attractiveness/ effectiveness of transit from new transit services and improvements in Groups 1 and 2, with addition of new corridor over the entire study area for transit and widened freeways for bus services</p> <p>Potential for new higher order inter-regional transit on new corridor, with higher order inter-regional transit services provided through Group 2, and potential for improved transit operations along inter-regional freeways</p> <p>Potential to improve linkages between inter-regional and local transit with new station location and service connections on new and widened inter-regional corridors, and improved integration through measures in Groups 1 and 2</p> <p>Improves bus operational</p>	<p>Major potential to improve modal integration, balance and choice for people movement</p> <p>Moderate potential to increase attractiveness/ effectiveness of transit from new transit services and improvements in Groups 1 and 2, with addition of new corridor over the entire study area for transit and widened freeways for bus services</p> <p>Potential for new higher order inter-regional transit on new corridor, with higher order inter-regional transit services provided through Group 2, and potential for improved transit operations along inter-regional freeways</p> <p>Potential to improve linkages between inter-regional and local transit with new station location and service connections on new and widened inter-regional corridors, and improved integration through measures in Groups 1 and 2</p> <p>Improves bus operational</p>

Table B-5: High Level Assessment of Group #4 Alternatives

<p><b>FACTOR/CRITERIA</b></p>	<p><b>Alternative 4-1</b></p> <p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 410</p>	<p><b>Alternative 4-2</b></p> <p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 401 / HPBATS Corridor</p>	<p><b>Alternative 4-3</b></p> <p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 401 in Milton area</p>	<p><b>Alternative 4-4</b></p> <p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Guelph (north)</p>	<p><b>Alternative 4-5</b></p> <p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Guelph (south)</p>
<p>Bus operational performance on inter-regional road network</p> <p>Availability/provision of alternate travel modes for tourism/recreational travel</p> <p>Provision of/allowance for active transportation measures (e.g., bike lanes, bike racks on buses/trains)</p>	<p>with improved road network operations and potential for bus rapid transit (BRT) on new corridor</p> <p>Potential to provide alternate travel modes for tourism/recreational travel on new transit services</p> <p>Improves accessibility for active transportation, including access to facilities, storage amenities at facilities and on transit vehicles, on existing and new/ expanded services, as in Groups 1 and 2</p>	<p>with improved road network operations and potential for bus rapid transit (BRT) on new corridor</p> <p>Potential to provide alternate travel modes for tourism/recreational travel on new transit services</p> <p>Improves accessibility for active transportation, including access to facilities, storage amenities at facilities and on transit vehicles, on existing and new/ expanded services, as in Groups 1 and 2</p>	<p>with improved road network operations and potential for bus rapid transit (BRT) on new corridor</p> <p>Potential to provide alternate travel modes for tourism/recreational travel on new transit services</p> <p>Improves accessibility for active transportation, including access to facilities, storage amenities at facilities and on transit vehicles, on existing and new/ expanded services, as in Groups 1 and 2</p>	<p>performance with improved road network operations and potential for bus rapid transit (BRT) on new corridor</p> <p>Potential to provide alternate travel modes for tourism/recreational travel on new transit services</p> <p>Improves accessibility for active transportation, including access to facilities, storage amenities at facilities and on transit vehicles, on existing and new/ expanded services, as in Groups 1 and 2</p>	<p>performance with improved road network operations and potential for bus rapid transit (BRT) on new corridor</p> <p>Potential to provide alternate travel modes for tourism/recreational travel on new transit services</p> <p>Improves accessibility for active transportation, including access to facilities, storage amenities at facilities and on transit vehicles, on existing and new/ expanded services, as in Groups 1 and 2</p>
<p><b>Modal integration, balance and choice for movement of goods</b></p> <p><b>Potential to improve modal integration, balance and choice for goods movement between ports and terminals, communities and employment centres.</b></p> <p>Potential to improve accessibility of inter-modal centres, ports and terminals</p>	<p>Moderate potential to improve modal integration and choice for goods movement</p> <p>Improvements to inter-regional road network operations with a new corridor between Hwy 400 and 410, increased roadway capacity improves accessibility of inter-modal facilities</p>	<p>Moderate potential to improve modal integration and choice for goods movement</p> <p>Improvements to inter-regional road network operations with a new corridor between Hwy 400 and 401/407, increased roadway capacity improves accessibility of inter-modal facilities</p>	<p>Moderate potential to improve modal integration and choice for goods movement</p> <p>Improvements to inter-regional road network operations with a new corridor between Hwy 400 and 401 at Milton, increased roadway capacity improves accessibility of inter-modal facilities</p>	<p>Moderate potential to improve modal integration and choice for goods movement</p> <p>Improvements to inter-regional road network operations with a new corridor between Hwy 400 and Hwy 6 at Guelph, increased roadway capacity improves accessibility of inter-modal facilities</p>	<p>Moderate potential to improve modal integration and choice for goods movement</p> <p>Improvements to inter-regional road network operations with a new corridor between Hwy 400 and Hwy 6 north of Hwy 401, increased roadway capacity improves accessibility of inter-modal facilities</p>

Table B-5: High Level Assessment of Group #4 Alternatives

<p><b>FACTOR/CRITERIA</b></p>	<p><b>Alternative 4-1</b></p> <p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 410</p>	<p><b>Alternative 4-2</b></p> <p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 401 / HPBATS Corridor</p>	<p><b>Alternative 4-3</b></p> <p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 401 in Milton area</p>	<p><b>Alternative 4-4</b></p> <p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Guelph (north)</p>	<p><b>Alternative 4-5</b></p> <p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Guelph (south)</p>
<p><b>Linkages to Population and Employment Centers</b>  <b>Potential to improve accessibility to Urban Growth Centers, Gateway Economic Centres and Gateway Economic Zones for people and goods movement based on higher order network continuity and connectivity</b></p> <p>Availability/provision of higher order linkages between Urban Growth Centers, Gateway Economic Centres and Gateway Economic Zones</p> <p>Accessibility of Urban Growth Centers, Gateway Economic Centres and Gateway Economic Zones</p>	<p>Major potential to improve accessibility between Urban Growth Centres for people and goods movement</p> <p>New higher order transportation corridor between Urban Growth Centres of Vaughan and Brampton, and new transit linkages and services in Group 2</p> <p>Improves accessibility to Urban Growth Centres and the GTA with new corridor between Hwy 400 and 410, additional inter-regional road capacity and transportation network operations; limited roadway linkage improvement to s to Guelph</p>	<p>Major potential to improve accessibility between Urban Growth Centres for people and goods movement</p> <p>New higher order transportation corridor between Urban Growth Centres of Vaughan and Brampton toward Milton, and new transit linkages and services in Group 2</p> <p>Improves accessibility to Urban Growth Centres and the GTA with new corridor between Hwy 400 and 401/407, additional inter-regional road capacity and transportation network operations; limited roadway linkage improvement to s to Guelph</p>	<p>Major potential to improve accessibility between Urban Growth Centres for people and goods movement</p> <p>New higher order transportation corridor between Urban Growth Centres of Vaughan, Brampton and Milton, and new transit linkages and services in Group 2</p> <p>Improves accessibility to Urban Growth Centres and the GTA with new corridor between Hwy 400 and 401 at Milton, additional inter-regional road capacity and transportation network operation improvements; limited roadway linkage improvement to Guelph</p>	<p>Major potential to improve accessibility between Urban Growth Centres for people and goods movement</p> <p>New higher order transportation corridor between Urban Growth Centres of Vaughan, Brampton, Milton and Guelph, and new transit linkages and services in Group 2</p> <p>Improves accessibility to Urban Growth Centres and the GTA with new corridor between Hwy 400 and Hwy6 at Guelph, additional inter-regional road capacity and transportation network operation improvements; major roadway linkage improvements to all Urban Growth Centres</p>	<p>Major potential to improve accessibility between Urban Growth Centres for people and goods movement</p> <p>New higher order transportation corridor between Urban Growth Centres of Vaughan, Brampton, Milton and Guelph, and new transit linkages and services in Group 2</p> <p>Improves accessibility to Urban Growth Centres and the GTA with new corridor between Hwy 400 and Hwy6 at Guelph, additional inter-regional road capacity and transportation network operation improvements; moderate roadway linkage improvement to s to Guelph</p>
<p><b>Recreation and Tourism Travel</b>  <b>Potential to support recreation and tourism travel within and to/from the study area</b></p> <p>Directness of routes between population centers, international gateways and tourist/recreation destinations</p> <p>Peak period (summer/weekend) transportation system performance on key inter-regional corridors – forecast volume/capacity issues at critical screenlines</p>	<p>Major potential to support recreation and tourism travel</p> <p>Provides potential to improve directness of routes to tourist destinations within and outside of the study area, including the GTA and toward northern Ontario, with a new transportation corridor, increased road capacity and new/expanded transit services</p> <p>Several of the critical screenlines are approaching capacity, namely the Hwy 400, Hwy 10 and West of Milton screenlines:                      East of Guelph WB - 0.83 V/C                      West of Milton WB - 0.93 V/C                      East of WC Blvd WB - 0.85 V/C</p>	<p>Major potential to support recreation and tourism travel</p> <p>Provides potential to improve directness of routes to tourist destinations within and outside of the study area, including the GTA and toward northern Ontario, with a new transportation corridor, increased road capacity and new/expanded transit services</p> <p>Several of the critical screenlines are approaching capacity, namely the Hwy 400, Hwy 10 and West of Milton screenlines:                      East of Guelph WB - 0.84 V/C                      West of Milton WB - 0.93 V/C</p>	<p>Major potential to support recreation and tourism travel</p> <p>Provides potential to improve directness of routes to tourist destinations within and outside of the study area, including the GTA and toward northern Ontario, with a new transportation corridor, increased road capacity and new/expanded transit services</p> <p>Several of the critical screenlines are approaching capacity, namely the Hwy 400 and Hwy 10 screenlines:                      East of Guelph WB - 0.86 V/C                      West of Milton WB - 0.88 V/C                      East of WC Blvd WB - 0.80 V/C                      East of Hwy 10 WB - 0.98 V/C</p>	<p>Major potential to support recreation and tourism travel</p> <p>Provides potential to improve directness of routes to tourist destinations within and outside of the study area, including the GTA and toward northern Ontario, with a new transportation corridor, increased road capacity and new/expanded transit services</p> <p>Several of the critical screenlines are approaching capacity, namely the Hwy 400 and Hwy 10 screenlines:                      East of Guelph WB - 0.78 V/C                      West of Milton WB - 0.85 V/C                      East of WC Blvd WB - 0.81 V/C</p>	<p>Major potential to support recreation and tourism travel</p> <p>Provides potential to improve directness of routes to tourist destinations within and outside of the study area, including the GTA and toward northern Ontario, with a new transportation corridor, increased road capacity and new/expanded transit services</p> <p>Several of the critical screenlines are approaching capacity, namely the Hwy 400 and Hwy 10 screenlines:                      East of Guelph WB - 0.78 V/C                      West of Milton WB - 0.88 V/C                      East of WC Blvd WB - 0.80 V/C</p>

Table B-5: High Level Assessment of Group #4 Alternatives

FACTOR/CRITERIA	Alternative 4-1	Alternative 4-2	Alternative 4-3	Alternative 4-4	Alternative 4-5
<p>Percentage of inter-regional system operating better than LOS D (vehicle lane km) during summer/weekends</p> <p>Diversion of summer recreational trips from local and regional roadways.</p>	<p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 410</p> <p>East of Hwy 10 WB - 0.99 V/C East of Hwy 50 WB - 0.76 V/C West of Hwy 400 WB - 0.98 V/C</p> <p>Approximately 11% of the inter-regional transportation system operates better than LOS D for auto trips (lane / km).</p> <p>Potential to divert summer/ recreational trips from local/regional roads with new corridor between Hwy 400 and 410 and increased freeway capacity</p>	<p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 401 / HPBATS Corridor</p> <p>East of WC Blvd WB - 0.81 V/C East of Hwy 10 WB - 0.98 V/C East of Hwy 50 WB - 0.76 V/C West of Hwy 400 WB - 0.98 V/C</p> <p>Approximately 11% of the inter-regional transportation system operates better than LOS D for auto trips (lane / km).</p> <p>Potential to divert summer/ recreational trips from local/regional roads with new corridor between Hwy 400 and 401/407 and increased freeway capacity</p>	<p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Highway 401 in Milton area</p> <p>East of Hwy 50 WB - 0.79 V/C West of Hwy 400 WB - 0.99 V/C</p> <p>Approximately 10% of the inter-regional transportation system operates better than LOS D for auto trips (lane / km).</p> <p>Potential to divert summer/ recreational trips from local/regional roads with new corridor between Hwy 400 and 401 at Milton, and increased freeway capacity</p>	<p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Guelph (north)</p> <p>East of Hwy 10 WB - 0.99 V/C East of Hwy 50 WB - 0.78 V/C West of Hwy 400 WB - 0.99 V/C</p> <p>Approximately 17% of the inter-regional transportation system operates better than LOS D for auto trips (lane / km).</p> <p>Potential to divert summer/ recreational trips from local/regional roads with new corridor between Hwy 400 and Hwy 6 at Guelph, and increased freeway capacity</p>	<p>Includes New Transportation Corridors, Widening of Existing Freeways, Group 1 and Group 2</p> <p>Widening of existing Provincial Freeways (Highway 401, Highway 410, Highway 400, Highway 427, 407ETR) and proposed new transportation corridor from Highway 400 to Guelph (south)</p> <p>East of Hwy 10 WB - 0.99 V/C East of Hwy 50 WB - 0.78 V/C West of Hwy 400 WB - 0.99 V/C</p> <p>Approximately 10% of the inter-regional transportation system operates better than LOS D for auto trips (lane / km).</p> <p>Potential to divert summer/ recreational trips from local/regional roads with new corridor between Hwy 400 and Hwy 6 north of Hwy 401, and increased freeway capacity</p>
<p><b>Constructability</b> <b>Potential to ease implementation considering: relative costs; relative property impacts; feasibility/difficulty; and requirements environmental mitigation</b></p>	<p>Significant constructability issues. Additional right-of-way requirements could significantly impact properties adjacent to freeways through built up areas. Considerable costs and staging requirements will come with widening and reconfiguration of existing freeways</p> <p>Traffic staging issues will include potential for increased delays during the construction period along each widened facility. The construction costs involved with these improvements are anticipated to be significant.</p> <p>The provision of a new corridor connecting Hwy 400 and Hwy 410 will require new construction through rural lands</p>	<p>Significant constructability issues. Additional right-of-way requirements could significantly impact properties adjacent to freeways through built up areas. Considerable costs and staging requirements will come with widening and reconfiguration of existing freeways</p> <p>Traffic staging issues will include potential for increased delays during the construction period along each widened facility. The construction costs involved with these improvements are anticipated to be significant.</p> <p>The provision of a new corridor connecting Hwy 400 and Hwy 401 at Hwy 407 will require new construction through rural lands.</p>	<p>Significant constructability issues. Additional right-of-way requirements could significantly impact properties adjacent to freeways through built up areas. Considerable costs and staging requirements will come with widening and reconfiguration of existing freeways</p> <p>Traffic staging issues will include potential for increased delays during the construction period along each widened facility. The construction costs involved with these improvements are anticipated to be significant.</p> <p>The provision of a new corridor connecting Hwy 400 and Hwy 401 at Milton will require additional new construction through rural lands.</p>	<p>Significant constructability issues. Additional right-of-way requirements could significantly impact properties adjacent to freeways through built up areas. Considerable costs and staging requirements will come with widening and reconfiguration of existing freeways</p> <p>Traffic staging issues will include potential for increased delays during the construction period along each widened facility. The construction costs involved with these improvements are anticipated to be significant.</p> <p>The provision of a new corridor connecting Hwy 400 and Hwy 6 at Guelph will require new construction through rural lands across the study area.</p>	<p>Significant constructability issues. Additional right-of-way requirements could significantly impact properties adjacent to freeways through built up areas. Considerable costs and staging requirements will come with widening and reconfiguration of existing freeways</p> <p>Traffic staging issues will include potential for increased delays during the construction period along each widened facility. The construction costs involved with these improvements are anticipated to be significant.</p> <p>The provision of a new corridor connecting Hwy 400 and Hwy 6 north of Hwy 401 will require new construction through rural lands across the study area.</p>

Table B-5: High Level Assessment of Group #4 Alternatives

FACTOR/CRITERIA	Alternative 4-1	Alternative 4-2	Alternative 4-3	Alternative 4-4	Alternative 4-5
<p><b>SUMMARY</b></p>	<p>Advantages</p> <ul style="list-style-type: none"> <li>▪ Generally addresses people and goods movement transportation demands in the GTA West Preliminary Study Area</li> <li>▪ Major improvement to efficiency of people and goods movement, with improved inter-regional transportation system operations</li> <li>▪ Major improvement to transportation system operations and safety</li> <li>▪ Major improvement to transportation system reliability and redundancy with new transportation corridor</li> <li>▪ Major potential to improve modal integration for people and goods movement</li> <li>▪ Major potential to improve linkages and accessibility between urban areas in the GTA West Corridor</li> <li>▪ Major improvement to recreation and tourism travel and directness of routes to tourist/ recreation destinations in the GTA and northern Ontario</li> <li>▪ Allows for higher order transit on new higher order roadway</li> </ul> <p>Disadvantages</p> <ul style="list-style-type: none"> <li>▪ Significant constructability and staging issues</li> <li>▪ 4-1, 4-2 and 4-3 provide limited roadway redundancy improvements in the western portion of the Study Area</li> <li>▪ 4-1, 4-2 and 4-3 provide limited roadway improvements to Guelph</li> </ul>				

**Notes:**

Congested conditions occur at a vehicle/capacity (v/c) ratio  $\geq 0.90$

Congestion Type	Level of Service	Approximate v/c (volume/capacity)	Description
Minor	LOS A-C	$< 0.79$	Non-recurring congestion*
Moderate	LOS D	$0.80 \leq 0.89$	Unstable conditions
Major	LOS E-F	$\geq 0.90$	Congested conditions (stop-and-go)

\*Traffic conditions may be adversely affected by incidents, collisions, weather and construction/ maintenance activities

“Higher order transportation corridor” is a new corridor separate from existing Rights-of-Way that could be used for one or several transportation modes (e.g., automobile, Bus Rapid Transit, Light Rapid Transit, etc.)



**GTA  
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GTA West Corridor  
Environmental Assessment



**GTA West Corridor  
Environmental Assessment**

APPENDIX C:  
Summary of Comments and Responses

Revised Draft

January 2011



McCORMICK RANKIN  
CORPORATION  
A member of  stantec

**URS**

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## **C. Summary of Comments and Responses**

**GTA West Corridor Environmental Assessment**

**Summary of Comments and Responses on Draft Area Transportation System Alternatives Report (March 2010)**

<b>Correspondence</b>	<b>Comments Received / Concerns Identified</b>	<b>Response &amp; Actions Taken / Planned</b>	<b>Change to Area Transportation System Alternatives Report</b>
<p><b>Region of Waterloo</b></p> <p><b>Submitted via Email, dated May 12, 2010</b></p>	<p>Upon more closely reading through the draft report, I realize that there is in fact road tolling discussed therein, but the discussion seems to be a little inconsistent.</p> <p>For example, I find it mentioned Table B-2 (Appendix B) under the following numbers: 163, 171, 178, 179, 194, 245, 278 and 279. Depending on the question, the check marks and rationale change, which makes sense in some cases but not in all.</p> <p>Based on your comments yesterday regarding provincial direction, I would expect most of these to be identified as "Should be pursued as part of separate study/initiative". However, #163 (new tolls) and #171 (occupancy/congestion tolls) suggest that these "should be considered further as part of GTA West study". Also, while it notes that #163 "has potential to substantively contribute...", for some reason #171 does not, even though most of the transportation analysis is for peak hour congestion.</p> <p>Additionally, since the discussion in Appendix A regarding TDM and TSM in other jurisdictions specifically discusses congestion tolling, the discussion of Group 1 (Optimization) in the Executive Summary and in the main text should also include something about it. If, as you indicated yesterday, the Province is providing direction that this issue is too broad to be examined on a corridor-by-corridor basis and needs to be studied separately, it would help the report if a statement was made in that regard. After all, interested parties should at least know that the issued is actually being studied, of which I myself was unaware until yesterday.</p>	<p>Although Table B-2 identifies road tolling as an alternative for addressing the transportation problems and opportunities in the study area, a full analysis of road tolling (including congestion tolling) would need to be studied separately. Tolling analysis is generally undertaken during later stages of the EA process once alternative alignments have been developed.</p> <p>See response above.</p>	<p>No change.</p> <p>No change.</p>
<p><b>Regional Municipality of Halton - Public Works and Engineering Services</b></p>	<p>Include the linkages in the Regional Natural Heritage System (RNHS), as a sub-factor under 1.2 (Terrestrial Ecosystems) of Table B-1: Factors and Criteria for Assessing Preliminary Planning Alternatives, Section 1- Natural Environmental Factors.</p>	<p>Linkages in RNHS added as a sub-factor.</p>	<p>Table B-1 updated.</p>

**GTA West Corridor Environmental Assessment**

**Summary of Comments and Responses on Draft Area Transportation System Alternatives Report (March 2010)**

<b>Correspondence</b>	<b>Comments Received / Concerns Identified</b>	<b>Response &amp; Actions Taken / Planned</b>	<b>Change to Area Transportation System Alternatives Report</b>
<b>Submitted via Letter, dated July 8, 2010</b>	The Problems and Opportunities should be Listed in the Executive Summary.	Comment noted. Reference to report retained.	No change.
	Double use of the term “stage”: i) to describe steps in the development and assessment of alternatives, and; ii) to describe the broader EA process. Recommend changing the term stage in i) to phase or step.	Terminology is consistent with other reports and documents including Public Information Centre displays.	No change.
	Figure titled “Exhibit E-1 Two-Stage Process” shows three stages.	Exhibit E-1 updated to show two stages.	Exhibit E-1 updated.
	Each Map should have a Separate Exhibit/ Figure Number and Title. Nine maps are labeled “Exhibit E-2.  The same comment applies to the maps in Appendix B, which have not been assigned Exhibit numbers nor titles.	Exhibit E2s are re-labelled E2 to E10 in the report. No change to Appendix B since all references to these figures are by alternative number (i.e. Group 2, Group 4-1 etc).	Exhibit E2s re-labeled in the report.
	Maps should show the number of existing lanes along with proposed new lanes [i.e. see the Niagara to GTA Corridor Planning and Environmental Assessment Study – ATSAR (April 2010), Exhibit E-3 on page xi].	Noted.	No change.
	The tables in Appendix B are difficult to navigate.  It is recommended that: ▪ Page numbers be added to Appendix B, and ▪ Table titles be listed on each page of the multi-page tables.	Agreed, page number and titles added to multi-page tables.	Tables updated in Appendix B.
	Heading in Table B-3 is incorrect.	See comment below.	See comment below.
	Table B-3 should be split into 3 separate tables.	Agreed.	Table B-3 updated

**GTA West Corridor Environmental Assessment**

**Summary of Comments and Responses on Draft Area Transportation System Alternatives Report (March 2010)**

Correspondence	Comments Received / Concerns Identified	Response & Actions Taken / Planned	Change to Area Transportation System Alternatives Report
	Rationale Column in Table B-2 does not match Interest / Disinterest in Alternatives.	Comments noted.	No change.
	Add Halton-Peel Boundary Area Transportation Study (HPBATS) to Definitions.	Agreed.	Definition added.
<p><b>Toronto and Region Conservation Authority</b></p> <p><b>Submitted via Letter, dated June 1, 2010</b></p>	<p>Alternative Groupings</p> <p>It is our understanding that the next step in this EA process is to further refine each of the group alternatives which will ultimately result in the development of the Transportation Development Strategy. The Group 1 alternative involves innovative and effective ways of improving and utilizing the structures that already exist. Group 2 involves extensive improvements to transit, rail, marine and air services and will also include Group 1 alternatives. Group 3 involves the widening and improvement of existing roads and incorporates recommendations from Groups 1 and 2. Group 4 alternatives incorporate recommendations from all of the alternatives described above.</p> <p>While the report notes that many of the transportation problems can be addressed by widening and improving existing roads and highways (Group 3), it is understood that this will have an impact on neighbouring communities, except where local bypasses may be required, in which case there will be impacts to undeveloped lands. The report then states that although new corridors (Group 4) will have a larger impact on agricultural and natural environments, the impacts can be mitigated.</p>	<p>Your comment regarding the Group 4 alternatives has been noted. We will be revising this section as follows "...some effects can be mitigated through careful environmental planning however, some impacts to natural heritage features/functions and agricultural lands will be unavoidable".</p>	<p>Executive summary Section 4.6 updated and Section 3.9 in main report updated.</p>
	<p>Water Management</p> <p>Watersheds serve an important role in accepting and directing stormwater runoff to our larger lakes and rivers. There is growing concern regarding impacts to headwater drainage features, such as urbanization, causing degradation in downstream aquatic systems. Studies suggest that headwater drainage features are important sources of food, sediment, nutrients and flow to downstream aquatic systems. They also provide water quality, storage and attenuation functions.</p> <p>Should the EA determine that the proposed alternative involves construction of a new corridor, four watersheds may potentially be impacted within our jurisdiction including Etobicoke Creek, Mimico Creek, the Humber River and the Don River. Each watershed is its own unique feature making them an integral part of the community in which they exist. Many of these watersheds have been urbanized, however, there still remain areas such as within the Humber River Watershed, that are rural and undeveloped that will need to be protected.</p>	<p>This phase of the EA will look to identify a route planning "study area" within which routes will be generated in the next phase of the EA process. Water management will be an important component of evaluating route alternatives during the next phase of study, which will also include more detailed work such as field investigations, drainage analysis, and generation of design alternatives at water crossings etc.</p>	<p>No change.</p>

**GTA West Corridor Environmental Assessment**

**Summary of Comments and Responses on Draft Area Transportation System Alternatives Report (March 2010)**

Correspondence	Comments Received / Concerns Identified	Response & Actions Taken / Planned	Change to Area Transportation System Alternatives Report
	<p>Terrestrial Natural Heritage System</p> <p>A natural heritage system consists of all of the natural cover in a region and is dependent on the linkages between and among its parts. The value and lack of knowledge and appreciation for the ecological goods and services that natural heritage systems provide should not be underestimated. By properly integrating infrastructure with natural heritage systems and open space, habitat fragmentation to natural heritage systems should be reduced.</p>	<p>We will endeavour to integrate infrastructure with natural heritage systems and open space to minimize habitat fragmentation in the next phase of study.</p>	<p>No change.</p>
	<p>Items to Consider</p> <p>TRCA is the largest landholder within the GTA. Large tracts of conservation land serve to protect and support what little greenspace we have left in our jurisdiction (e.g., Bolton Resource Management Tract, Claireville Conservation Area, Heart Lake Conservation Area, Albion Hills Conservation Area, Kortright Centre for Conservation, Boyd Conservation Area), and provide terrestrial natural heritage linkages throughout the area. As a result, it is expected that any proposed future alignments will avoid impacts to these conservation lands and routes will need to be chosen that do not bisect these tracts anymore than already exists.</p> <p>It is important that the EA consider the greater planning requirements of the study area such as regional and local municipal Official Plans, Master Plans, watershed plans (Etobicoke/Mimico Creek, Humber River, Don River) and ongoing source water protection assessment reports and planning. Mapping of vulnerable areas including wellhead protection areas, significant groundwater recharge areas and highly vulnerable aquifers are now available as inputs to the EA, and should be considered to minimize potential effects to potential and future drinking water supplies. Digital mapping available through TRCA was provided on June 30, 2009 to help identify areas of TRCA concern.</p> <p>Additionally, areas of provincial environmental and agricultural significance, as identified and protected through provincial land use plans such as the Greenbelt Plan, the Oak Ridges Moraine Conservation Plan and the Niagara Escarpment Plan, should be avoided as much as possible. Specific guidance documents for development or infrastructure projects in these areas have been prepared by various provincial ministries (Ministry of the Environment, Ministry of Natural Resources, Ministry of Transportation) and must be consulted and adhered to. We also have a strong partnership with our regional municipalities (Peel Region, York Region and lower tiered municipalities) and other organizations, such as Metrolinx, and we hope to have a similar working partnership with this design team as the EA is developed.</p>	<p>The Ministry will work with TRCA to identify conservation land tracts in future route planning study area – as part of next stage of EA with a view to minimizing impacts during route generation/evaluation.</p> <p>Land use information and mapping has been updated during the study through direct consultation with municipal planning department staff and CAs. In addition, the mapping and information provided by the TRCA on June 30<sup>th</sup>, 2009 was included in the updated Environmental Assessment Overview of Environmental Conditions and Constraints Report (dated May 2010) and was considered during the evaluation of transportation alternatives. This information will be updated as part of Stage 2.</p> <p>The route planning study area to be identified at the end of this phase to allow a reasonable range of alternatives to be generated and evaluated. It is recognized that this will include some Greenbelt areas that extend across the study area (in a north south direction) and some areas of the Niagara Escarpment, if Alternative 4-3 is carried forward. Impacts to these areas will be minimized where possible during generation/evaluation of route</p>	<p>No change.</p>

**GTA West Corridor Environmental Assessment**

**Summary of Comments and Responses on Draft Area Transportation System Alternatives Report (March 2010)**

<b>Correspondence</b>	<b>Comments Received / Concerns Identified</b>	<b>Response &amp; Actions Taken / Planned</b>	<b>Change to Area Transportation System Alternatives Report</b>
		<p>planning alternatives in the next phase of the EA. The next EA study phase will also be supported by environmental field work that will include identifying locations of the most sensitive features within these designated areas.</p>	
	<p><b>Developing the EA – Areas of Concern</b></p> <p>The purpose of the EA is to determine the best possible solution to mitigate expected future transportation requirements and, at the same time, develop a solution that minimizes impacts to the natural, social and economic environments. If transportation requirements can be met by widening and improving existing roads and highways, with supplementation by Groups 1 and 2, then it would seem reasonable to expand upon the areas that have already been impacted by this type of infrastructure, rather than impacting untouched natural corridors and existing neighbourhoods and communities. TRCA staff is concerned that this EA is moving forward with an alternative, such as Group 4, that proposes to not only create a new road corridor, but also widen existing networks. This approach seems excessive, particularly if transportation requirements can be met by widening existing networks.</p> <p>As outlined in the Evaluation Stage 2 table for Alternative 4, the disadvantage to widening existing highways and constructing a new corridor is that there is the potential to impact many significant natural heritage features, not all of which can be avoided through route selection. Wetland complexes and areas of natural and scientific interest, for example, are diminishing at a rapid rate due to development pressures within the GTA, and specifically within the TRCA jurisdiction.</p> <p>TRCA staff respectfully requests that strong weighting and evaluation of the natural heritage criteria be included, and that the ultimate solution not overlook the true impacts to these natural features. Although it is difficult to assign a cost to the loss of the natural environment, it is expected that a fair comparison will be provided as the EA is developed and that the preferred solution and preferred design will limit impacts to these sensitive areas.</p>	<p>We acknowledge TRCA comments that Group 4 alternatives do have higher natural environment effects than Group 3 alternatives. That has been recognized and considered in the evaluation. Group 3-1 was identified as most preferred from a Natural Environment and Cultural perspective and equally preferred as some of the Group 4 alternatives from an economic perspective. Having said that Group 3-1 has higher Land Use/Social impacts, does not perform as well from a transportation perspective and has some significant constructability challenges. Given these issues, Group 3-1 was not carried forward for further consideration. More detailed information on the evaluation of alternatives and rationale for the preferred alternatives (as presented at PIC 4) is available on the project website.</p> <p>The next phase of EA will continue to seek ways to reduce impacts to significant natural heritage features in TRCA jurisdiction – through route generation and evaluation phases.</p> <p align="center"><b>Appendix A Comments</b></p> <ol style="list-style-type: none"> <li>1. Indirect impacts (such as noise and air quality, as well as land use) were considered during the evaluation. The next phase of EA</li> </ol>	<p>No change.</p>

**GTA West Corridor Environmental Assessment**

**Summary of Comments and Responses on Draft Area Transportation System Alternatives Report (March 2010)**

Correspondence	Comments Received / Concerns Identified	Response & Actions Taken / Planned	Change to Area Transportation System Alternatives Report
	<p align="center"><b>APPENDIX A</b></p> <ol style="list-style-type: none"> <li>1. The Factors and Criteria for Assessing Preliminary Planning Alternatives should consider both potential direct, indirect and cumulative effects. From the information provided, it appears as if only direct effects are to be assessed.</li> <li>2. Table B-1, Surface Water, does not consider floodplain impacts as a result of additional lanes or a new corridor.</li> <li>3. In Table B-1 it should be recognized that most effects cannot be 'measured' and are not quantifiable. Although the number of watercourse crossings, for example, can be identified there are complex links between many of these features. As a result, it is recommended that there be comprehensive integration between disciplines. For example, integration between hydrogeology and ecology is required to effectively assess potential impacts, and possible mitigation measures. Currently, the section on groundwater only deals with wellhead protection areas, and potable water sources, rather than integrating ecological components such as wetlands and coldwater watercourses. Similarly, the assessment of noise only considers impacts to people, but should also include potential impacts to wildlife.</li> <li>4. The assessment only considers sensitive fish habitat, provincially and locally significant wetlands, significant wildlife habitat, and permanent watercourses. It is our preference that all fish habitat, all wetlands, all forest communities, all wildlife habitat and all watercourses (intermittent and ephemeral, in addition to permanently flowing streams) be included in the evaluation, not only those that are deemed to be 'significant'. This is necessary to be consistent with a "systems-based approach" that is advocated by the TRCA, municipalities and the province of Ontario.</li> <li>5. Table B-1, Land Use/Socio-economic Environment Factors, does not discuss Conservation Authority policies, plans, goals, objectives or regulations.</li> <li>6. The Evaluation Stage 2 should include a comprehensive review of natural features and functions, including minor aquatic and terrestrial ecosystems. Currently, only 'major' aquatic and terrestrial ecosystems have been included. Similarly, indirect and cumulative impacts need to be incorporated.</li> <li>7. The Evaluation Stage 2 should indicated that all impacts related to widening of existing transportation corridors will be mitigated, however, it is unclear how a larger footprint, and removal of terrestrial and aquatic habitats can truly be mitigated.</li> <li>8. The Evaluation Stage 2 Environmental Protection Policies should also include Conservation Authorities.</li> <li>9. The Evaluation Stage 2 Natural features and functions section should also address impacts to Conservation Lands.</li> <li>10. Several alternative routes are provided for Group 4 and although some will obviously have a greater impact on areas to the west, because the eastern limits within TRCA's jurisdiction main relatively the same for all alignments, impacts to the natural heritage systems will be similar for all options.</li> </ol>	<p>will continue to consider additional evaluation criteria that includes direct and indirect impacts at higher level of detail (including drainage and stormwater management).</p> <ol style="list-style-type: none"> <li>2. The evaluation criteria under Surface Water includes watershed/sub-watershed drainage features and patterns and the potential to affect existing drainage systems associated with permanent watercourses, which includes floodplain impacts as a result of additional lanes or a new corridor.</li> <li>3. The intent of this analysis was to identify potential effects at a higher/strategic level to determine which alternatives warranted a higher level of detail. More detailed analysis will be undertaken for the alternatives recommended to be carried forward.</li> <li>4. Same as response 3.</li> <li>5. The municipal land use criteria under the Land Use/Socio-economic Environment Factors is intended to include land use plans for existing and future residential, community, commercial, employment or industrial areas. Natural land use areas are taken into consideration under the Natural Environment Factor.</li> <li>6. Same as response 3.</li> <li>7. Mitigation will be developed in accordance with MTO Standards and Practices. The</li> </ol>	

**GTA West Corridor Environmental Assessment**

**Summary of Comments and Responses on Draft Area Transportation System Alternatives Report (March 2010)**

<b>Correspondence</b>	<b>Comments Received / Concerns Identified</b>	<b>Response &amp; Actions Taken / Planned</b>	<b>Change to Area Transportation System Alternatives Report</b>
		<p>extent required (i.e., for a larger footprint) won't be known until design alternatives are developed in future study phases.</p> <p>8. The report has been revised to include Environmental Protection Policies for Conservation Authorities.</p> <p>9. Same as response 8.</p> <p>10. The project team agrees that TRCA's jurisdiction remains relatively the same for the new corridor sections generated to date and that impacts to the natural heritage systems will be similar for all options. The next study phase will include generating route alternatives that may have varying levels of impacts on sensitive areas within the corridor.</p>	
<p><b>Conservation Halton</b></p> <p><b>Submitted via Letter, dated June 3, 2010</b></p>	<p><b>Report Overview</b></p> <p>As staff of Conservation Halton have expressed in the past, we continue to recommend that all efforts be made to avoid the creation of a new transportation corridor given the known environmental impacts that such an alternative will cause. We appreciate that the Study Team has included a review of Groups 1-3 however, it is our understanding that the Study Team has determined that Groups 1-3 will still not provide the transportation capacity that has been deemed necessary for the study area. As a result, the Study Team has identified a number of potential transportation corridors that will be further reviewed and refined as the study continues.</p>	<p>Your comment recommending that all efforts be made to avoid the creation of a new corridor is noted and understood. The study team will be incorporating a number of improvements that include elements of Groups 1 to 3 in the preferred Transportation Development Strategy. However, those improvements are still not enough to accommodate the traffic volumes and address transportation problems that are predicted to occur in the study area by 2031.</p>	<p>No change.</p>

**GTA West Corridor Environmental Assessment**

**Summary of Comments and Responses on Draft Area Transportation System Alternatives Report (March 2010)**

<b>Correspondence</b>	<b>Comments Received / Concerns Identified</b>	<b>Response &amp; Actions Taken / Planned</b>	<b>Change to Area Transportation System Alternatives Report</b>
	<p><b>Section 3.5.2 – Assessment of Group #2</b> – staff recommend that under “Environment” it should be noted “potential impact for increase in resource consumption”. This is consistent with the understanding that as you continue up the chain of the four groups, the amount of resource consumption generally increases.</p>	<p>We agree that in Section 3.5.2 under <i>Assessment of Group 2 – Environment</i> the report should note the “potential impact for increase in resource consumption”.</p>	<p>Note added to Section 3.5.2.</p>
	<p><b>Section 3.9 – Assessment of Group 3 and Group 4</b> – states that “New corridors will have a larger footprint impact on the agricultural or natural environment, but effects can be mitigated through careful environmental planning”. Staff question this statement and recommend that it would be more appropriate to state, “...some effects can be mitigated through careful environmental planning however, some impacts to natural heritage features/functions and agricultural lands will be unavoidable”. This statement is more reflective of the impact that new highway corridors have on agricultural and environmental features/functions.</p>	<p>Your comment regarding the <i>Assessment of Group 3 and Group 4</i> has been noted and the text has been revised accordingly.</p>	<p>Executive summary Section 4.6 updated and Section 3.9 in main report updated.</p>
	<p><b>Table B-1 – Factors &amp; Criteria for Assessing Preliminary Planning Alternatives:</b></p> <p>a) Why are the factors and criteria different for the NGTA Study and the GTA West Study? Given that both projects have the same consultant teams and the same proponent it would seem reasonable to assume that the factors, sub-factors, evaluation criteria and measurement of effects would be the same for both projects. As noted in previous correspondence, the factors and evaluation criteria, from a natural heritage, water and natural hazard perspective, should be based on the Provincial Policy Statement (Sections 2 and 3);</p> <p>b) Significant Woodlands – the measurement of effects is identified as the “number of significant wooded areas (over 40 hectares) potentially impacted – linear area of significant woodlot potentially impacted”. What is the basis for the 40 hectare size criteria? Please clarify whether this is representative of the size criteria of significance that may have already been examined by the Regional municipalities within the study</p>	<p>a. The factors and criteria used for NGTA and GTA West studies are essentially the same. In some cases the criteria, forms of measurement or differences between alternatives are documented slightly differently based on characteristics that are unique to each study area. For example, the GTA West study area refers to specific land use development pressures in York and Peel Regions – these types of pressures generally do not exist in the NGTA study area. The NGTA refers to tender fruit farms and specialty agricultural operations which do not exist in GTA West study area. The Provincial Policy Statement (PPS) has been used to develop criteria for both projects. Furthermore, the evaluation criteria for both projects was approved in the Terms of Reference for each study.</p> <p>b. As significant woodlands are a planning authority responsibility and the study area</p>	<p>No change.</p>

**GTA West Corridor Environmental Assessment**

**Summary of Comments and Responses on Draft Area Transportation System Alternatives Report (March 2010)**

<b>Correspondence</b>	<b>Comments Received / Concerns Identified</b>	<b>Response &amp; Actions Taken / Planned</b>	<b>Change to Area Transportation System Alternatives Report</b>
	<p>area. In addition, the linear area of woodlot that is removed is not entirely indicative of the actual impact that such a removal of this area will have on the remaining woodlot;</p> <p>c) Significant Wildlife Habitat – there are dozens of types of habitat that can be considered significant based on the MNR’s Technical Guidelines for identifying significant wildlife habitat. The report states that the information on significant wildlife habitat has been provided by MNR however, in most cases the existence of such habitat is not evident until site specific studies are undertaken. As a result, staff question that completeness of this information.</p> <p>d) Surface Water – evaluation criteria is “potential to affect existing drainage systems associated with permanent watercourses”. We recommend that permanent and intermittent watercourses both contribute to downstream water quality, water quantity and fish habitat. The evaluation criteria should not be limited to permanent watercourses.</p>	<p>crosses various municipalities, the project team used MNR’s Natural Heritage Reference Manual (Attachment A2) to provide a guideline that woodlands greater than 40 ha in size should be considered significant. We acknowledge that the linear impact to a woodlot does not entirely represent the amount of impact but, we use it to provide a fair comparison between planning alternatives at a high level, during this phase of the EA process. Even these lengths will vary within corridors, depending on where routes are generated in the next study phase.</p> <p>c. We acknowledge that the SWHTG identifies wildlife habitat that are not discussed in this section of the report or taken into consideration at this phase of the EA. However, we feel the presence/absence of significant/sensitive features and species are also captured under other categories such as designated areas (ESAs, ANSIs, PSW, NEC and SAR, etc). In addition we acknowledge that permanent and intermittent watercourses both contribute to downstream water quality and fish habitat. A greater level of detail on environmental features will be obtained in the next phase of EA and on a narrower study area, when provincial secondary source information is supplemented by field work, local studies and knowledge, etc.</p>	

**GTA West Corridor Environmental Assessment**

**Summary of Comments and Responses on Draft Area Transportation System Alternatives Report (March 2010)**

Correspondence	Comments Received / Concerns Identified	Response & Actions Taken / Planned	Change to Area Transportation System Alternatives Report
		<p>d. A greater level of detail on environmental features (i.e., permanent and intermittent watercourses) will be obtained in the next phase of EA and on a narrower study area, when provincial secondary source information is supplemented by field work, local studies and knowledge, etc.</p>	
	<p><b>Table B-3 – High Level Assessment – Group Alternatives 3:</b></p> <p>a) Alternatives 3-1, 3-2 and 3-3 – the following impacts should be listed for all:</p> <ul style="list-style-type: none"> <li>o the expansion of existing culverts under existing roadways/highways could create a barrier to fish passage where none currently exists based on the length of the watercourse enclosure.</li> <li>o Species at Risk are mentioned within the evaluations for Group 4 alternatives but not within the Group 3 alternatives. A quick review of the NHIC mapping indicates that the Group 3 alternatives could all potentially impact species at risk. Please revise accordingly.</li> <li>o for all three alternatives the chart states, “Supports the PPS on the protection of Natural Heritage, Agricultural and Cultural Heritage/Archaeological resources”. Please explain this statement given that all alternatives will likely result in negative impacts to at least one or more natural heritage features/functions listed in the PPS. A similar comment applies to the Environment Summary section.</li> </ul> <p>b) Alternative 3-1 (Freeway widening Highways 401, 407, 401, 400 and 427 extension) – Mountsberg Wildlife Area ESA should be added to the list of environmental features. Also, there is no mention of significant valleylands, woodlands, species of concern or significant wildlife habitat in the evaluation of this alternative. Given the environmental features in the vicinity of these existing highways please review accordingly.</p> <p>c) Alternative 3-2 – environmental impacts associated with the Trafalgar Road widening should also list impacts to significant woodlands, fish habitat and connectivity. The same comment applies to Alternative 3-3.</p> <p>d) Resource Consumption – for all alternatives it states that widening alternatives reduce resource consumption and mineral and aggregate resource related issues. Staff agree that this is likely true relative to new highway alternatives but not for non-road alternatives.</p>	<p>a.</p> <p>Table B-3 is intended to summarize potential impacts to natural features at a relatively high level of detail – by acknowledging the numbers and names of natural features (including watercourses) potentially impacted by the alternative. We don’t state the type of impact because we don’t know where the route will cross the feature, or on which side of the highway we are widening. Therefore, although we acknowledge that the expansion of existing highways and culverts could create a barrier to fish passage where none currently exist we feel the addition of this type of wording (i.e., level of detail on the impact) is not consistent with the level of detail in the remainder of the table.</p> <p>We will add SAR in Group 3 alternatives to be consistent with Group 4 alternatives.</p> <p>In general, we feel that widening existing highways supports the PPS on the protection of Natural Heritage, Agriculture and Cultural Heritage/Archaeological resources because footprint impacts are</p>	<p>Appendix B, Table B-3 updated to incorporate comments in a,b and d.</p>

**GTA West Corridor Environmental Assessment**

**Summary of Comments and Responses on Draft Area Transportation System Alternatives Report (March 2010)**

<b>Correspondence</b>	<b>Comments Received / Concerns Identified</b>	<b>Response &amp; Actions Taken / Planned</b>	<b>Change to Area Transportation System Alternatives Report</b>
	<p>It may be more appropriate to state that, "...in relation to new highway corridors, widening alternatives require less resource consumption...". A similar comment applies to the Environment Summary section.</p>	<p>contained in an area (usually the highway right-of-way) that is already disturbed. We acknowledge that some impacts (beyond the right of way) are still possible, but that in most cases these are "fringe" impacts to natural, agricultural or cultural areas. Fringe impacts can typically be mitigated using standard mitigation measures and normally result in less impact than new corridor alternatives.</p> <p>b. We will add the Mountsberg Wildlife Area ESA to list of natural features for Alternatives 3-1.</p> <p>c. The information listed under Trafalgar Road is consistent with information presented on other sections of Group 3 alternatives.</p> <p>d. This change can be made in the report.</p>	

**GTA West Corridor Environmental Assessment**

**Summary of Comments and Responses on Draft Area Transportation System Alternatives Report (March 2010)**

Correspondence	Comments Received / Concerns Identified	Response & Actions Taken / Planned	Change to Area Transportation System Alternatives Report
	<p><b>Table B-3 – High Level Assessment – Group Alternatives 4:</b></p> <ul style="list-style-type: none"> <li>a) Tourism and recreation – most of the impacts listed in this section relate to the positive impacts that new highways could have on tourism and recreation by bringing people closer to recreation and tourism destinations. Staff recommend that negative impacts should also be considered including: impacts to views from trails and lookouts along the Niagara Escarpment; direct impacts to Conservation Areas as a result of routing/widening, increased noise impacts to Conservation Areas, etc.</li> <li>b) Alternatives 4-3 and 4-5 – both these alternatives indicate that there are “several unevaluated wetland features” that could be impacted. Please quantify “several”.</li> <li>c) Alternative 4-5 – under “Resource Consumption”, states that this alternative will impact Halton Shale. Staff recommend that this more appropriately belongs under the Economy section. A similar comment applies to the “Environment Summary”.</li> <li>d) Under the “Environment Summary” it is stated that one of the advantages of new transportation corridors is that they offer some opportunities to increase separation distance between built-up areas and the transportation corridor. Staff recommend that although this may be true initially, a new corridor will inevitably attract development pressures along the route.</li> <li>e) Also within the Environment Summary, given that some of the Alternative 4 routes cross the Niagara Escarpment, two significant disadvantages are missing from the list. These include disruption to wildlife movement/corridors and impacts to Species at Risk.</li> </ul> <p>All of the alternative corridors and widenings being considered in Group 4 will have impacts on natural heritage features/functions and natural hazards within Conservation Halton’s watershed however, based on the information currently available, in order of significance of likely impacts (from least impact to greatest impact) the alternatives are as follows: Group 4-4 (new corridor completely outside Conservation Halton’s watershed), Group 4-1, Group 4-2, Group 4-3, Group 4-5.</p> <p>Staff are concerned with any option that would require a new crossing/cut of the Niagara Escarpment. Specifically, within our watershed, Alternative 4-5 would have significant impacts on the natural heritage features and functions of this area as a result of a new crossing of the Escarpment as well as the additional impacts to natural heritage features/functions on either side of the Escarpment crossing. Any new highway corridor will have direct and indirect impacts on natural heritage and natural hazard features and functions. Although mitigation measures will assist in minimizing some impacts, certain impacts will be unavoidable and will not be able to be mitigated. Alternative 4-5 would also potentially have significant impacts on lands owned by Conservation Halton. Specifically, Hilton Falls Conservation Area is shown within the</p>	<ul style="list-style-type: none"> <li>a/b. We acknowledge that there are areas of tourism and recreation and a number of unevaluated wetlands that have the potential to be impacted. A greater level of detail on environmental features will be obtained in the next phase of EA and on a narrower study area, when provincial secondary source information is supplemented by field work, local studies and knowledge, etc. Additional evaluation criteria that includes direct and indirect impacts at higher level of detail will also be considered.</li> <li>c. We believe the “aggregates and mines” sub factor is appropriately placed under the “Land Use/Socio-Economic Environment” and were approved in the Terms of Reference.</li> <li>d. This phase of EA will look to identify a route planning “study area” within which routes will be generated in the next phase of the EA process. Development pressures resulting from a new corridor will be considered as part of evaluating route alternatives during the next phase of study, which will also include more detailed work. Land use surrounding new corridor highways can be controlled to some extent by location of interchanges etc.</li> <li>e. We will add “including disruption to</li> </ul>	<p>Appendix B, Table B-3, Environmental Summary for Group 4 alternatives updated to incorporate comments in e.</p>

**GTA West Corridor Environmental Assessment**

**Summary of Comments and Responses on Draft Area Transportation System Alternatives Report (March 2010)**

<b>Correspondence</b>	<b>Comments Received / Concerns Identified</b>	<b>Response &amp; Actions Taken / Planned</b>	<b>Change to Area Transportation System Alternatives Report</b>
	<p>approximate location of the new transportation corridor. As outlined in previous correspondence, staff strongly recommend against a new transportation corridor within this area, given the high level of Provincially and Locally significant features and functions that would be impacted.</p> <p>Finally, although some alternatives avoid a new Escarpment crossing all alternatives, including widening existing highways and/or the creation of a new highway will have an impact on the Niagara Escarpment through the need to excavate aggregate for the creation of the new/expanded roadways. These aggregate operations can have significant impacts on Provincially and locally significant natural heritage features and functions as well as on groundwater and surface water features. These indirect impacts to the natural environment are not being considered as part of the evaluation but will have a significant overall impact on the natural heritage features and functions and water quality and quantity within the Study Area and beyond. These impacts should be considered in the evaluation.</p>	<p>wildlife movement/corridors and impacts to SAR associated with Niagara Escarpment” to the Environmental Summary row for Group 4 Alternatives that cross the escarpment.</p> <p>Your concerns regarding Alternative 4-5, the avoidance of a new escarpment crossing and the impacts that aggregate operations have on natural heritage features and function as well as groundwater and surface water features have been noted and will be considered as the study moves forward.</p>	