

GTA West Corridor Environmental Assessment Study

Transportation Development Strategy Report - November 2012



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Appendix A - Comments and Responses to Draft Transportation Development Strategy Report (February 2011) - Under Separate Cover

Introduction

1.1. STUDY BACKGROUND

Over the last several decades South-Central Ontario has evolved from a Toronto-based employment centre to a large geographic region with many centres of economic activity, employment and population. Travel demand is increasingly dispersed, with travel occurring between many employment and residential areas within and outside the Greater Toronto Area (GTA). Future population and employment growth in major urban centres will result in an increase in travel demand for both people and goods movement between the centres that are spread across the Greater Golden Horseshoe (GGH).

One of the Ontario government's efforts to deliver a long-term sustainable plan for transportation and better transit in the GTA-Hamilton area is through Metrolinx, a Provincial agency that has been established to create a seamless, integrated transportation network.

In June 2006, the then Minister of Public Infrastructure Renewal (now split into the Ministry of Energy and Ministry of Infrastructure) released the *Growth Plan* for the Greater Golden Horseshoe (the *Growth Plan*). The *Growth Plan* outlines a set of policies for managing growth and development and guiding planning decisions in the GGH, and represents a planning "vision" for the province. It is accompanied by the Places to Grow Act (2005) which requires that planning decisions made by the province, municipalities and other authorities conform to the policies contained in the *Growth Plan*.

The province also established the *Greenbelt Plan* (2005) through the Greenbelt Act 2005. Together, the *Greenbelt Plan* and the *Growth Plan* provide clarity and certainty about urban structure, where and how future growth should be accommodated, and what must be protected for current and future generations in the GGH area. The *Growth Plan* and the *Greenbelt Plan* build on the Provincial Policy Statement, 2005 (PPS, 2005) and are to be read in conjunction with the PPS.

The *Growth Plan's* policy directions include transportation

improvements to accommodate intended growth. To realize these policy directions, the Ontario Ministry of Transportation (MTO) has commenced an Environmental Assessment (EA) study to examine long-term multi-modal transportation needs for moving people and goods in the GTA West Corridor, including parts of the regions of York, Peel and Halton, the County of Wellington and City of Guelph. The study identifies and validates the transportation problems and opportunities within the preliminary study area, and evaluates a variety of alternatives to address them, culminating in an integrated, multi-modal Transportation Development Strategy (Strategy) that offers choice for the efficient movement of people and goods. MTO is co-ordinating with Metrolinx, other ministries and municipalities as the EA study moves forward, as well as working with transportation service providers where MTO has limited ability to make changes (e.g. rail, air and marine).

Prior to approval of the province's *Growth Plan* a number of studies, including MTO's Central Ontario Strategic Transportation Directions (Draft 2002) indicated that MTO should examine long-term transportation needs to address a number of areas including future growth in the GTA from Highway 400 westerly to the Guelph area. The GTA West Corridor, identified in the *Growth Plan* as a "Future Transportation Corridor", represents a strategic link between the Urban Growth Centres in the west of the GTA including Downtown Milton, Downtown Brampton, Vaughan Metropolitan Centre (formerly known as Vaughan Corporate Centre) and Downtown Guelph.

1.2. STUDY PURPOSE

As economic activities in the GGH evolve from a Toronto-based platform to an economy of multiple centres, the Guelph-Kitchener/Waterloo-Cambridge triangle is becoming an important economic area in addition to Toronto's downtown and the several economic centres that surround it. The concentration of population and employment in the Guelph-Kitchener/Waterloo-Cambridge triangle introduces new transportation challenges in the western portion of the GGH

as it is important that these economic centres are adequately linked. This is true for the continuing needs of commuter travel that provide the economic workforces and also for the increasing needs of goods movement between these centres.

In meeting these challenges, MTO is committed to taking a comprehensive and long-term approach in planning for future transportation infrastructure. The GTA West Corridor Planning and EA Study reflects the government policy objectives as outlined in the *Growth Plan*, *Greenbelt Plan* and *Provincial Policy Statement*. These policy objectives include a transportation network that links Urban Growth Centres through an integrated system of transportation modes characterized by efficient public transit, a highway system for moving people and goods with improved access to inter-modal facilities, international gateways (e.g. border crossings), airports and transit hubs.

The purpose of the GTA West study is to address long-term inter-regional transportation problems and opportunities and consider alternative solutions to address these issues as part of developing an integrated, multi-modal transportation system that enables the efficient movement of people and goods, and provides better economic and transportation linkages between Urban Growth Centres in the GTA West preliminary study area (as shown in **Exhibit 1-1**).

Stage 1 of the GTA West study was initiated according to the process outlined in the Environmental Assessment Terms of Reference (EA ToR) – depicted in **Exhibit 1-2**. This includes:

- Identifying the specific transportation problems and opportunities within the preliminary study area
- Developing, assessing and evaluating a range of Area Transportation System Alternatives to address the identified transportation problems and opportunities within the preliminary study area
- Recommending a Transportation Development Strategy based on the Area Transportation System Alternatives carried forward from the evaluation.

The Transportation Development Strategy is documented in **Chapter 6** and makes recommendations for transportation improvements required throughout the preliminary study area.

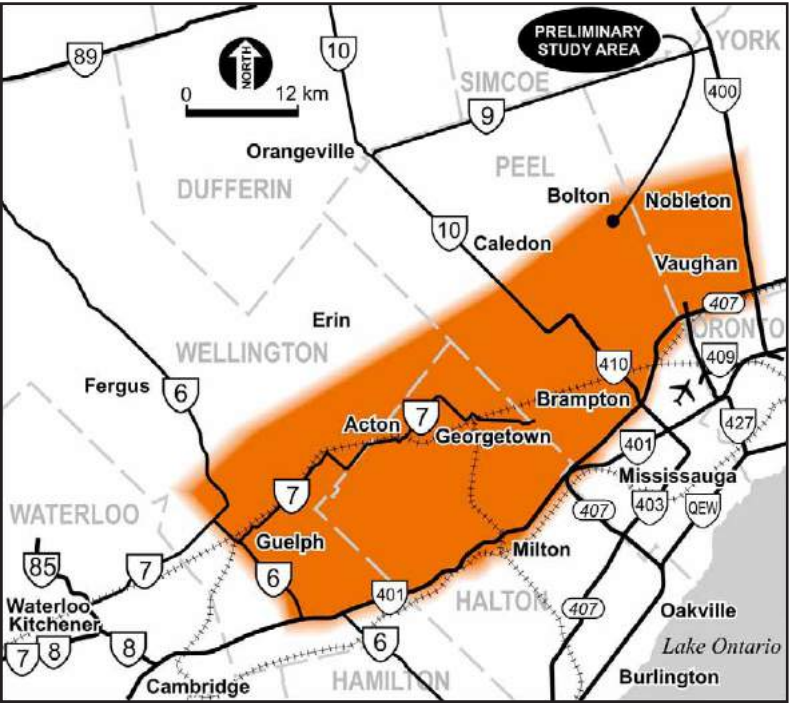


Exhibit 1-1: GTA West Preliminary Study Area

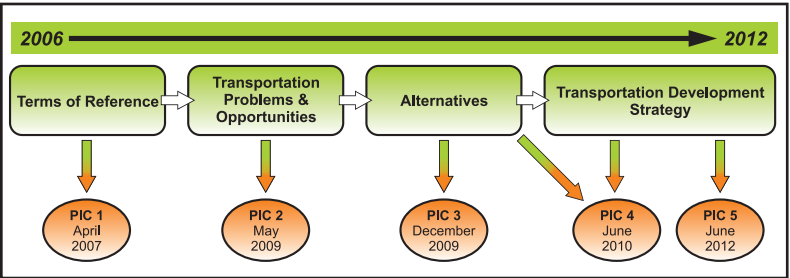


Exhibit 1-2: Study Schedule

1.3. STUDY PROCESS AND SCHEDULE

1.3.1. Planning and Environmental Assessment Process

Planning for all major infrastructure projects in Ontario is conducted in accordance with the requirements of the Ontario Environmental Assessment Act (OEAA) (R.S.O. 1990) unless otherwise exempted. The GTA West study is following the requirements of the OEAA under the Individual Environmental Assessment (Individual EA) process (Section 6.1 (2) of the OEAA).

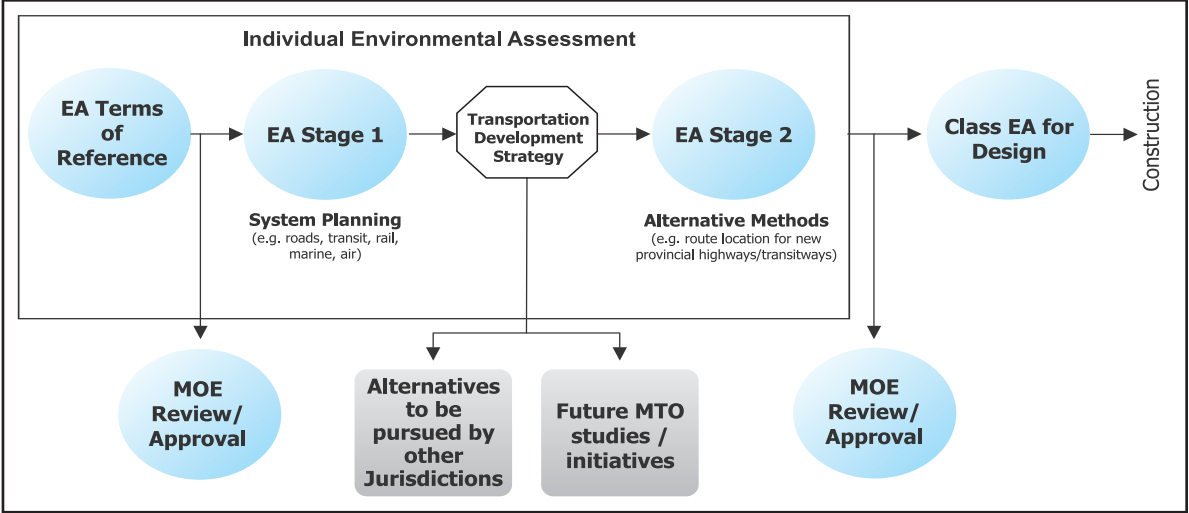


Exhibit 1-3: Environmental Assessment Process

Under the Individual EA process, the first step in an application for approval to proceed with the planning of an Individual EA study under the OEAA is the submission of a Terms of Reference (ToR) for the EA. A ToR sets out a framework that guides the preparation of the EA. The approval of the ToR is the first statutory decision made by the Minister of the Environment and Cabinet in the EA planning and approval process. The Ontario Minister of the Environment (MOE) approved the ToR for this study on March 4, 2008.

The overall EA process for the GTA West Corridor is outlined in **Exhibit 1-3**. Two formal MOE approvals are required: for the ToR and at the conclusion of the EA study.

As per the OEAA, Stage 1 of this EA study has been undertaken to be consistent with the requirements set out in Section 6.1 (2) of the OEAA, addressing the following components:

- A description of the purpose of the undertaking;
- A description and statement of the rationale for the proposed undertaking, Alternatives to the Undertaking, and Alternative Methods of Carrying Out the Undertaking;
- A description of:
 - The environment that will be affected or might reasonably be anticipated to be affected, directly or indirectly, by the undertaking, the Alternatives to the Undertaking, and the Alternative Methods of Carrying Out the Undertaking;
 - The effects that will be caused or that might reasonably

be expected to be caused to the environment, by the undertaking, the Alternatives to the Undertaking, and the Alternative Methods of Carrying Out the Undertaking;

- The actions necessary or that might reasonably be expected to be necessary to prevent, change, mitigate or remedy the effects upon or the effects that might reasonably be expected upon the environment, by the undertaking, the Alternatives to the Undertaking, and the Alternative Methods of Carrying Out the Undertaking;
- An evaluation of the advantages and disadvantages to the environment of the undertaking, the Alternatives to the Undertaking, and the Alternative Methods of Carrying Out the Undertaking; and
- A description of the consultation undertaken by the proponent and the results of the consultation.

As discussed above, Stage 1 of the GTA West study includes the following steps, as outlined in the study ToR:

- Identifying the specific transportation problems and opportunities within the preliminary study area.
- Developing, assessing and evaluating a range of area transportation system alternatives to address identified transportation problems and opportunities within the preliminary study area.
- Recommending a Strategy based on the area transportation system alternatives carried forward from evaluation.

The schedule for the study has been designed to allow the various technical and management teams adequate time to undertake thorough data collection and technical work, while providing adequate time for extensive consultation with stakeholders. Stage 1 of the GTA West Corridor Planning and EA Study has included the following key steps, as shown in **Exhibit 1-2**:

- Develop a Terms of Reference that guides the study (Public Information Centre #1 – April 2007)
- Identify transportation problems and opportunities (Public Information Centre #2 – March 2009)
- Identify and assess transportation alternatives that address the problems and opportunities (Public Information Centre #3 – November / December 2009)
- Select preferred transportation alternative(s) and recommend a multi-modal Strategy for the preliminary study area (Public Information Centre #4 – June 2010)
- Present findings of additional analysis in Halton Area per comments received on the Draft Strategy Report, February 2011, and the updated multi-modal Strategy for the preliminary study area (Public Information Centre #5 – June 2012)

Each round of public consultation included a number of consultation events, including Public Information Centres (PICs) at a minimum of four locations (PIC #1 to PIC #4) and two locations for PIC #5, and meetings with municipalities, regulatory agencies, First Nations and other stakeholders. Additional information on the study’s consultation activities is provided in **Chapter 7**.

1.4. PURPOSE, RELEVANCE AND POSITION OF REPORT WITHIN STUDY PROCESS

The purpose of this report is to document the decision-making process in development of the Strategy, including assessment and evaluation of the area transportation system alternatives, and recommendations of alternatives to carry forward. This report represents the conclusion of this stage of the GTA West Corridor Planning and EA study, and a foundation for the next stage. All of the recommendations that fall within the jurisdiction of MTO (e.g. provincial highways and transitways) will be reviewed and the ministry will decide whether to proceed to Stage 2 of the study. Stage

2 will involve the assessment and evaluation of alternative methods corresponding to the recommended new corridor elements of the Strategy (i.e. route planning). All other recommendations that fall within MTO’s jurisdiction, such as highway widening, will be pursued within the Provincial EA process. Recommendations that fall outside of MTO’s jurisdiction will be forwarded to the relevant agencies and authorities for further review and action. **Chapter 6** describes the elements of the Strategy and the intent in furthering those initiatives outside of its jurisdiction.

As is featured in **Chapter 2**, a number of draft study reports have been prepared and circulated to date, leading up to this Transportation Development Strategy Report:

- Transportation and Economic Conditions Overview Report (July 2008, Updated December 2010)
- Environmental Conditions and Constraints Overview Report (July 2008, Updated December 2010)
- Overview of Corridor Protection and Development Issues Paper (June 2009)
- Area Transportation System Problems and Opportunities Report (July 2009, Updated December 2010)
- Area Transportation System Alternatives Report (April 2010, Updated January 2011)
- Draft Transportation Development Strategy Report (February 2011)

1.5. STUDY AREA AND AREAS OF INFLUENCE

The GTA West preliminary study area is presented in **Exhibit 1-1**. This area includes parts of York Region, Region of Peel, Halton Region, County of Wellington and City of Guelph. The preliminary study area includes the Urban Growth Centres of Downtown Brampton (Peel), Downtown Milton (Halton), Vaughan Metropolitan Centre (York) and Downtown Guelph (Guelph). It also includes areas designated under the Greenbelt Act and *Greenbelt Plan*.

It is recognized that transportation issues in the preliminary study area are related to and influenced by a much broader area. Therefore, inter-regional travel demand analysis has been carried out in a much broader context, including the consideration of major transportation infrastructure in

proximity to the preliminary study area and linkages to / from other regional transportation services, hubs and gateways. These “Areas of Influence” include much of southern and central Ontario and allow for consideration of transportation connectivity to the international borders and the GTA. **Exhibit 1-4** highlights this relationship.

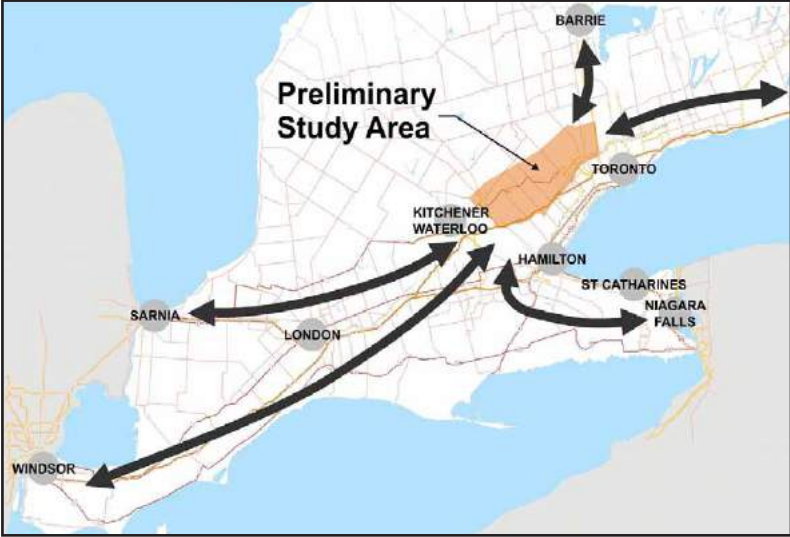


Exhibit 1-4: GTA West Areas of Influence

1.6. STUDY AREA TRANSPORTATION SYSTEM OVERVIEW

The “Area Transportation System” is comprised of transportation facilities that have the primary function of providing transportation linkages for the movement of people and goods by all modes between regions, cities and other major population and employment centres. The transportation system provides primary transportation linkages with an emphasis on connections to: cities and other centres of population and employment, including designated Urban Growth Centres; major transit service areas; and inter-regional facilities for goods movement, such as inter-modal facilities, airports and ports.

Several natural environmental features influence the provision of transportation services and mobility in the preliminary study area. These include the Niagara Escarpment, the designated Greenbelt Area, Credit River Watershed, Humber River Watershed, and the Oak Ridges Moraine. Currently, a limited number of road and rail corridors cross these existing natural constraints. The presence of sensitive natural habitat

or geographic conditions such as wide river valleys has an influence on the provision of transportation facilities.

1.6.1. Transportation Demand Management / Smart Commute

Smart Commute is an initiative of Metrolinx (an agency of the Ontario government) and the municipalities in the Greater Toronto and Hamilton Area (GTHA). It is currently the key Transportation Demand Management (TDM) co-coordinator / operator in the area and has been in operation in some form since 2004. Smart Commute’s goal is essentially to ease gridlock, improve air quality and reduce greenhouse gas emissions. It offers an array of services across the GTHA, including; carpooling and vanpooling; exclusive ridematching programs for carpooling and vanpooling; site assessments and surveys to understand employee commute behaviour; shuttle programs; Emergency Ride programs; support for employee work arrangement solutions (telework, compressed work weeks and flex hours, workshops, lunch and learns and seminars); incentives and promotions; and Clean Air Commute and other events. As of March 2011, there were eleven Smart Commute offices in the GTHA, serving approximately 430,000 employees and post-secondary students (source: www.smartcommute.ca).

1.6.2. Transit

Existing Bus / Rail Passenger Transit System

Transit services are provided throughout much of the preliminary study area; the municipalities of York Region, Mississauga, Brampton, Milton, Waterloo Region and Guelph operate transit systems within or directly adjacent to it. These systems use local bus routes to provide access to a large coverage area of their respective jurisdictions, primarily in urban / suburban environments. Brampton and York also operate bus rapid transit along high-demand corridors.

Inter-regional transit systems provide service between urban centres. Major stops on these systems are typically transit hubs, such as bus terminals or train stations, often providing connections to different transit systems and serving key trip generators such as universities, shopping centres and highway commuter / carpool lots. Inter-regional transit services in the GTA West preliminary study area are illustrated in Exhibit 1- 5.



Exhibit 1-5: GTA West Area Inter-Regional Transit Services

These services include:

- Peak period GO train service from Toronto to Kitchener on the Kitchener Line;
- Peak period GO train service from Toronto to Milton on the Milton Line;
- GO bus service from Mississauga to Guelph;
- GO bus service from Mississauga to Kitchener-Waterloo;
- GO bus service from Toronto to Brampton;
- GO bus service from North York to Bolton;
- GO bus and train service from Toronto to Barrie;
- 407 ETR GO Bus services from York University to Guelph (407 West) and to Oshawa (407 East);
- Local GO Bus routes, including, Bronte GO Station to Milton and Brampton to Orangeville; and
- Greyhound Bus and VIA Rail provide scheduled services to London, Toronto, Hamilton and points beyond. Greyhound stops within the preliminary study area include: Brampton, Guelph, Georgetown, Bolton, Caledon and Milton. Coach Canada has numerous stop locations just outside of the study area and one in Guelph, and Abouttown operates a Saturday coach service from

Guelph to Brantford. VIA Rail operates two trains daily each way along the Toronto – Sarnia route. VIA stations in the study area include: Brampton, Georgetown and Guelph.

Metrolinx Regional Transportation Plan (RTP)

Metrolinx was created by the Ontario government to develop and implement an integrated multi-modal transportation plan for the GTHA. In Spring 2009, Metrolinx merged with GO Transit. 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.

As referenced earlier in Section 1.6.1, a significant part of its mandate has been the creation of *The Big Move*, the Regional Transportation Plan (RTP) for the GTHA that includes a comprehensive regional transit network, as shown in Exhibit 1-6 and Exhibit 1-7.

In addition to the transit-related strategies and priority items identified in the RTP, the following projects identified in the RTP have provincial funding committed and are within the GTA West preliminary study area:

- Upgrading York Region’s VIVA BRT network;
- BRT investments complementary to the Mississauga Transitway; and
- The Spadina subway extension to the Vaughan Metropolitan Centre.

Future GO Transit projects were also documented as follows:

- GO rail service expansion to all-day, two-way service from Union Station to Milton;
- GO rail service expansion to all-day, two-way service from Union Station to Georgetown; and
- Peak period GO rail service to Bolton on a new line.

Metrolinx completed a study of the electrification of the GO rail system in January 2011.



Source: Metrolinx – The Big Move (2008)

Exhibit 1-6: The Big Move, Quick Wins for Regional Rapid Transit



Source: Metrolinx – The Big Move (2008)

Exhibit 1-7: The Big Move, 25 Year Plan for Regional Rapid Transit

GO Transit 2020 Strategic Plan

GO Transit provides regional bus and rail service in the Greater Toronto Area and beyond. Its service area was recently expanded to include a larger portion of the GGH, including the regional municipalities of Dufferin, Durham, Halton, Niagara, Peel, Peterborough, Simcoe, Waterloo, Wellington and York; and the municipalities Barrie, Guelph, Hamilton, Kawartha Lakes, Peterborough and Toronto.

GO Transit has developed the *GO 2020 Strategic Plan* (see Exhibit 1- 8) with a horizon year of 2020. The plan anticipates GO ridership to the Toronto core, served by Union Station, to more than double and GO ridership outside the Toronto core to triple. The number of riders travelling outside the Toronto core

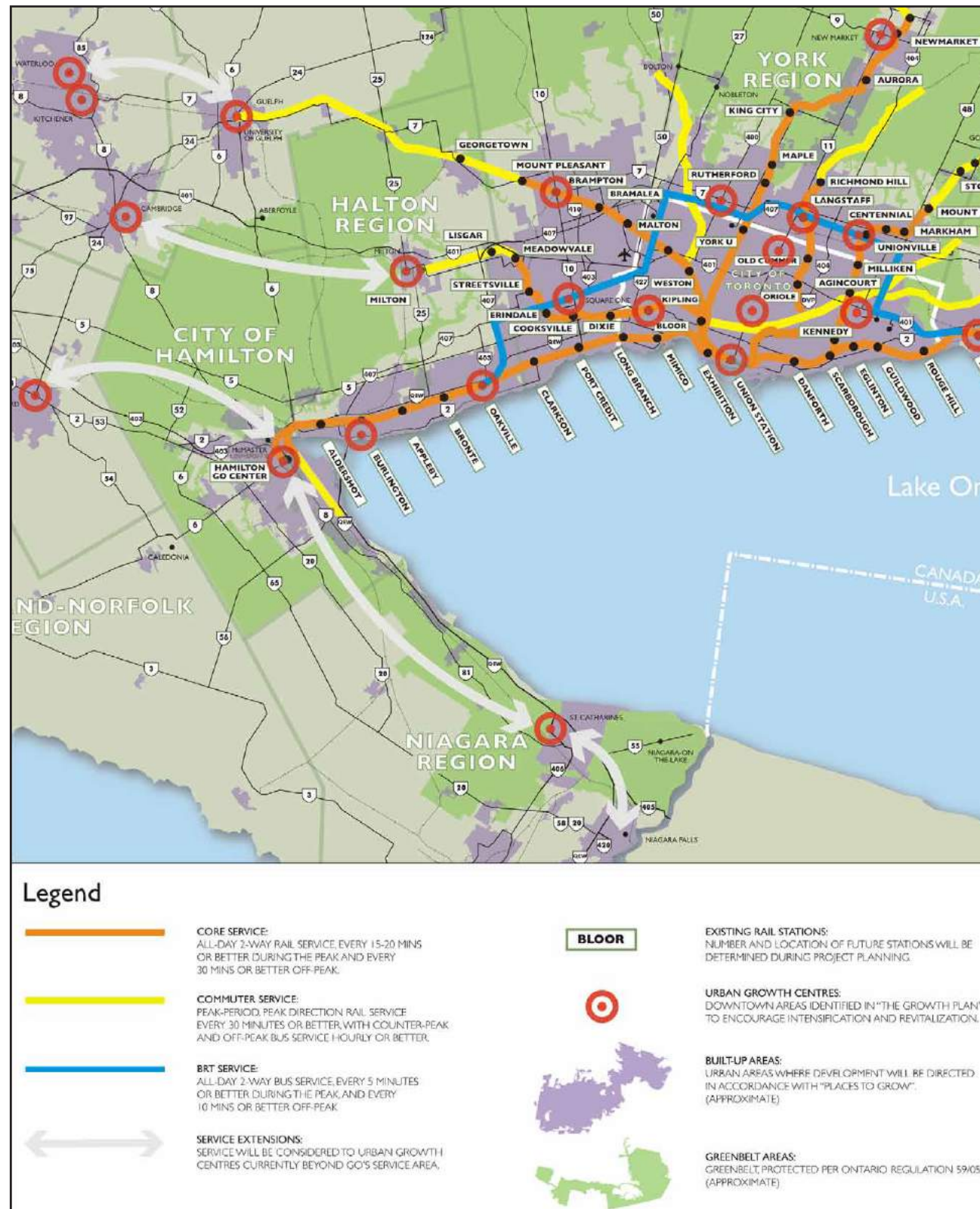
will grow from 12% to 16% of the increased total GO ridership. The *GO 2020 Strategic Plan* identifies the following improvements within the GTA West preliminary study area:

- Georgetown line: Peak period headway of 15 minutes from Toronto to Brampton, with some trips serving Georgetown and Guelph, and a 30-minute counter-peak headway; all day off-peak service to Mount Pleasant with bus service connections to Georgetown and Guelph;
- Milton Line: Maximum headway of 15 minutes from Toronto to Meadowvale, with express service during peak periods and counter-peak headways of 30 minutes; all day off-peak 30 minute headways to Meadowvale with bus service to Milton; and
- Bolton Line: Peak period headways of 30 minutes to Bolton

with all-day service as warranted by demand.

Other potential GO Transit initiatives within the preliminary study area include:

- An EA to investigate the potential for full rail service along the Toronto-Milton corridor;
- An EA to investigate rail capacity improvements on the Georgetown North line between Mount Pleasant and Georgetown;
- Station improvements to accommodate longer trains, improve access for riders, facilitate transfers between GO lines and municipal transit services, and increase available commuter parking spaces; and
- Improve signal systems along rail lines used by GO Transit.



Source: GO Transit GO 2020

Exhibit 1-8: GO Transit 2020 Strategic Plan

1.6.3. Freight Rail

Canada's two major freight railway companies operate within the GTA West preliminary study area: the Canadian National (CNR) and Canadian Pacific (CPR) Railways. Typically, the bulk commodities moved by rail include grain and coal, and merchandise freight includes finished vehicles, automotive parts, and forest and industrial products. Containerized goods make up a significant proportion of rail cargo.

Both CNR and CPR have primary rail corridors linking the GTA with the Niagara frontier and on to the US Eastern Seaboard, and through Southwestern Ontario to Chicago and the central US. CNR has over 30,000 route-kilometres of track in Canada and the US and operates in eight Canadian provinces and 16 US states. CNR's study area corridor runs through the middle of the GTA West preliminary study area to Georgetown; then it travels south to Burlington and splits to Southwestern Ontario and the Niagara frontier. CPR operates over 20,000 kilometres on a network extending from the Port of Vancouver to the Port of Montreal, and to US industrial centers including Chicago, Philadelphia, New York City and Buffalo. The CPR mainline runs along the southern edge of the study area and then just west of Milton. The line then splits to Southwestern Ontario and the Niagara frontier.

Class 1 railway markets are based on these primary routes through the GTA, and their efficiencies are based on long-haul shipments between terminals in a just-in-time delivery manner. These rail corridors are essential for economic and industrial growth and are increasingly used for passenger services. A balance must be found between protecting freight rail capacity and accommodating the need for improved passenger rail services.

Three shortline (Class 2) railways also exist within the preliminary study area (shortlines operate in a limited geographical area and focus on local interests and flexibility of service, forming an important link in the short-haul, door-to-door movement of goods). The Goderich and Exeter Railway (GEXR) services areas of Southwestern Ontario including London, Stratford, Goderich, Kitchener, Guelph and Cambridge, and interchanges with CNR. The Orangeville Brampton Railway (OBRY) serves the Orangeville, Brampton and Streetsville area and connects to CPR in Streetsville /

Mississauga. The Ontario Southland Railway (OSR) operates between Guelph and Campbellville, functioning with and connecting to CPR.

Freight inter-modal terminals generally refer to facilities where traffic consists largely of goods in overseas containers that can be transported by train, ship and truck and in domestic containers and trailers that can be moved by train and truck. Other similar facilities typically serve one type of traffic or commodity, such as lumber, coal, iron ore, etc. These types of commodities generate enough traffic to warrant a dedicated site to handle the trans-shipping between road, rail or ship. CPR operates inter-modal facilities at the Vaughan Inter-modal Terminal, Obico Inter-modal Terminal and the Trafalgar Road-Rail Terminal. CNR’s inter-modal facility in Brampton and the CNR MacMillan Yard Road-Rail Terminal are also located in the GTA West preliminary study area.

It should be noted that Metrolinx completed the Urban Freight Study in February 2011 to review urban freight within the GTHA in order to identify challenges and opportunities in the freight industry (http://www.metrolinx.com/en/regionalplanning/goodsmovement/urban_freight.aspx). Peel Region also formed a Goods Movement Task Force (<http://www.peelregion.ca/pw/roads/goodsmovement/>), which included development of an Action Plan and a conference in partnership with the private sector.

An overview of rail corridors and facilities within the preliminary study area is provided in **Exhibit 1-9**.

1.6.4. Air

Although there are no significant air transportation facilities within the GTA West preliminary study area, the largest international airport in Canada, Toronto Pearson International Airport, is located approximately three kilometres southeast of the study area boundary. As the major international airport in the region, Toronto Pearson serves over 180 domestic and international destinations.

Canada’s busiest airport served over 32 million passengers in 2008¹ and is projected to accommodate 66 million passengers



Exhibit 1-9: GTA West Area Rail Corridor Locations

per year by 2030². Toronto Pearson is also the dominant Canadian airport for air cargo, which is expected to continue into the future. In 2006, 517,000 metric tons of cargo were moved through the airport, positioning the airport in the top 30 busiest cargo airport in the world. Cargo volumes are projected to reach 1.27 million tons by 2030³.

Air demand forecasts suggest that the practical capacity of the Toronto Pearson’s five runways will be reached by approximately 2013, while maximum capacity, with significant airside congestion and delay, will be reached around 2019⁴. The 2008 Airport Master Plan includes discussion of current and future transportation connections to the airport, including the effects of increasing road congestion and support for the Air Rail Link to Toronto Union Station.

The Air Rail Link (ARL) is a planned public transport rail service to operate from Toronto Pearson along a dedicated spur line, then along the existing CNR Weston Subdivision line and connect onto GO Transit’s Union Station Rail Corridor to Union Station. In July 2010 Metrolinx announced that it is will build, own and operate the ARL, assuming responsibility for the project including design, construction and operations and will incorporate the work that has already been done to

date. Construction of the ARL began in 2012.

The Guelph Airfield is located to the north east of the City of Guelph but does not provide significant passenger or cargo travel services. Other airports in the vicinity of the preliminary study area include Waterloo International, Hamilton International, Buttonville Municipal and Toronto City Centre. Each of these airports moves people and goods. **Exhibit 1-10** shows the airports that influence the travel patterns within the preliminary study area.



Exhibit 1-10: GTA West Area Air Transportation Facilities

1.6.5. Marine

There are no significant marine transportation facilities located within the GTA West preliminary study area. Key marine facilities in the vicinity of the study area include the Port of Toronto, Port of Hamilton and the Great Lakes St. Lawrence Seaway System. The major marine facilities in the vicinity of the preliminary study area are identified in **Exhibit 1-11**.

The Great Lakes St. Lawrence Seaway System lies to the northeast of the preliminary study area and is comprised of the St. Lawrence River, St. Lawrence Seaway and the Great

¹ GTAA Passenger Traffic Statistics (<http://www.gtaa.com/local/files/en/Corporate/Statistics/PassengerTraffic-200908.pdf>)
² Taking Flight: The Airport Master Plan 2008-2030, Chapter 3, GTAA, December 2007

³ Taking Flight: The Airport Master Plan 2008-2030, Chapter 3, GTAA, December 2007
⁴ Taking Flight: The Airport Master Plan 2008-2030, Chapter 15, GTAA, December 2007



Exhibit 1-11: GTA West Area Major Area Marine Facilities

Lakes, running over 3,700 kilometres through Canada and the US. The Great Lakes St. Lawrence Seaway operates as a bi-national partnership between Canada and the US, and the shipping season generally extends from mid March to late December. Between Montreal and Lake Ontario there are two US locks and five Canadian locks.

The Port of Toronto is located to the east of the preliminary study area and handled over 2 million tonnes of cargo and more than 70,000 TEU (20-foot equivalent unit) containers in 2007⁵. Most of its domestic tonnage is comprised of cement, asphalt, salt, aggregate and stone, as well as project cargo, including imported wind turbines, natural gas turbines and exported locomotives. Additionally, the International Marine Passenger Terminal opened in 2005 to handle visiting cruise ship traffic on 10 acres of the marine terminals site. It also has a full complement of harbour tour and charter boats.

The Port of Hamilton handles the largest volume of cargo and shipping traffic of all the Canadian Great Lakes ports (over 11 million tonnes in 2008⁶). In July 2009, a new container feeder service launched between Montreal and Hamilton, which provides weekly fixed day transport for more than 250 TEU per sailing, driven by the Hamilton Port Authority subsidiary, Sea 3 Inc.

1.6.6. Roadways

Provincial, regional and municipal roads in southern Ontario service an ever increasing demand of road transportation by providing an inter-city network of links used for the transport of goods and people. The automobile continues to be the preferred mode of travel in southern Ontario. Auto ownership rates have been growing at a rate faster than population growth over the previous decades with the popularity of suburban life being a major contributor.

Trucks are a principal means of goods transport in Southern Ontario with highways linking to all major manufacturing centres and international border crossings. The demand for truck transport remains a competitive mode of goods distribution. Trucking provides inter-modal goods transport connectivity between rail and marine transport facilities and provincial freeways.

The provincial highway network within the GTA West preliminary study area is presented in **Exhibit 1-12**, and includes Provincial Highways 400, 401, 410, 427, 6, 7, and 10, as well as the 407 ETR.



Exhibit 1-12: GTA West Area Provincial Highway Network

Highway 400 is a north-south, 10-lane provincial freeway on the east boundary of the preliminary study area, extending from within the City of Toronto north through York Region

and Simcoe County. This freeway provides an important link between Highways 401 and 407 ETR corridors to Simcoe County, Northern Ontario and Western Canada.

Highway 401 is a major six-lane provincial freeway extending across the south end of the preliminary study area through the County of Wellington and Regions of Halton and Peel. This freeway extends between the Quebec border through to the US border at Windsor and provides for significant goods movement, tourism and connections across the province. Presently, a significant component of travel through the GTA West preliminary study area is accommodated by Highway 401. Planning is underway to widen several sections of the highway, to include provision for HOV lanes in some areas.

407 ETR is a privately owned and operated toll facility that provides east-west travel opportunities across the south end of the preliminary study area from the east boundary of the Halton Region through the Regions of Peel and York. It has a six-lane cross-section, expanding to ten lanes in some sections, and provides an alternate to Highway 401.

Highway 410 is a north-south provincial freeway extending from the City of Mississauga into the City of Brampton and connects directly to Highway 10 in the Town of Caledon. The highway provides network connectivity with links between Highways 403, 401, 7 and 407 ETR, with a current cross-section upwards of four lanes in each direction.

Highway 427 is a north-south provincial freeway in the vicinity of the boundary between the Cities of Mississauga and Toronto, and provides freeway connections between the Queen Elizabeth Way (QEW), Highway 401 and 407 ETR with direct access to Toronto Pearson International Airport. Extension north to Major Mackenzie Drive has received EA approval.

Highway 6 is a north-south rural highway located along the western boundary of the preliminary study area connecting Highway 401, Highway 403 at Hamilton and the City of Guelph. Highway 6 ("Hanlon Expressway" north of Highway 401) has a four-lane cross-section and at-grade connections

⁵ Toronto Port Authority web site (http://www.torontoport.com/PortAuthority/media_facts.asp)

⁶ Hamilton Port Authority web site (<http://www.hamiltonport.ca/commercial/default.aspx>)

to crossing arterials. It is not aligned north and south of Highway 401 and currently requires the use of Highway 401 as a connecting link.

Highway 7 provides relatively direct connections between the urban areas of Kitchener-Waterloo, Guelph, Acton, and Georgetown. It primarily serves shorter distance trips in the GTA and transitions from two lanes to four lanes in built-up urban areas.

Highway 10 is a four-lane north-south undivided highway between Brampton and Caledon Village crossing the Niagara Escarpment. It narrows to two lanes south of Caledon Village and then northerly, and extends to the City of Owen Sound. MTO is continuing with a program to reconstruct Highway 10 to a basic four-lane cross-section towards its northern boundary at Orangeville.

Highway 9 runs east-west between Highway 10 at Orangeville and Highway 400. East of County Road 12, it is a two-lane rural highway. Highway 9 connects Highways 6, 10 and 400 and provides an inter-regional route that also accommodates longer distance travel.

Other routes that are either inside the preliminary study area or important to the east-west network include Regional Road 124 / County Road 24 that was formerly Highway 24, connecting with Highway 401 at Cambridge. These roads provide key transportation linkages through and adjacent to the preliminary study area.

Municipal Network

The counties and regional municipalities are responsible for maintaining and operating the Regional Road and County Road System for the transport of goods and people in a safe and efficient manner. These road facilities serve both short distance and longer inter-regional trips by connecting rural and urban centres to each other as well as to the provincial highway system. Part of the regional / county operational and planning mandate is to provide physical improvements to the Regional Road and County Road system to meet growth needs and improve the level of service. The major municipal roads within the GTA West preliminary study area are described below.

County of Wellington

The primary east-west county roads include County Roads 30, 124, 50, 37 (Arkell Road) and 34. These County roadways serve its east-west travel demand as well as provide connections to Highway 6. The primary north-south county roads include Watson Road and County Roads 39, 38 (Victoria Road), 29, 27, 24 (Eramosa-Erin Townline) and 125. These county roadways connect towns within Wellington County and provide links to Highway 401 and Highway 7. County Road 124 is a major rural roadway in the County of Wellington.

City of Guelph

The primary east-west roadways under the jurisdiction of the City of Guelph include Woodlawn Road, College Avenue, Stone Road and Clair Road. These roadways accommodate internal municipal traffic as well as provide access to the City’s Hanlon Expressway (Highway 6). The primary north-south arterial roads include Edinburgh Road, Woolwich Street / Gordon Street, Victoria Road and Watson Road, which provide both internal and north-south access to Highway 401 to the south and Highway 7, via York Road, to the north. Woodlawn Road currently connects the Hanlon Expressway with Highway 6 North, from the City of Guelph.

Halton Region

The only major continuous east-west facilities within the Halton section of the preliminary study area are Derry Road and Steeles Avenue, the others being discontinuous for reasons related to either the Niagara Escarpment or wide watercourses such as Sixteen Mile Creek and Bronte Creek. These natural corridors all generally run north-south in Halton Region. The primary north-south regional arterial roads include Guelph Line, Regional Road 25 and Trafalgar Road, which provide connections to Highways 7, 401, 407 ETR and the QEW / Highway 403.

Region of Peel

The primary east-west regional arterial roads within Peel Region include Old Baseline Road, King Street, Mayfield Road, Bovaird Drive / Castlemore Road, Queen Street, Steeles Avenue, Derry Road and Britannia Road. The primary north-south regional arterial roads include Winston Churchill Boulevard, Mississauga Road / Erin Mills Parkway,

Chinguacousy Road, Main Street / Hurontario Street, Dixie Road, Airport Road and Gore Road. These roadways provide continuous arterial road connections to the Region’s population and employment centres and highway network including Highways 401, 410, 403, 407 ETR and Highway 7. Main Street / Hurontario Street becomes Highway 10 north of Mayfield Road at the City of Brampton / Town of Caledon boundary, providing connections to 407 ETR and Highway 410.

York Region

The primary east-west regional arterial roads include King Road, Teston Road, Major Mackenzie Drive, Rutherford Road, Langstaff Road, Steeles Avenue and Finch Avenue. North-south regional arterial roads include Regional Roads 27 and 50 (Caledon-King Townline), Weston Road, Pine Valley Drive and Keele Street. These roadways provide connections to Highways 400, 401, 407 ETR and 7.

1.7. OVERVIEW OF RELEVANT FEDERAL, PROVINCIAL AND MUNICIPAL POLICIES

Policy documents provide direction on land use, growth, infrastructure planning, trade, tourism and recreation and environmental protection. These policies have strong potential to influence future transportation demand in the preliminary study area by shaping population and employment growth, stimulating economic and tourism growth and establishing a vision for the transportation system. The policies provide the impetus for changing travel patterns, modes and volumes in the preliminary study area, as well as shape the strategies developed to address these transportation needs.

This study is being carried out within a policy framework that includes all relevant approved provincial planning policies, including the key principles, themes and directions embodied within them, as well as approved municipal official plans and transportation master plans of the preliminary study area upper tier municipalities. The study has proceeded with the intent of accommodating the future transportation and land use visions embodied in these documents.

The policies developed by various levels of government are consistent with respect to the direction on land-use planning and transportation to promote strong communities, a clean

and healthy environment, and a strong economy. The policies recognize the complex inter-relationships among economic, environmental and social factors in planning. The *Area Transportation System Problems and Opportunities Report*, available on the study website (www.gta-west.com) provides detailed descriptions of each policy and document.

The Study Team reviewed numerous policies and documents that form the policy framework for this study, including the following:

- *Provincial Policy Statement*, Ministry of Municipal Affairs and Housing, March 2005
- *Growth Plan for the Greater Golden Horseshoe*, former Ministry of Public Infrastructure Renewal (now Ministry of Energy and Ministry of Infrastructure), June 2006
- *Greenbelt Act and Greenbelt Plan*, Ministry of Municipal Affairs and Housing, February 2005
- *Niagara Escarpment Plan*, June 2005
- *Oak Ridges Moraine Conservation Act*, 2001 and *Plan*, April 2002
- *Metrolinx Regional Transportation Plan*, November 2008
- *GO Transit's Strategic Plan – GO 2020*, December 2008
- *National Policy Framework for Strategic Gateways and Trade Corridors*, July 2007
- *Ontario-Quebec Continental Gateway and Truck Corridor*, July 2007
- *Discovering Ontario – A Report on the Future of Tourism*, February 2009
- *Building a National Tourism Strategy – A Framework for Federal/ Provincial/ Territorial Collaboration*, 2006
- *Go Green, Ontario's Action Plan on Climate Change*, August 2007
- *Straight Ahead – Vision for Transportation in Canada*, Transport Canada, February 2003
- *Southern Ontario Highways Program 2008 to 2012*, August 2008
- *Ontario Tourism Strategy*, June 2004
- *Municipal Policies from the Halton Region, Region of Peel, York Region, City of Guelph and County of Wellington*

1.7.1. Provincial Policy Statement

The Provincial Policy Statement (PPS) influences transportation primarily through municipal planning policy as the *Planning Act*, R.S.O. 1990 requires that official plans have regard for matters of provincial interest, and are consistent with the PPS. Specifically, municipalities shall include policies that integrate transportation and land use considerations at all stages of the planning process and provide the necessary infrastructure to support current and projected needs in a co-ordinated, efficient and cost-effective manner.

For the purpose of this study, the PPS requires close examination of existing infrastructure to establish the potential to expand capacity before considering the development of new infrastructure. The PPS contains various policies that provide protection for natural heritage, water, agricultural, and cultural heritage and archaeological resources for their economic, environmental and social benefits. These are vital when considering potential new infrastructure. These policies were key factors in the identification and evaluation of transportation alternatives to address the problems and opportunities in the preliminary study area.

1.7.2. Growth Plan for the Greater Golden Horseshoe

The *Growth Plan* outlines a set of policies for managing growth and development and guiding planning decisions in the GGH over the next 25 years (to 2031). This broad based plan represents a planning “vision” for Ontario. As a part of this vision, the plan outlines a strategy for “Where and How to Grow”, “Infrastructure to Support Growth”, “Protecting What is Valuable” and “Implementation”. Municipal official plans must conform to the *Growth Plan’s* population and employment intensification and density targets and growth forecasts, and to policies and targets encouraging growth within existing urban areas, and discourage urban sprawl.

The *Growth Plan* designates Urban Growth Centres, which are areas within certain municipalities (typically downtowns or other major nodes of higher density development) that will be the focus for intensification and be planned to achieve certain density targets. As noted above, there are four designated Urban Growth Centres within the GTA West preliminary study area: Downtown Brampton; Downtown Milton;

Vaughan Metropolitan Centre; and Downtown Guelph, as shown in **Exhibit 1-13**. Further, the *Growth Plan* includes transportation policies to support growth and increased needs for moving people and goods.

Consistent with the anticipated growth and policies for managing it, challenges are expected on the transportation network through the preliminary study area, with increased goods movement, commuter, tourism and recreational travel. The future transportation problems, opportunities and network recommendations reflect the *Growth Plan's* substantial increase in population and employment throughout the GGH, as well as its priorities for transportation investments beginning with transit for moving people and inter-modal linkages for moving goods.

1.7.3. Greenbelt Plan

The *Greenbelt Plan* includes plans and policies to: protect against loss and fragmentation of agricultural lands; provide permanent protection to natural heritage and water resource systems; and to provide for a range of economic and social activities associated with rural communities. The goals of the Infrastructure and Natural Resources policies of the Plan are to support infrastructure that is consistent with the aim of the *Greenbelt Plan* and *Growth Plan*, while seeking to minimize the impact on the environment.

Similar to the PPS and *Growth Plan*, the *Greenbelt Plan* policies influence transportation primarily through municipal planning policy as the Greenbelt Act requires that official plans conform to the policies of the Plan. The *Greenbelt Plan* has strict policies that address how transportation infrastructure will be constructed and mandates the needs and justification that the provincial and municipal government must provide in proposing improvements to existing facilities or new facilities through the Greenbelt planning area. The *Greenbelt Plan* sets out policies for how transportation infrastructure may be planned, designed and constructed.

The preliminary study area includes a large portion of Greenbelt Planning Area, primarily extending through the Regions of Peel and Halton, and the location of Greenbelt areas is a significant factor in the identification and evaluation of transportation alternatives to address the transportation

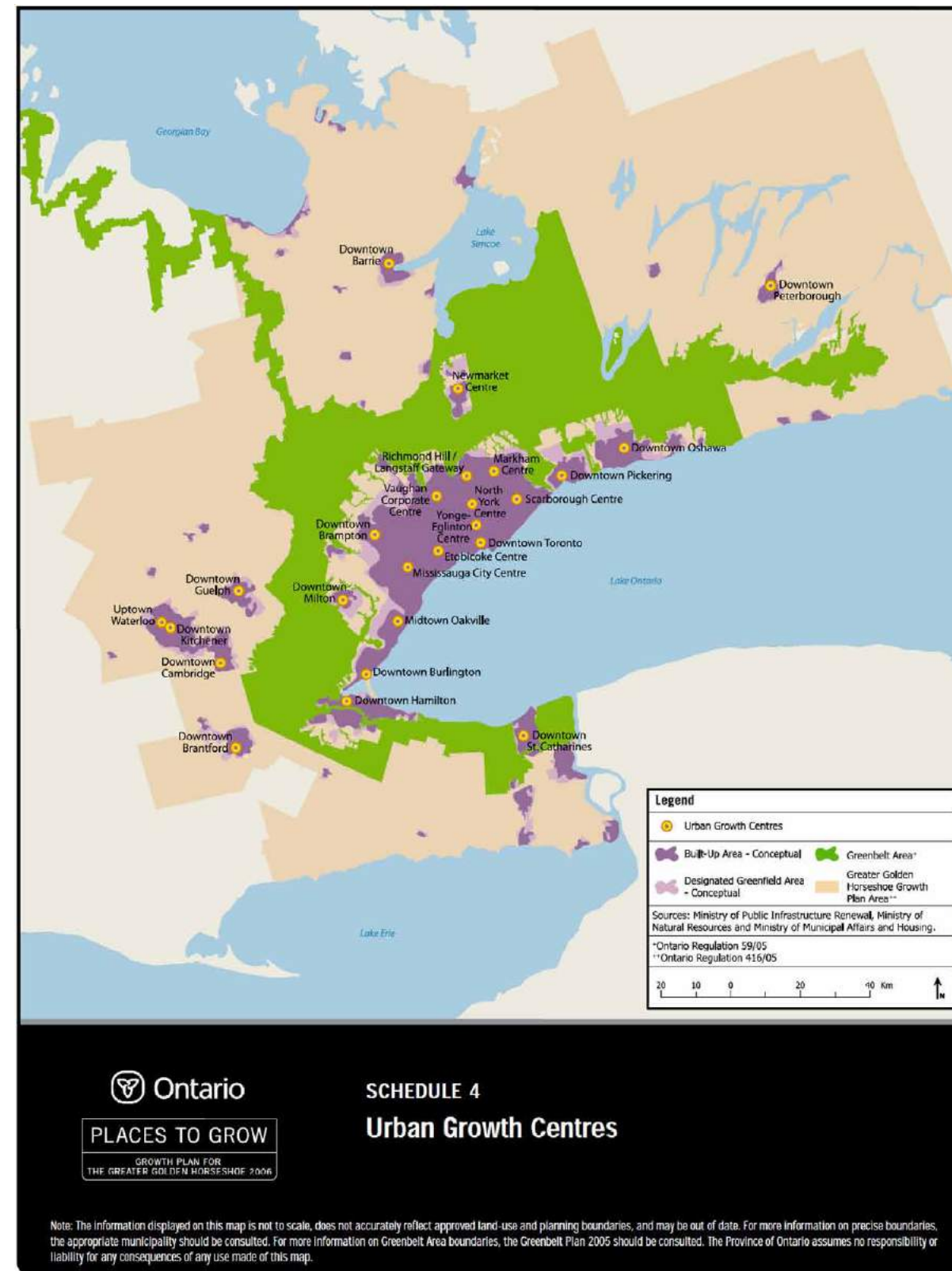


Exhibit 1-13: Places to Grow (2006) - Schedule 4: Urban Growth Centres

problems and opportunities. This study has fully integrated the goals, objectives and policy requirements of the *Greenbelt Plan*.

1.7.4. Niagara Escarpment Plan

Stretching 725 km in length from Niagara to Tobermory, the Niagara Escarpment encompasses a range of habitats, physiographic regions and land-uses. It runs parallel to the southern and western shores of Lake Ontario, ranging in distance from one to several kilometres south of the lake. Although the Niagara Escarpment Plan (NEP) permits essential transportation facilities in the Escarpment Natural Area, it must be demonstrated that any new and/or expanded facility has the least possible impact on the natural environment and be consistent with the objectives of the Plan.

The NEP guides land use within an area defined by the Niagara Escarpment, from the Bruce Peninsula in the north to the Niagara River. It limits development within the NEP area through limitations on new lot creation and limitations on permitted uses. Its intent is to balance development, preservation and public use. Official plans are required to conform to the NEP. The Plan establishes land use designations, policies and criteria for the protection of the lands within its policy area.

The NEP policies will impact where and how new transportation facilities are built to meet the increase in transportation demand in the preliminary study area. Similar to the *Greenbelt Plan*, the NEP influences where development, and to some degree infrastructure to serve development, can occur.

1.7.5. Oak Ridges Moraine Conservation Act and Plan

The *Oak Ridges Moraine (ORM) Conservation Plan* supports the *ORM Protection Act* (2001), and clarifies the long-term protection and management of the 190,000 ha that comprise the Moraine. The ORM is one of Ontario's most significant landforms – an irregular ridge stretching 160 km from the Trent River in the east to the Niagara Escarpment in the west. The ORM has a unique concentration of environmental, geological and hydrological features, including clean and abundant water resources. The southern limit of the ORM forms the approximate northern boundary of the GTA West preliminary study area through the Regions of York and Peel.

Similar to the *Greenbelt Plan* and NEP, provincial policies for the ORM influence where development, and infrastructure to serve development can occur. The Oak Ridges Moraine Conservation Plan allows only those transportation, infrastructure and utilities projects where no reasonable alternative exists and includes policies which require minimum disturbance and impact on the ecological and hydrological integrity of the ORM. The ORM requires the protection of sensitive water resources (e.g. kettle lakes, wetlands, permanent and intermittent streams, seepage areas and springs) from development.

1.7.6. Metrolinx Regional Transportation Plan

Metrolinx is a provincial crown agency established by the Ontario government in 2006, tasked to develop and implement an integrated multi-modal transportation plan for the GTHA. Its mandate includes providing seamless, co-ordinated transportation throughout the region. In November 2008, Metrolinx published its *Regional Transportation Plan (RTP): The Big Move*. The RTP is the third piece in the province’s approach to prepare the GTHA for growth and sustainability, building upon the *Greenbelt Plan* and the *Growth Plan*. It reaches 25 years into the future toward a transportation system that provides connectivity among modes, encourages the most financially and environmentally appropriate modes, as well as offers multi-modal access and shapes growth by supporting intensification.

The RTP identifies three sets of priorities: for the first 15 years; years 15 to 25; and longer term. It proposes a broad range of actions and policies that may include legislative changes, the creation of new programs and / or establishment in the policy framework guiding decision making. Work is now underway toward the first transit construction projects in York Region and Toronto.

Much of the GTA West preliminary study area lies within the area covered by the RTP. The principles, priorities and planned system improvements in the RTP have been included in the GTA West Corridor Planning and EA Study.

1.7.7. GO Transit’s Strategic Plan – GO 2020

GO Transit is now the province’s operating arm of the Metrolinx provincial crown agency overseeing inter-regional public transportation services provided by trains and buses in the GTHA. In May 2009, GO Transit’s service area was expanded to include the upper tier municipalities of Dufferin, Durham, Halton, Niagara, Peel, Peterborough, Simcoe, Waterloo, Wellington and York and the single tier municipalities of Barrie, Guelph, Hamilton, Kawartha Lakes, Peterborough and Toronto. GO Transit’s Strategic Plan, *GO 2020*, presents its direction to 2020 including its vision, objectives and goals, and service strategy. Alongside the Metrolinx RTP, this document provides the basis for GO Transit’s capital, operating and annual business plans.

The Strategic Plan’s focus on inter-regional travel is relevant to the purpose of the GTA West study. A number of GO service improvements and extensions have recently been implemented / are planned for the GTA West preliminary study area.

1.7.8. National Policy Framework for Strategic Gateways and Trade Corridors

This policy framework, launched in July 2007 by Transport Canada, has been developed to advance the competitiveness of the Canadian economy in the rapidly changing area of global commerce. It will do so by providing focus and direction for strategies that foster further development and exploitation of the transportation systems that are key to Canada’s most important opportunities and challenges in international trade. Three strategic gateways/trade corridors were identified for this approach: the Asia-Pacific Gateway and Corridor; the Ontario-Quebec Continental Gateway and Trade Corridor; and the Atlantic Gateway.

The gateway corridor strategies coming out of this framework will influence the movement of people and goods within and through the preliminary study area. The GTA West Corridor Planning and EA Study will continue to progress in the context of this framework, incorporating its integrated approach to infrastructure, policy, regulation and operational practice. The study area lies within the Ontario-Quebec Continental Gateway and Trade Corridor.

1.7.9. Ontario-Quebec Continental Gateway and Trade Corridor

The Ontario-Quebec Continental Gateway and Trade Corridor is one of the three Strategic Gateways and Trade Corridors identified in the National Policy Framework. In July 2007, the governments of Canada, Ontario and Quebec signed a Memorandum of Understanding (MOU) on the development of an Ontario-Quebec Continental Gateway and Trade Corridor. The goal of this partnership is to maintain and build upon Ontario and Quebec’s world-class transportation system so that it remains a driver of international trade and economic growth for the future.

This gateway is a key component of Canada’s multimodal transportation system. Its central location facilitates international trade and the domestic inputs toward foreign trade with the U.S. and other partners. The Continental Gateway initiative is focused on developing a sustainable, secure and efficient multimodal transportation system that keeps Canada’s economic heartland competitive, attractive for investment and essential for trade.

Major transportation facilities in the GTA West preliminary study area such as Highway 401, CPR and CNR railways and inter-modal facilities form strategic and integral part of the Ontario-Quebec Continental Gateway. Planning for improvements to the transportation system in the study area includes close co-ordination between these initiatives. As planning for the Ontario-Quebec Continental Gateway and Truck Corridor progresses, its findings regarding infrastructure, policy and regulatory strategy have been incorporated into the GTA West study.

1.7.10. Discovering Ontario – A Report on the Future of Tourism

This report, commissioned by the Ontario government, was prepared by the Ontario Tourism Competitiveness Study and released in February 2009. Its mandate was to develop a plan, including specific steps for public and private sectors, to support the growth and long-term viability of tourism in Ontario. The Study consisted of a wide variety of research studies and a broad-based consultation process.

The importance of transportation in supporting Ontario’s tourism industry is highlighted in the Discovering Ontario Report and the GTA West study has progressed in this context.



1.7.11. Building a National Tourism Strategy – A Framework for Federal / Provincial / Territorial Collaboration

The National Tourism Strategy (2006) relates specifically to the factors influencing the tourism industry, identifying challenges and setting priorities for strengthening tourism competitiveness developed by the Federal / Provincial / Territorial (FPT) governments in consultation with industry. This tourism strategy has the potential to influence transportation demand in and through the preliminary study area by promoting areas of Canada such as Toronto and Niagara as world-class tourist destinations. It emphasizes the importance of providing an efficient, integrated and secure transportation system and travel choice options to facilitate tourist travel, and recognizes the importance of transportation policies, programs and infrastructure as enablers to building a strong and sustainable tourism industry.

1.7.12. Go Green: Ontario’s Action Plan on Climate Change

Go Green: Ontario’s Action Plan on Climate Change includes some of the most comprehensive, forward-looking steps on the environment that Ontario has ever contemplated. It sets firm targets and goals towards making better, greener choices that will save money, help the economy and help the environment.

Go Green’s MoveOntario 2020 transit projects will provide new infrastructure and influence travel patterns within and through the preliminary study area. Any new infrastructure considered to address the problems and opportunities identified in the study area will need to be evaluated in the context of the Go Green’s vision and targets to reduce greenhouse gas emissions.

1.7.13. Straight Ahead – A Vision for Transportation in Canada

Straight Ahead - A Vision for Transportation in Canada is a federal government policy paper prepared by Transport Canada which covers the full spectrum of long-term transportation issues in Canada, ranging from airline and railway competition issues to critical infrastructure needs, environmental pressures and safety and security imperatives. The document provides the vision, the policy framework and principles to guide the Government of Canada’s decisions in the years ahead in key areas such as marketplace policies, strategic infrastructure investments and initiatives in support of the broader government agenda on competitive cities and

healthy communities, climate change and innovation and skills.

This document sets the overall context for transportation planning for all modes of travel in the preliminary study area, and the study’s recommendations are made in this context. Marketplace / competition issues, infrastructure, environmental protection, security and innovation were important elements to consider in identifying alternatives to address the transportation problems and opportunities.

1.7.14. Southern Ontario Highways Program, 2011 to 2015

This document, published in August 2011, presents an annual update of the five-year construction program for Southern Ontario highways. The program lists all major highway projects already under construction or starting in 2011, as well as a five year outlook to 2015. It recognizes the importance of long-term planning to ensure first-class transportation infrastructure for the future.

The program includes current and future highway improvements in the GTA West preliminary study area, which have been included in the study’s assessment of 2031 transportation conditions. The GTA West Corridor Planning and EA Study is included as a Future Southern Ontario Project.

1.7.15. Ontario’s Tourism Strategy

This 2004 document provides a strategy for long-term sustainable growth of Ontario’s tourism industry, including a framework identifying the areas for action through to 2010. It is to serve as a tool to bring the tourism industry and different levels of government together to focus efforts and take advantage of the assets available for tourism in Ontario. In 2007, an update report was published, highlighting the progress and achievements to date, including specific efforts related to the priorities outlined in the Strategy.

The importance of Toronto and Niagara as tourist destinations is highlighted as is the point that greater collaboration between Toronto and the Niagara Region will strengthen them as destinations and major gateways for tourism in the province. The document also recognizes the transportation issues across the province that can act as barriers to smooth

travel for tourists, recognizing all modes of transportation (road, rail, air, water, transit) from a tourism perspective.

1.7.16. Municipal Policies

In addition to provincial policies, local area policy documents are considered in the context of the GTA West Corridor Planning and EA Study. At the municipal level, official plans provide the context and boundaries within which a municipality operates with regards to land use, development and growth and helps to ensure that future planning and development will meet the specific needs of the community. The Planning Act requires that an official plan conform to, or does not conflict with provincial plans, has regard for matters of provincial interest, and is consistent with the PPS.

Official plans contain policies governing various land use designations, such as residential, commercial, industrial, agricultural, open space and recreation. These designations are broadly established on a land use map. Other policies relate to environmental management, economic development, transportation and community improvement.

Municipal policies have the potential to influence transportation in the preliminary study area by shaping the patterns of demand and in turn impacting the modes of travel used. Transportation demand can be influenced by factors such as: land use patterns, service requirements and locations; order and location where development will occur; development policies; economic development policies; transportation master plans; transit strategies; and co-ordination of planning policies between regions. The official plans of the Regions of Peel, Halton and York, Wellington County and City of Guelph have been considered throughout the study.

1.8. OVERVIEW OF LINKAGES BETWEEN THE GTA WEST AND NGTA STUDIES

The Niagara to GTA (NGTA) Corridor Planning and EA Study – Phase 1 is a similar study to the GTA West Study – Stage 1. Both studies are being undertaken at the same stage of the Individual Environmental Assessment (EA) process, and both studies are being undertaken by the same Consultant Joint Venture on behalf of the Ontario Ministry of Transportation (MTO).



Exhibit 1-14: GTA West and NGTA Study Areas

The study areas for the GTA West and NGTA studies are shown together in **Exhibit 1-14**. The GTA West preliminary study area is described in **Section 1.5**, and borders the NGTA study area, extending from Highway 400 in Peel Region west to Highway 6 in the Guelph area. The NGTA study area includes Niagara Region, the City of Hamilton and part of Halton Region.

The NGTA and GTA West studies commenced in 2006 and 2007, respectively, and it was recognized by both Study Teams at the outset that a high degree of coordination would be vital to a successful outcome. To this end, both Study Teams established a regular meeting schedule where members of the Project Management Board from both the consultant team and MTO met to discuss coordination issues from the standpoint of technical work being undertaken, as well as consultation with stakeholders common to both studies.

Many of the technical team members involved in the transportation, economic, environmental and consultation streams of the studies were common to both Study Teams and

undertook their work in a joint fashion where applicable. As an example, all of the transportation modelling completed for this study was undertaken by a team of transportation specialists common to both studies, and utilized the Greater Golden Horseshoe (GGH) Transportation Model which encompasses the GTA West and NGTA study areas, as well as other parts of the GGH.

During later phases of the study when both Study Teams tested the various highway widening and new corridor alternatives, the model runs undertaken for each study included an assumption with regard to the infrastructure improvements in the other study area. When the GTA West team was running various new corridor alternatives within the study area, various highway widening and new corridor scenarios were also assumed in the NGTA study area and vice versa.

From a consultation standpoint, joint meetings were held when possible with common stakeholders such as Niagara Escarpment Commission, Conservation Halton, Halton Region, the Mississaugas of the New Credit First Nation, the Six Nations of the Grand River Territory First Nation, Transportation Service Providers such as CN, CP, Metrolinx and GO Transit, as well as others. This was done to avoid providing repetitive information and to reduce the consultation demands on both the stakeholders and the Study Team members.

In summary, both studies have been undertaken in a parallel and integrated fashion. While the ultimate recommendations of both studies may differ, the process that has been followed in arriving at these recommendations and the technical work and underlying assumptions were well coordinated throughout both study processes. For updates on the NGTA Study, please visit the website: <http://www.niagara-gta.com/>.

1.9. OVERVIEW OF TRANSPORTATION DEVELOPMENT STRATEGY

This report has been structured to document the planning process followed in Stage 1 of the GTA West Corridor Planning and Environmental Assessment Study and the identification of the Transportation Development Strategy (Strategy).

- **Chapter 2:** Study Reports and Supporting Documents – a summary of the existing conditions and background reports;
- **Chapter 3:** Area Transportation Alternatives - an overview of the development and assessment of the group transportation alternatives;
- **Chapter 4:** Assessment of Group #3 and Group #4 Transportation Alternatives – high level assessment carried out in the analysis and evaluation of Group #3 (widening of existing facilities) and Group #4 (new transportation corridor) using factors socio-economic environment, cultural environment, natural environment, economic environment, transportation, constructability and cost;
- **Chapter 5:** Additional Analysis in Halton Area – following the release of the draft Transportation Development Strategy Report, February 2011, many comments were received from the Halton area. Their main concern was the need of a new transportation corridor through Halton Hills compared to the potential further widening of Highway 401, as well as potential impacts of the new transportation corridor on the rural character of the communities in Halton area and impacts on agricultural lands. In response, additional analysis was carried out and documented in this chapter;
- **Chapter 6:** Transportation Development Strategy – a description of the suite of transportation strategies for the GTA West preliminary study area; and
- **Chapter 7:** Summary of Consultation Activities – a summary of consultation activities including the general public, local community and interest groups, federal and provincial ministries and agencies, upper- and lower-tier municipalities and First Nations.

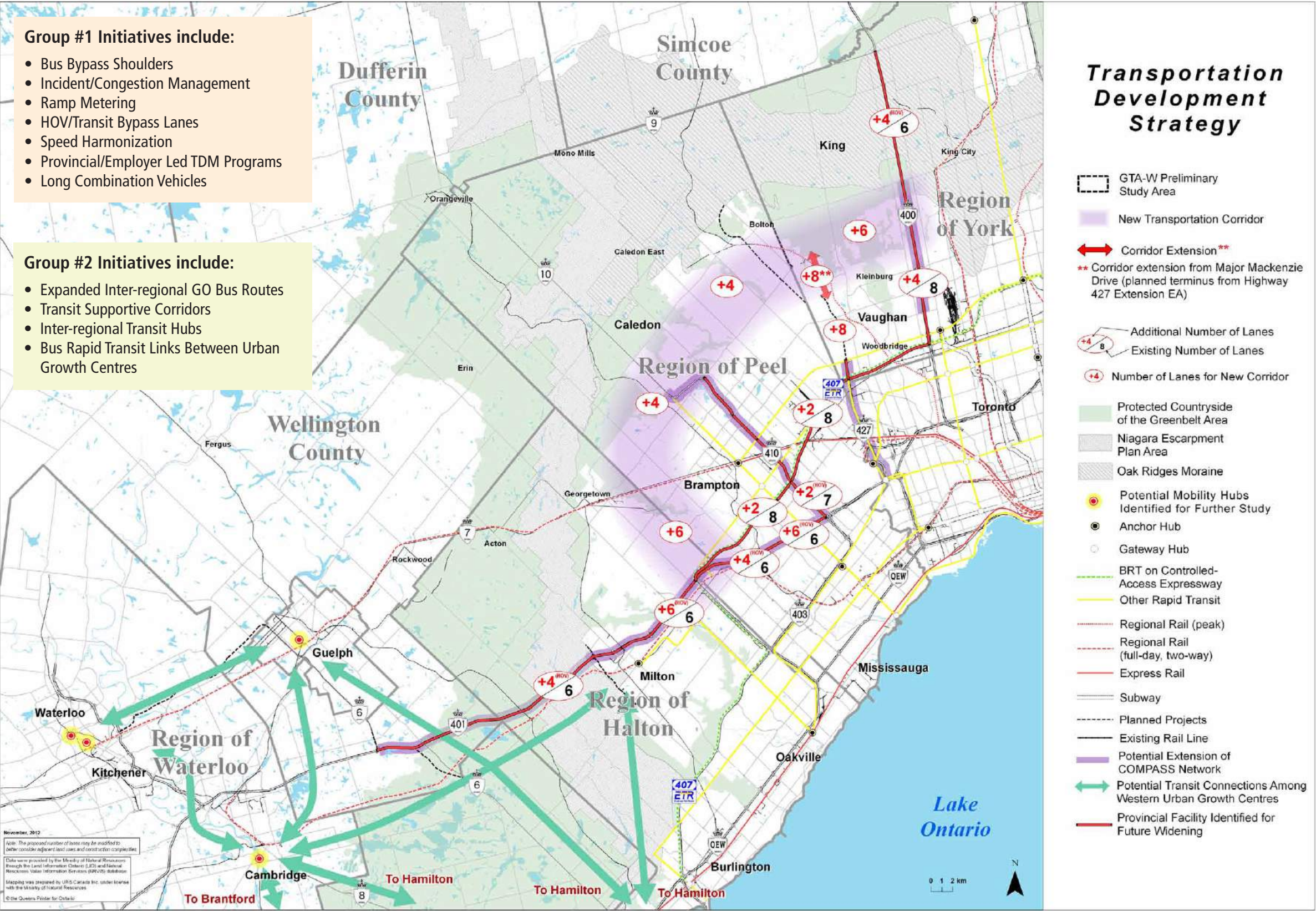
The Transportation Development Strategy (Strategy) is illustrated in **Exhibit 1-15** and represents the culmination of the “building block” approach (described in **Section 3.1**). The Strategy is comprised of the following prioritized elements:

- Group #1: Optimize Existing Networks
- Group #2: Improve Non-Road Infrastructure
- Group #3: Widen / Improve Roads
- Group #4: New Transportation Corridors and Links to the Existing Freeway Network

All of the recommendations in the Strategy will be further studied as part of the applicable future Environmental Assessment (EA) processes. For more details on the Transportation Development Strategy, refer to **Chapter 6**.

While the Transportation Development Strategy includes long-term roadway recommendations, the Ontario government’s first priority will be optimization of existing infrastructure and transit improvements / expansion. It is envisioned that Group #1 will be implemented in the near-term while Group #2 will be implemented in the near- and mid-term. Widening roads and planning multi-use corridors will be part of a longer-term strategy, which will provide opportunities for transit initiatives like those in the Metrolinx RTP and *GO 2020 Strategic Plan* to grow.

Exhibit 1-15: Transportation Development Strategy



Study Reports and Supporting Documents

2.1. OVERVIEW

Throughout the GTA West Corridor Planning and Environmental Assessment Study, interim reports have been prepared to record critical steps in the study process, including: documentation of existing environmental, transportation and economic conditions; methodology and identification of future transportation problems and opportunities; identification of development issues and corridor protection needs; and methodology, development and assessment of alternatives to address the identified problems and opportunities. The work recorded in these interim reports has shaped the development of the GTA West Transportation Development Strategy (Strategy).

Key content of each of these reports have been presented to the public and stakeholders at Public Information Centres and meetings, and the draft reports are available on the study website (www.gta-west.com). A summary of each report is provided below, highlighting the reports' timing and role in the study, and key elements.

2.2. OVERVIEW OF TRANSPORTATION AND ECONOMIC CONDITIONS REPORT

2.2.1. Report Overview

The Overview of Transportation and Economic Conditions Report was published as a Draft for Consultation in July 2008. The draft report was subsequently updated and input received on the draft is summarized in the revised report dated December 2010. This report established baseline transportation and socio-economic data for the purpose of undertaking the Environmental Assessment Study. The report focused on documentation of historical transportation and socio-economic conditions and trends in the preliminary study area. The review of historical trends was applied to existing conditions as part of an investigation of the "Area Transportation System" needs, providing a foundation for the generation and evaluation of transportation alternatives to address future problems and opportunities, and ultimately

development of the multi-modal development strategy.

The draft report included an overview of relevant federal, provincial and municipal policies, a definition and description of the "Area Transportation System", a description of current travel conditions in the system, a description of the socio-economic conditions and outlooks, and a summary of existing conditions and future trends. It can be referenced on the study web site (www.gta-west.com) or by contacting the Study Team.

2.2.2. Report Findings

The "Area Transportation System" comprised the area transportation facilities and linkages for moving people and goods by all modes and all jurisdictions. The report described the highway and municipal road network, recent studies and projects, and the transit and rail networks and airports that serve the preliminary study area.

A number of key factors that influence the "Area Transportation System" needs were identified through this preliminary assessment. Key factors driving these needs were summarized into the following themes:

- Policy Framework
- Existing Travel Characteristics
- Existing Transportation System
- Historical Traffic Flows
- Existing Traffic Flows
- Traffic Operations and Level of Service
- Demographic Growth
- Future Trends

Policy Framework

The policies developed by various levels of government are consistent with respect to the direction on land-use planning

and transportation to promote strong communities, a clean and healthy environment, and a strong economy. They recognize the complex inter-relationships among economic, environmental and social factors in planning (see discussion in **Section 1.7**).

Better use of land and infrastructure can be made by directing growth to the existing urban areas. Provincial policy, including the Provincial Policy Statement and the *Growth Plan*, envisages increasing intensification of the existing built-up areas. Intensification provides a focus for transit and infrastructure investment to support future growth.

Existing Travel Characteristics

The preliminary 2006 Transportation Tomorrow Survey (TTS) database indicated that the municipalities west of the Greater Toronto Area (GTA) within and adjacent to the preliminary study area exhibit a relatively high proportion of self sufficiency and high proportion of automobile usage. The municipalities within the GTA have a higher proportion of trips leaving the municipality in the morning peak period to travel to neighbouring municipalities. The automobile is the primary mode used for the majority of these trips:

Municipal transit service is currently available within the urban areas of Waterloo Region, the Town of Milton and the cities of Brampton, Vaughan and Guelph. Transit usage in these municipalities range from 1% to 8% of the trips made in the morning peak period. The majority of the inter-regional transit trips are currently destined to downtown Toronto.

Existing Transportation System

The automobile continues to be the preferred mode of travel and auto ownership has been increasing. Inter-regional transit services are generally limited to connecting urban centres and major gateways that are either integrated with local transit service or integrated with park-and-ride facilities. A prominent example of inter-regional transit meeting these

criteria is GO Transit, which currently serves 92% of the corridor markets to downtown Toronto.

Currently, public (GO Transit) and privately controlled (Greyhound, Coach Canada, etc.) inter-regional bus services are available throughout Southern and Central Ontario, as are rail services. VIA Rail does not serve a specific origin/destination within the preliminary study area, but passes through with east-west service between Toronto and Kitchener.

Trucks are a principal means of goods transport in Central Ontario, with highways linking all major manufacturing centres and international border crossings. Truck transport remains a competitive mode of goods distribution for the majority of shippers, and it provides inter-modal goods transport connectivity using provincial freeways and arterial road networks.

Inter-modal rail terminals in Brampton and Vaughan provide rail to truck transfer locations for domestic and international freight. Toronto Pearson International Airport, Waterloo International, Hamilton International, Buttonville Municipal and Toronto City Centre airports are in the vicinity of the preliminary study area. Each of these airports serves to move people and goods. Continued expansion of the Port of Hamilton will also influence goods movement to and through the study area.

Historical and Existing Traffic Flows

Traffic volumes have grown significantly along all of the roadways within Southwestern Ontario and especially within the Greater Golden Horseshoe (GGH) over the last 45 to 50 years, particularly along the 400 series highways.

Review of daily traffic flows within and adjacent to the preliminary study area indicates that the area freeways carry significant daily traffic volumes ranging from 100,000 to 300,000 vehicles per day. Arterial and highway facilities such as Highway 6 and Regional Road 27 carry upwards of 45,000 vehicles daily. Rural arterial roadways carry daily traffic volumes ranging from less than 5,000 to upwards of 20,000 vehicles.

Truck traffic reflects a significant proportion of the daily traffic flows. Commercial vehicle demand can account for upwards of 20% of the total traffic on some highway sections; provincial 400 series highways carry the majority of the commercial vehicle traffic.

Traffic Operations and Level of Service

The review of peak hour travel demands crossing key screenlines within the GTA West preliminary study area indicate that there are good existing operating conditions crossing all analysis screenlines, with the exception of those immediately west of Winston Churchill Boulevard and immediately east of Highway 400.

Although screenline operating characteristics provide a good indication of general transportation network operations within the preliminary study area, a more in-depth review of operating characteristics for individual facilities indicates that the Highway 401 corridor experiences significant congestion in the peak travel periods. Other road corridors also experience congestion at peak travel times, including sections of Highways 400, 427 and 410, Regional Road 24 and Regional Road 50. Additionally, several major urban arterial road corridors are operating with congested conditions during the morning and afternoon peak hours.

Demographic Growth

Significant growth in population and employment is forecast within the preliminary study area, with the Regions of Waterloo, Halton, Peel, and York anticipated to experience above-average population and employment growth.

Future Trends

The Conference Board of Canada forecasts to 2030 indicated that Ontario economic growth will be slow but steady. Over the next 25 years the population within the preliminary study area is forecast to increase significantly, with a large component allocated to Urban Growth Centres. Employment opportunities within the preliminary study area are forecast to increase with the Business Services, Education, Health, Wholesale Trade and Retail Trade sectors experiencing the most growth.

The changes in employment sectors will impact transportation services. Currently, industries and services are leaving the Airport Supernode area and relocating to the west along Highway 401 to the Milton “Strip” or to the City of Guelph. The trucking logistic firms and terminals are also shifting west and relocating to the City of Guelph or Waterloo Region.

Historically, the traffic volumes on major inter-regional facilities within the GTA West preliminary study area have grown at about 1.5 to 2% per annum over the last 40 years. These historical traffic growth trends are in line with the population growth in Ontario. General traffic growth trends of approximately 2% per annum are expected over the next 25 years.

Since the signing of the North American Free Trade Agreement (NAFTA), commercial vehicle traffic has increased by upwards of 3 to 4% per annum on the provincial highway system and international border crossings. This growth appears to be levelling, indicating slightly lower growth rates over the next 25 years.

Over the past two years, transit ridership in Ontario has been increasing annually at a rate of 3.4%. Further increased growth in transit ridership is anticipated given the MoveOntario 2020 initiatives.

2.3. ENVIRONMENTAL CONDITIONS AND CONSTRAINTS OVERVIEW REPORT

2.3.1. Report Overview

The Environmental Conditions and Constraints Overview Report was prepared, and input was obtained from ministries, agencies and the public. The draft report was subsequently updated and input received on the draft is summarized in the revised report dated December 2010. The original draft report, dated July 2008, was presented at Public Information Centre #2 in March 2009.

The report documented the existing environmental conditions and constraints in the preliminary study area. In order to avoid or mitigate potential negative impacts to these features during the development and evaluation of planning alternatives, the environmental investigations identified significant and sensitive natural, socio-economic and cultural

features. The report provided a basis for analysis in two stages of evaluation to assist in the generation of “Area Transportation System Planning Alternatives” and “Preliminary Planning Alternatives” as described in **Chapter 3**.

2.3.2. Report Findings

Environmental Factors and Sub-Factors

The report structure and data inform the factors and sub-factors used in the evaluation of Area Transportation System Alternatives, as presented in the Environmental Assessment Terms of Reference (EA ToR). Public and agency input for the environmental factors and sub-factors was obtained throughout the study process as described in the study’s consultation record.

Policy Context

In addition to the EA ToR, several provincial, federal, regional and local policies and plans establish the framework within which transportation issues, opportunities and potential solutions are identified and assessed. The relevant policies are summarized in the report (see discussion in **Section 1.7**).

Significant or Sensitive Natural Environmental Conditions

Legislative and Policy Protection

A summary of the environmental features and functions for the preliminary study area and their associated legislative and policy protection is provided in **Exhibit 2-1**.

LEGISLATIVE AND POLICY PROTECTION*		
FEATURE AND/OR FUNCTION		
GROUNDWATER	Ontario Water Resources Act Safe Drinking Water Act Environmental Protection Requirement	PPS Niagara Escarpment Planning and Development Act
SURFACE WATER	Canada Water Act Conservation Authorities Act Planning Act PPS Lakes and Rivers Improvement Act Canada Water Act Canadian Environmental Protection Act	Ontario Environmental Protection Act Ontario Water Resources Act Conservation Authorities Act Lakes and Rivers Improvement Act Environmental Protection Requirement Niagara Escarpment Planning and Development Act
FISH AND FISH HABITAT	Fisheries Act Species At Risk Act	Environmental Protection Requirement
TERRESTRIAL ECOSYSTEMS		
Wetlands	Federal Policy on Wetland Conservation PPS Environmental Protection Requirement Conservation Authorities Act	Greenbelt Plan Niagara Escarpment Planning and Development Act
Wildlife, Habitats, and Movements	Canada Wildlife Act s.1-19 Migratory Birds Convention Act PPS	Fish and Wildlife Conservation Act Environmental Protection Requirement WLD-1 to WLD 2 and WLD-5 to WLD-9
Woodlands and Other Vegetated Areas	PPS s.2.1.2, 2.1.3 (b), 2.1.4 (d) Forestry Act Environmental Protection Requirement Niagara Escarpment Planning and Development Act	York Region Official Plan Peel Region Official Plan Halton Region Official Plan County of Wellington Official Plan
Terrestrial Species of Conservation Concern	Species At Risk Act Ontario Endangered Species Act Environmental Protection Requirement	Niagara Escarpment Planning and Development Act
DESIGNATED AREAS		
Niagara Escarpment	Niagara Escarpment Planning & Development Act Designation of Area of Development Control Designation of Planning Area	Development Within the Development Control Area Environmental Protection Requirement
Oak Ridges Moraine	Oak Ridges Moraine Conservation Act	Environmental Protection Requirement
Greenbelt	Greenbelt Act	Environmental Protection Requirement
ANSIs	Environmental Protection Requirement PPS Greenbelt Plan York Region Official Plan	Peel Region Official Plan Halton Region Official Plan County of Wellington Official Plan
ESAs	Environmental Protection Requirement York Region Official Plan Peel Region Official Plan	Halton Region Official Plan County of Wellington Official Plan

* The information is provided as a convenience only and should not be relied on as authoritative. It is intended to provide context to the type of legislation that are relevant to existing environmental conditions in the study area.

Exhibit 2-1: Summary of the Environmental Features and Functions Identified for the Preliminary Study Area and their Associated Legislative and Policy Protection

Designated Areas

The Niagara Escarpment, a recognized UNESCO World Biosphere Reserve, is the most significant natural feature in the preliminary study area from a fish and fish habitat, terrestrial ecosystem, surface water, and groundwater perspective. Evaluation of any alterations to the Niagara Escarpment should also include an evaluation of the potential visual impact on the Escarpment. In addition to the Niagara Escarpment, there are 65 Areas of Natural and Scientific Interest (ANSIs) within the preliminary study area as well as several locally or regionally designated features and areas, which typically coincide with valleys.

Groundwater

The Amabel Formation (above the Escarpment) is one of the most significant and productive bedrock aquifers in the preliminary study area and Lake Ontario basin, which is a regionally significant transmissive aquifer. Above the Escarpment, most infiltration recharges the underlying Amabel Formation aquifer. Below the Escarpment, the Amabel Formation discharges groundwater to tributaries at the face of the Escarpment, and is the likely source of most of the baseflow to surface watercourses to the east. Shallower overburden aquifers are more significant east of the Escarpment and provide the water supply for several municipalities. Wellhead Protection Zones are scattered throughout the preliminary study area.

In general terms, four hydrogeological indicators are used to determine the areas that are most sensitive to the potential impacts of transportation infrastructure:

- Proximity to groundwater recharge areas;
- Highly vulnerable aquifers;
- Proximity to groundwater discharge areas; and
- Proximity to water wells set in shallow, unconfined aquifers.

Recharge areas are the water source for the groundwater system. Therefore, the proximity of infrastructure to such areas may affect water resources that are used by humans and/or support the natural environment. Proximity to a discharge

area is also significant because the infrastructure will exhibit groundwater upwelling that supports aquatic habitat. Reductions in upwelling in groundwater-fed wetlands could reduce vegetation diversity by starving species that require more water. Given the reliance of so many wildlife species on wetland habitat, wildlife may be displaced or unable to survive. Similarly, such disruption may redirect groundwater discharge, which could lead to flooding of low-lying areas. Reduced discharge into particularly sensitive reaches of streams could also impact fish habitat and spawning grounds.

Surface Water

Four watersheds comprise nearly 75% of the preliminary study area. Of these, the Humber River, and to a lesser extent the Credit River, are the most urbanized while Sixteen Mile Creek and Eramosa River are predominately agricultural and natural.

Fish and Fish Habitat

Within the GTA West preliminary study area there are seven Species of Conservation Concern as well as approximately 47 km of coldwater, 61 km of coolwater, and 117 km of warmwater habitat. Coldwater streams and their fish communities are considered the most sensitive aquatic resource in the preliminary study area. These are intolerant to disturbances such as changes in water chemistry or thermal regime, particularly when related to the loss of, or change in, the quality of groundwater discharging to the streams. Coldwater fish species are typically found where forested riparian cover is intact, water quality is good, and baseflow is sufficient to maintain flow rates and moderate stream temperatures. The absence or impairment of these conditions can undermine the viability of fish populations. In particular, coldwater fish, such as Brook Trout, are dependent on direct groundwater discharge for successful egg incubation. Therefore, groundwater that contributes functionally to these communities should be protected.

Warmwater streams and species may also be sensitive. However, they typically support fish species that are more tolerant to environmental disturbance. Common warmwater fish species, particularly in urbanized areas, can usually withstand moderate habitat changes and fluctuating

environmental conditions over a short period of time without any significant influence on the community.

Terrestrial Ecosystems

Sixty-seven wetlands were evaluated, 42 of which are Provincially Significant Wetlands (PSWs). These are located predominantly west of the Niagara Escarpment, along with the three largest wetland complexes in the GTA West preliminary study area, which are each greater than 1,000 ha.

Wildlife in the preliminary study area is generally characteristic of southern Ontario and the Great Lakes-St. Lawrence Lowlands forest region. There are 78 occurrences of 42 different known Species of Conservation Concern. Eleven species are federally designated with protection under the federal Species at Risk Act (SARA).

Significant wildlife habitats include Deer Wintering Areas (approximately 6,930 ha) and Raptor Nesting Sites.

Within the preliminary study area, there are 202 Significant Wooded Areas totalling approximately 18,730 ha, and approximately 20 designated Old Growth Forests associated with the southern edge of the Oak Ridges Moraine. As well, there are over 5,200 ha of interior woodlands (3% of the study area), and approximately 1,000 ha of deep interior woodlands (< 1 % of the study area).

The Nashville Resource Management Tract is also an important conservation area in York Region, which includes over 700 ha of greenspace in York Region between the Town of Bolton and Kleinburg.

The study area also includes large tracts of land owned and managed by conservation authorities such as the Nashville Resource Management Tract in York Region.

The proximity of any of these features to infrastructure may affect the feature, species, habitat, or functions and is a high constraint to transportation development. For example, reductions in surface water or groundwater contribution to wetlands could compromise the biodiversity of both wildlife and vegetation. Fragmentation of interior forest habitat could potentially compromise the ability of certain birds and

wildlife species to carry out life processes. The removal of their habitat would lead to a reduction in abundance and biodiversity at a broader level.

Significant or Sensitive Socio-Economic Environmental Conditions

First Nations

A significant component of the socio-economic environment in the preliminary study area is of interest to Six Nations of the Grand River Territory and Mississaugas of the New Credit First Nations based on the potential impact to traditional lands used for hunting and fishing, and on potential impacts to their rural community. Continued discussions with the First Nations regarding their traditional land uses and interest in the area is important to this study. **Section 7.6** provides further information about consultation with First Nations.

Municipal Land Use Planning Goals and Development Pressures

At this stage of the study process, general and preliminary land use constraints have been identified. Potential displacement of existing residences, businesses or institutional uses is recognized as a major constraint to transportation corridor development. Consequently, existing urbanized areas pose land use constraints, as do villages and hamlets, clustered rural residential development and existing community institutional features. Isolated residences, industrial development, recreational uses and other special area uses are also recognized as land use constraints. Undeveloped, fully serviced areas and approved Plans of Subdivision are also of concern due to future infrastructure investment and anticipated development potential.

As discussed in **Section 2.5**, a number of areas within the preliminary study area are currently under considerable development pressure. Generally, they are located on the fringe of existing urban areas and north of the built-up sections of the GTA. These areas have been identified by the Study Team through discussions with municipal staff and are based on a review of the status and pace of development applications, in relation to existing built-up boundaries and designated urban boundaries.

Agriculture

The identification and protection of Prime Agricultural Lands in the GTA West preliminary study area are important, as supported by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) policies regarding agriculture. Agricultural lands are also identified in municipal official plans. Consistent with provincial policy, priority will be given to agricultural lands in order of CLI Class 1 soils, CLI Class 2 soils, CLI Class 3 soils and other soils. There are vast areas of Class 1 soils and prime agricultural lands in both Greenbelt and non-Greenbelt areas, especially in north Halton Region and Wellington County.

Tourist Areas, Recreational Land Uses and Trails

Several major tourist areas are found within the GTA West preliminary study area, including the Niagara Escarpment, and many small communities such as Terra Cotta, Erin and Kleinburg. Tourism activities include increasingly popular agri-tourism operations and enjoyment of natural areas. These types of tourism activities are spread throughout the preliminary study area and will need to be examined in more detail as the study progresses.

The preliminary study area is also crossed by numerous trail systems primarily along its north / south running river valleys (e.g. Humber River) and the Niagara Escarpment (e.g. Bruce Trail). Recreational trails pose a moderate constraint to corridor development. Potential impacts on existing or planned trails will be assessed, and mitigation measures may be available to eliminate or minimize adverse impacts.

Areas containing significant aggregate resources present a moderate constraint in terms of the potential disruption or displacement of an active extraction activity, as well as the need to protect identified areas containing this non-renewable resource. As a mitigative measure, resources can be extracted prior to implementation if required. Potential adverse impacts on active aggregate business operations will be considered.

Air Quality

Current air quality in the preliminary study area is determined through data from Ontario Ministry of Environment (MOE)

and Environment Canada (EC) monitoring stations. Air quality monitoring stations within the preliminary study area are located in Guelph (Exhibition and Clark Streets) and Brampton (525 Main Street North), and surrounding the preliminary study area in Kitchener (West and Homewood Avenues) and Toronto West (125 Resources Road). Contaminants include carbon monoxide (CO), nitrogen dioxide (NO₂), respirable particulate matter (PM_{2.5}), benzene, and 1,3-Butadiene. Data for inhalable particulate matter (PM₁₀), formaldehyde, acetaldehyde, and acrolein were not available from published reports. These contaminants were selected because they are directly associated with transportation emissions and has been studied in the dispersion modelling when evaluating the transportation alternatives.

Transportation is not the only cause of regional air pollution. For example, elevated levels of PM_{2.5} are commonly related to regional photochemical processes. According to the MOE (2005) Air Quality in Ontario – 2005 Report, EC (2004) Transboundary Air Quality in Ontario – 2005 Report, and previous studies done by EC and RWDI, transboundary air pollution (mainly from the US) is one of the largest contributors to Ontario’s summer smog events.

Significant/Sensitive Cultural Environmental Conditions

The Ministry of Culture (now Ministry of Tourism, Culture and Sport) has defined a set of criteria for determining archaeological potential in the Province (MCCR, 1997). These can be organized as known archaeological resources, physiographic features and historic cultural features, and features specific to the preliminary study area. These criteria are known to have influenced past settlement and, therefore, can be used to generate a predictive model for determining where previously undocumented archaeological sites are likely to be found within a particular area.

Several factors were used to assess the potential for pre-contact First Nations sites, including well drained sandy soils, rolling topography, impressive and elevated landscape features, proximity to water and known archaeological sites. When these are considered together, much of the lands within the preliminary study area have potential for archaeological sites.

2.4. AREA TRANSPORTATION SYSTEMS PROBLEMS AND OPPORTUNITIES REPORT

2.4.1. Report Overview

The Area Transportation Systems Problems and Opportunities Report was published as a Draft for Consultation in July 2009. The draft report was subsequently updated and input received on the draft is summarized in the revised report dated December 2010. An overview of the key transportation problems and opportunities stage of the study was presented at the second round of Public Information Centres, held in March 2009.

The purpose of this report was to summarize the process and methodology used to identify transportation problems and opportunities in the GTA West preliminary study area, and to document the key findings of this work. It served as a critical stage in the study, providing a foundation for the generation and evaluation of transportation alternatives to address future problems and opportunities, and ultimately development of a technically, environmentally and economically sound multi-modal transportation development strategy.

The draft report included detailed information on the factors that influence transportation demand in the preliminary study area, forecasting of travel demand, the specific transportation problems within and outside of the study area and transportation opportunities. It can be referenced on the study web site (www.gta-west.com) or by contacting the Study Team.

2.4.2. Report Findings

Forecast of Future Travel Demands

Transportation in the preliminary study area is characterized by a high degree of reliance on the road network as the vast majority of inter-regional trips in the GTA West area are made by automobile and truck. Further, as established by analysis and stakeholder consultation, the road network is of paramount importance to the operation of all travel modes including transit and rail, and connecting to air and marine. All of these modes rely upon and connect to the road network.

Forecasts for the preliminary study area show substantial growth by 2031. Population and employment levels are

	2001	2031	% CHANGE
POPULATION	862,000	1,912,000	122%
EMPLOYMENT	416,000	896,000	115%
TOTAL PM* PEAK PERIOD PERSON TRIPS	404,815	1,097,322	171%
PM* PEAK PERIOD AUTO TRIPS	318,000	766,800	140%
PM* PEAK PERIOD TRANSIT TRIPS	15,700	101,400	547%
PM* PEAK PERIOD TRANSIT MODE SHARE	4%	9%	125%

* refers to afternoon and evening (3 pm to 6 pm)
Source: GGH Model land use allocation and trip data, October 2008

Exhibit 2-2: Projected Growth in the GTA West Corridor, 2001-2031

expected to more than double between 2001 and 2031, with growth of over 1 million people and over 450,000 jobs. Accordingly, study area travel is expected to increase significantly, as shown in Exhibit 2-2.

Future area transit improvements are expected to result in significant increases in transit trips, varying depending on trip origins and destinations. Additionally, analysis indicates that weekday PM traffic volumes are forecast to increase by 80% to 95% east of Winston Churchill Boulevard (near the central part of the preliminary study area), and between 70% and 130% east of Guelph. In the east of the preliminary study area, west of Highway 427, volumes are projected to increase by 25% by 2031.

Canadian Pacific Railway (CPR) and Canadian National Railway (CNR) and VIA Rail operate in the preliminary study area, and rail use is anticipated to steadily increase through to 2031, driven largely by growth in volumes of containerized goods. Stakeholder consultation indicated that the existing infrastructure is anticipated to meet demand for the next 10 to 20 years.

There are no major air and marine transportation facilities directly within the preliminary study area, although Toronto Pearson International Airport lies in close proximity to the southeast. The Ports of Toronto and Hamilton are the closest marine transportation facilities. Expansion is planned to meet

future demand, which will result in increased automobile and truck traffic on the preliminary study area road network.

Summary of Future Transportation Problems

The overarching problem of the inter-regional transportation system in 2031 relates to the road network. Much of the higher order road system (i.e. highways and inter-regional roads) is expected to be heavily congested during peak periods and increasingly throughout the day. Road congestion in the summer is higher due to the overlay of tourism and recreational travel. Every mode connects to and relies on the road network, creating significant issues for the efficient movement of people and goods in the future.

The transportation problems by travel markets (i.e. moving people – commuter, tourism and recreation, as well as moving goods) and modes are as follows:

Moving People - Commuter

Transit

Future inter-regional transit connections, as provided in the Metrolinx RTP, will generally be oriented toward Toronto, including radial links to Vaughan, Brampton, Milton and Guelph. However, orbital inter-regional connections are more limited and indirect, requiring transfers and indirect travel routes.

Other transit issues include the following:

- Improvements may be needed in integration between local and inter-regional transit services, particularly beyond corridors served by GO Transit, in terms of physical connections, timetables and hours of service, fare structures and payment methods.
- Roadway congestion limits the efficiency of bus transit services and increases unreliability and travel times.
- The expansion of passenger and freight rail services within existing rail corridors creates potential for conflicts, particularly during peak commuting periods, as well as issues of scheduling and integration of rail services.

Automobile

The road transportation system is the main mode for commuting in the preliminary study area, especially where trips are not served by higher order transit. As traffic volumes increase throughout the day, the traditional AM and PM peak commuting periods are becoming longer, resulting in study area highway congestion for much of the day.

Highways 401, 400, 410 and 427 are expected to experience major congestion throughout the day by 2031. The 407 ETR is expected to experience major congestion between Highways 400 and 427, and moderate congestion between Highways 427 and 401. Other major roadways such as Regional Road 124, Highway 7 and Highway 6 are also expected to experience growing congestion. Even with the planned improvements included in the Metrolinx RTP and GO Transit Strategic Plan, substantial daily congestion is forecast for 2031.

- Major congestion issues are anticipated on the preliminary study area’s main highways, along Highways 401, 400, 410 and 427 within the study area’s boundary.
- The expected capacity shortfall will increase automobile travel times between the preliminary study area’s Urban Growth Centres. Delays that occur due to collisions, inclement weather conditions, road maintenance and construction will contribute to congested conditions.
- There is a lack of alternate higher order inter-regional routes to avoid congested conditions, particularly for travellers using the Highway 400 / Highway 401 corridors.

Moving People – Tourism and Recreation

The problems for tourism and recreation travel are somewhat similar to those for commuter travel. Summer travel, when roadway congestion is greatest, is a particular issue for tourists.

Transit

The vast majority of tourism to, from and through the preliminary study area are forecast to continue to be by automobile, as limited transit systems are in place to serve tourist destinations and travel schedules, and in many instances, there is no reasonable alternative to the automobile. Further to this:

- Improvements may be needed regarding transit connections between urban centres, tourist gateways such as Toronto Pearson International Airport and tourist destinations. Limited multi-modal connections are likely to increase car use even for those who travel to the preliminary study area by rail or air.
- Where publicly funded transit services are in place or planned, schedules tend to cater to commuters rather than tourists, with services focused on AM and PM commuting times and limited weekend services.

Automobile

The problems for road-based tourism and recreation travel include congestion, increased travel times, limited travel routes and modal options. Automobiles are used for more than 90% of visitors to the preliminary study area. In general, problems associated with tourism and recreation in terms of automobile are:

- For the most part, the preliminary study area’s tourism and recreation destinations are connected to urban centres by Highway 401 and Highway 400, which regularly experience major congestion and heavy truck volumes. These trips through the preliminary study area are more likely to occur in the summer season.

- There are inadequate connections between tourist gateways (e.g. airports) and tourism and recreation destinations.
- Congestion results in increased and unpredictable travel times for tourists, and can negatively affect the tourist trip experience.
- High volumes of trucks on the major highway corridors can be a deterrent to tourist travel, especially during the summer months.

Moving Goods

The inter-regional road system is the primary distribution mode for moving goods in the area, shipping almost 70% of Canada-US trade by value and 45% by tonnage. The key collective issue for rail, air and marine modes relates to the limitations associated with the inter-regional road network from the perspective of access and/or congestion.

Truck

While the problems for goods movement by inter-regional road system are largely similar to those for automobile commuters, they can result in significant economic impacts to shippers, distributors, local businesses and industries. These problems include:

- Increased congestion and travel times.
- Unpredictable travel times.
- Inadequate connections between Urban Growth Centres, commercial centres and inter-modal facilities.
- Diversion of trucks to regional and local roads, which results in out-of-way travel with associated community, social, noise and safety concerns.

Rail

Rail services provide connections for goods movement in the preliminary study area, including inter-modal facilities with the road network. Much of the strong growth in rail and inter-modal goods movement has been driven by the growth

in marine transport of containers. The key problems for rail transportation involve inter-modal connections to higher order roadways, as well as issues relating to congestion on the area road network. Other problems include:

- Limited connectivity of inter-modal facilities, which can increase the difficulty of moving containers and other goods by rail and produce bottlenecks at the trucking interface.
- Operational constraints on the rail network, including potential conflicts between rail-based transit and freight services, especially during peak commuting periods. As growth in freight and passenger traffic occurs on existing shared infrastructure, these problems will increase, potentially causing track capacity constraints.

Air

Canada’s busiest airport, Toronto Pearson International Airport, is located approximately 3 km to the southeast of the preliminary study area. Passenger and air cargo movements at this airport are expected to grow significantly over the next 25 years, which will increase runway capacity issues and pressure on the area road network.

- The key problem for air transportation as it relates to the GTA West preliminary study area is congestion on the inter-regional road network.

Marine

Marine port facilities are located to the south of the preliminary study area, in Toronto and Hamilton. Marine movement of goods can be affected by bottlenecks at inter-modal facilities and by limitations of the St. Lawrence Seaway to handle ocean vessels on a year-round basis.

- The major problem for marine transportation relates to congestion on the inter-regional roadway connections into the preliminary study area. Increased use of containers for shipping will also impose increased pressure on the road distribution network.

Summary of Future Transportation Opportunities

In addition to identifying the transportation problems, an equally important aspect of this study is the identification of transportation opportunities, referring to the “big picture” strategic benefits of an efficient transportation system. These opportunities within the GTA West preliminary study area are summarized as follows:

1. **Support Future Municipal Land Use Planning in Accordance with the Growth Plan** - The opportunity exists to co-ordinate multi-modal transportation and land use planning with municipal land use planning to support municipal growth aspirations that conform to the requirements of the *Growth Plan*, while at the same time accommodating both the local and inter-regional future travel demands.
2. **Maintain the Character and Integrity of Rural and Agricultural Lands** - There is an opportunity to avoid or minimize potential impacts to rural, agricultural and archaeological / heritage areas.
3. **Provide Transportation Choice, Improved Connections and Increased Reliability for Commuters** - The opportunity exists to build upon the Metrolinx RTP and GO Transit Strategic Plan to provide a robust transportation system that offers real alternatives to automobile travel throughout the preliminary study area.
4. **Provide Transportation Choice, Improved Connections and Increased Reliability for Moving Goods** - While trucks will continue to play an integral role in moving goods throughout and beyond the preliminary study area, there is an opportunity to encourage increased use of other modes for goods movement, including rail, marine and air, as well as to provide better connections between modes.
5. **Provide Improved Transportation Service for Tourists** - There is an opportunity to enhance the growth of tourism and recreation trips and the overall travel experience to the preliminary study area.

6. **Optimize Existing Transportation Infrastructure** - There are opportunities to use Transportation Demand Management (TDM) and Transportation Systems Management (TSM) strategies to reduce / shift trip making and automobile usage while optimizing use of the existing system.
7. **Minimize Impacts to the Natural, Social, Economic and Cultural Environments to the Extent Possible** - There is an opportunity to minimize, and potentially avoid, impacts to important natural, social, economic and cultural features at the earliest planning stages. This can be done through planning that optimizes use of existing infrastructure, and gives due regard to the requirements of approved provincial environmental protection policies, heritage resources and First Nations lands when developing and evaluating transportation alternatives.

2.5. OVERVIEW OF CORRIDOR PROTECTION AND DEVELOPMENT ISSUES PAPER

2.5.1. Report Overview

The *Overview of Corridor Protection and Development Issues Paper* was issued as a draft in June 2009, in order to capture the land development pressures and implications for transportation opportunities in the GTA West preliminary study area. The preliminary study area development pressures data have been updated throughout the study process and have been used in municipal consultation. An overview of the Areas of Interests (as defined below) and development pressures was presented at the second round of Public Information Centres in March 2009.

Development within the GTA West preliminary study area is occurring at a very fast pace. As a result, it was important to develop an approach to review development issues in order to protect corridor opportunities. The *Overview of Corridor Protection and Development Issues Paper* outlines the approach undertaken to complete this work.

At the start of the study, data on current land use designations and development applications were collected from the upper-tier regions and counties as well as all lower-tier municipalities. This information was used to assemble a comprehensive and up to date land use map of the preliminary study area. This map was continuously updated as the study progressed to reflect amendments made by upper-tier and lower-tier municipalities to implement the *Growth Plan*, in particular to designate future growth areas.

2.5.2. Report Findings

Areas of Interest

Following a review of applications and planning studies occurring within the preliminary study area, ten Areas of Interest were identified between Highway 400 in the Region of York and the Hanlon Expressway in Township of Puslinch and the City of Guelph as part of the draft paper in June 2009. These areas were identified as lands where future urban expansions or large development proposals would likely be considered by local municipalities and areas where potential connections between the growth centres may be compromised by future development plans. Areas of Interest were defined as areas where the Ontario Ministry of Transportation (MTO) should actively monitor and comment on all development applications as future urban expansions in these areas could limit corridor opportunities. These Areas of Interest as identified in 2009 are as follows:

- Area #1 - Highway 400 Corridor at Kirby Road, City of Vaughan
- Area #2 - North of Major Mackenzie Drive to Kirby Road East of Highway 50 West of Kleinburg, City of Vaughan
- Area #3 - South of Mayfield Road West of Regional Road 50, City of Brampton
- Area #4 - West of Coleraine Drive to Centreville Creek Road, North of Mayfield Road to Healey Road, Town of Caledon
- Area #5 - Mayfield West Secondary Plan Area, Town of Caledon
- Area #6 - South of Mayfield Road East of Winston Churchill Boulevard, City of Brampton

- Area #7 - West of Winston Churchill Boulevard South, Town of Halton Hills
- Area #8 - North-West Milton at Highway 401 and Tremaine Road
- Area #9 - City Of Guelph – Southerly Limit at Hanlon Expressway (Highway 6)
- Area #10 - Township Of Puslinch – North Of Aberfoyle to Guelph Boundary and Hanlon Expressway (Highway 6)

Consultation and Collaboration

Following the identification of the Areas of Interest a series of consultation meetings were held in February and March 2009, between the Study Team and upper and lower tier municipalities. The purpose of these meetings was to confirm the Areas of Interests and to develop a collaborative approach to review development applications and municipal planning studies. The municipal authorities agreed to provide information to the Ontario Ministry of Municipal Affairs and Housing (MMAH) and MTO regarding:

- municipal planning studies;
- applications for Official Plan Amendments;
- applications for Plans of Subdivision or Condominium; and,
- applications for rezoning.

In the identified Areas of Interest, the approval authorities agreed to provide the Province with all of the information identified above. Outside of the Areas of Interest, the approval authorities agreed to provide the Ministry with Official Plan Amendments and applications for Plans of Subdivision or Condominium. Less information was required outside the Areas of Interest as these lands were essentially rural areas where little or no development is anticipated as the result of the Provincial policies including the PPS, the *Greenbelt Plan* and the *Growth Plan*.

As a result of this collaborative approach, the Ministry has been able to provide comments on planning applications and municipally driven planning studies in an effort to ensure that a broad range of opportunities remained available during the

course of this study.

This approach has worked to a great extent to ensure that municipal planning decisions reflect the need to provide options for a transportation corridor through the preliminary study area.

2.5.3. Development Issues Update

Since the release of the *Overview of Corridor Protection and Development Issues Paper* in June 2009, the Study Team has been reviewing and updating development information focusing in and around the Preliminary Route Planning Study Area (see **Chapter 6**). The updates (are current as of September 2012) are summarized in the section below.

York Region

400 North Employment Area - The 400 North Employment Area Secondary Plan was approved by the Ontario Municipal Board in November 2011. A “GTA West Corridor Protection Area” has been identified in the Secondary Plan. This continues to be an Area of Interest as Highway 400 will be the terminus of the proposed new transportation corridor.

North Kleinburg-Nashville Area - The North Kleinburg-Nashville Secondary Plan process began in May 2007 as part of the larger Vaughan Official Plan project. The Secondary Plan was adopted by the City of Vaughan in September 2010.

Peel Region

Bolton Residential Expansion - The Town of Caledon is planning to commence the Bolton Residential Expansion Study. The planning horizon for the study is between 2021 and 2031, and generally bounded by Mayfield Road, The Gore Road, Castlederg Sideroad and the York-Peel municipal boundary.

Brampton Area 47 – The Brampton Secondary Plan Area 47 is generally bounded by Mayfield Road, Castlemore Road, Highway 50 and The Gore Road. There are a number of studies being completed for this Secondary Plan, the subjects of the studies are: community design and open space, transportation, environmental servicing, employment, retail and institutional land use, cultural heritage, and infrastructure (servicing).

enhancements and non-road capacity improvements provided by Group #2 and adds new capacity by widening existing roads or highways beyond that which is currently planned or contemplated by municipalities and the Province.

- Group #4: New Transportation Corridors** - This alternative builds upon the transportation system enhancements and both road and non-road capacity improvements provided by Group #1 and #2, as well as some existing road widening and improvements from Group #3, and adds new road and / or highway capacity on a new corridor to address identified transportation problems and opportunities.

MODE	CARRIED FORWARD	RATIONALE
Transportation Demand Management (TDM)	✓	Is recognized as an important component of transportation networks but on its own it does not provide a significant improvement to transportation problems in the GTA West preliminary study area.
Transportation Systems Management (TSM)	✓	Is recognized as an important component of transportation networks but on its own it does not provide a significant improvement to transportation problems in the GTA West preliminary study area.
Transit	✓	Is recognized as an important component of a transportation network for the movement of people; however, on its own it does not provide a significant resolution of the full range of transportation problems in the GTA West preliminary study area.
Air	✓	Improved multi-modal connections to the Toronto Pearson International Airport have some potential to reduce dependence on the road network in the GTA West preliminary study area. Recommended to be pursued by others or are already being pursued by others.
Marine	✓	Improved multi-modal connections to Port of Toronto / Port of Hamilton have some potential to reduce congestion on the road network in the GTA West preliminary study area. Recommended to be pursued by others or are already being pursued by others.
Freight Rail	✓	Will continue to be an important aspect of goods movement in the GTA West preliminary study area, however there are no specific freight rail transportation alternatives to be pursued as part of this study.
Inter-modal	✓	Improved inter-modal facilities have some potential to address transportation problems in the GTA West preliminary study area, especially as they relate to the movement of goods (i.e., rail to truck transfers etc.).
Roads and Highways	✓	Are expected to provide significant improvement to transportation problems in the GTA West preliminary study area through widening of existing roads and / or highways and potentially introduction of a new transportation corridor.

Exhibit 2-3: Assessment of Individual Transportation Alternatives

3

Area Transportation Alternatives

3.1. OVERVIEW

This Chapter provides an overview of the process for generating and assessing the Area Transportation Alternatives. The development of the Area Transportation System Alternatives involved a unique and creative process (illustrated schematically in **Exhibits 3-1a** and **3-1b**), built upon an extensive consultation program with a wide range of stakeholders and other transportation service providers. This process followed a two-stage approach that was presented in **Exhibit 1-1** of the EA Terms of Reference. The two stage approach involves evaluating ‘Alternatives to the Undertaking’ and ‘Alternative Methods of Carrying Out the Undertaking’, where the ‘Undertaking’ is not fully identified until the end of the planning process.

The first stage began with the development of ‘Alternatives to the Undertaking’. These Alternatives are defined as functionally different ways of addressing the identified problems and opportunities. This was followed by a comprehensive assessment of the individual transportation alternatives to assess their ability to address the future inter-regional transportation problems and opportunities identified by the Study Team. The individual transportation alternatives included:

- Transportation Demand Management (TDM);
- Transportation System Management (TSM);
- Transit;
- Marine;
- Air;
- Freight Rail;
- Inter-modal; and
- Roads and Highways

From the GTA West Environmental Assessment Terms of Reference - Amended (July 2007), the “Do Nothing” alternative is considered the status quo, where the transportation system

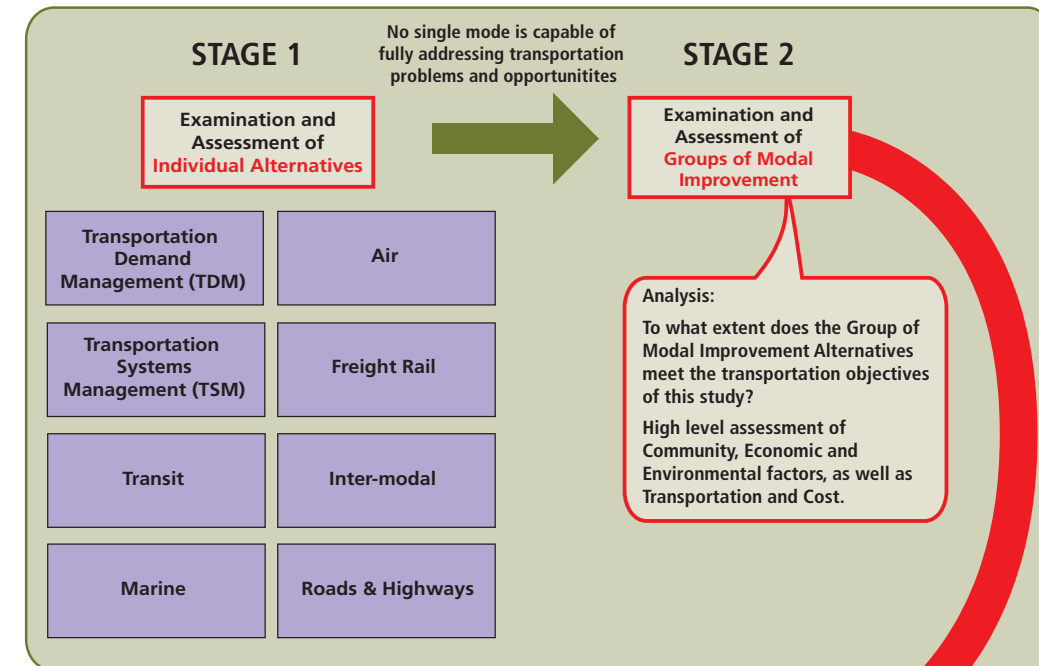


Exhibit 3-1a: Assessment of Individual Modes

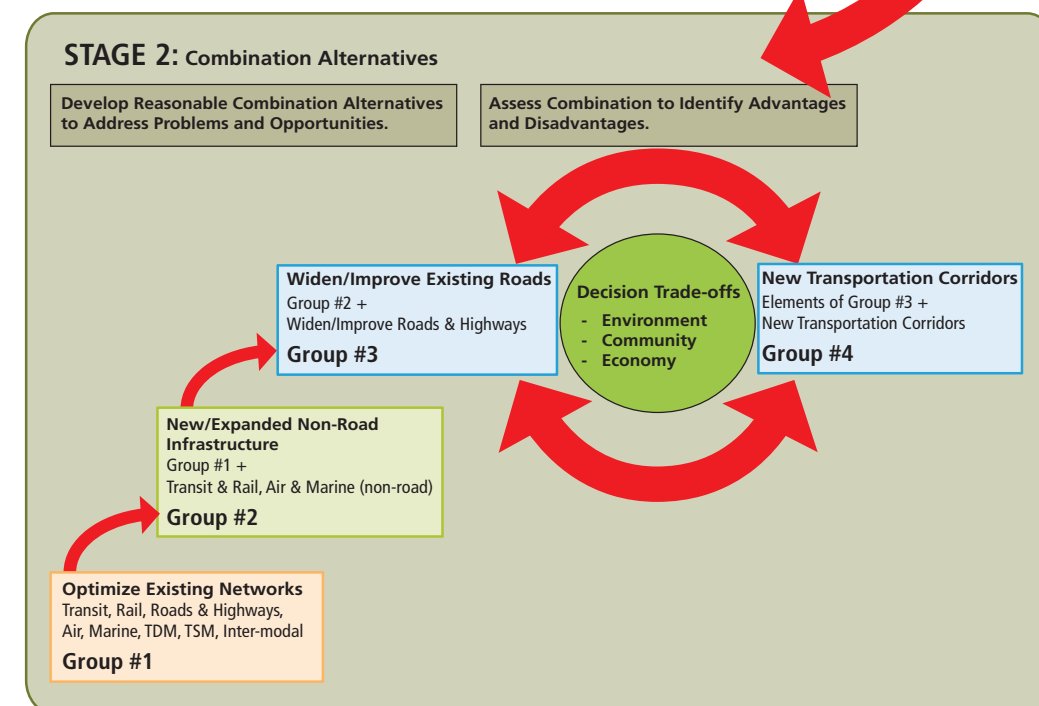


Exhibit 3-1b: Building Block Approach to Groups of Alternatives

would be limited to maintenance of current transportation infrastructure and the implementation of approved Provincial, Regional and local Municipal initiatives.

During the EA, the term “Do Nothing” was superseded by the use of the term “Base Case” as it was considered to be more meaningful in explaining the inclusion of the broad range of planned improvements and programs by 2031. The list includes:

- The Metrolinx Regional Transportation Plan (Metrolinx RTP);
- GO Transit’s Strategic Plan, GO 2020;
- The Ministry of Transportation’s planned highway improvement program, including highway extension and expansion plans, and High Occupancy Vehicle (HOV) systems;
- A range of municipal transportation initiatives for road, transit and active transportation programs identified through Transportation Master Plans and Official Plans; and
- Rail, air and marine transportation initiatives and programs including freight rail service enhancements.

The ‘Base Case Scenario’, accounts for implementation of approved Provincial, Regional and local Municipal initiatives including the full Regional Transportation Plan (by GO/ Metrolinx), as well as improvements identified in Regional/ municipal Transportation Master Plans (TMPs) in the study area and several approved MTO initiatives (i.e., Highway 427 extension, etc.). Based on this assessment, multi-modal alternatives considered capable of substantively contributing to addressing these problems and opportunities were carried forward, which involved assembling the multi-modal individual alternatives into group alternatives. These group alternatives (shown in **Exhibit 3-1**) included:

- Group #1 – Optimize Existing Networks
- Group #2 – New/Expanded Non-Road Infrastructure
- Group #3 – Widen/Improve Existing Roads
- Group #4 – New Transportation Corridors

The development and assessment of alternatives was undertaken at an increasing level of detail. As the range of alternatives under consideration became more focused (i.e. individual to group, and later to preliminary planning), the level of detail and range of criteria to be considered to identify potential environmental, community and economic impacts and benefits also became more detailed.

The primary focus of the process has been to assemble the group alternatives based on the ‘long list’ of alternatives that was generated initially by the Study Team and supplemented based on consultation with municipalities, agencies, members of the public, transportation service providers and other stakeholders. Further details on the long list of individual alternatives can be found in the *Area Transportation System Alternatives Report* available on the study website (<http://www.gta-west.com/>).

A “building-block” approach was used to assemble the group alternatives, based on the principle of first optimizing the existing transportation network, and then, if necessary, incorporating non-roadway infrastructure improvements and expansion before considering the provision of new roads and /or highways. This approach was developed to align with the underlying principles of the *Growth Plan* and *Greenbelt Plan*. This approach is consistent with current government policy, which talks to optimizing existing infrastructure before new infrastructure is built, and promotes transit initiatives as a priority. Moreover, the development of group alternatives at this stage of the process was inherently additive. Where a group alternative did not adequately satisfy the identified transportation objectives, it was not removed from further consideration, but rather used as a building block that the next group was built upon.

3.2. ASSESSMENT OF GROUP TRANSPORTATION ALTERNATIVES

The focus of the generation and assessment of group alternatives was to identify further enhancements needed for the transportation system to adequately address the identified problems and opportunities. In Stage 2, each group alternative was assessed based on the degree to which it achieved the transportation objectives of the study.

A high level assessment of environmental, economic and community factors was also undertaken to support the consideration of group alternatives. The level of assessment of these factors was reflective of the detail available in the group alternatives. A more detailed impact assessment was conducted subsequently. For more details, please refer to **Chapters 4 and 5**.

The assessment criteria builds upon those outlined in the GTA West Terms of Reference and reflects input received through stakeholder consultation in the development of study goals and objectives.

3.3. GROUP #1 – OPTIMIZE EXISTING NETWORKS

The Ontario government has a vision for building strong, prosperous communities by managing growth in this region to the year 2031 and beyond. The provincial government is planning for the future through policies like those contained in the Provincial Policy Statement, *The Growth Plan*, *The Greenbelt Plan* and the *Metrolinx Regional Transportation Plan (RTP)*.

These plans and policies place a strong emphasis on making the most of our existing infrastructure and focusing infrastructure development on non-roadway modes of transportation. As such, the foundation of the group alternatives (Group #1) includes strategies that are aimed at optimizing the existing transportation networks.

3.3.1. Overview of Group #1

Group #1 builds upon comprehensive optimization strategies embodied in the Metrolinx RTP, *GO 2020 Strategic Plan*, MTO’s *High Occupancy Vehicle Lane Network Plan* and Carpool Lot Program, and municipal transportation plans. These strategies aim at:

- Improving access to transit stations for pedestrians and motorists and advancing the concept of mobility hubs for key stations;
- Improving integration of active transportation opportunities and transit (e.g. secure storage facilities at transit stations, bicycle storage on transit vehicles, etc.);
- Expanding use of roadway shoulders during peak travel periods;



- Improving scheduling and fare integration between inter-regional and local transit providers;
- Providing transit users and drivers with real-time trip planning information technologies; and
- Increasing / improving transit service frequency.

In addition to these strategies, the Study Team identified a number of complementary strategies, which may be further supplemented and refined. These strategies are described in further detail below:

Speed Harmonization

The concept of speed harmonization is used widely in many European jurisdictions and essentially involves adjusting the speed limit on inter-regional road facilities based on prevailing congestion levels. Changeable message speed signs that are connected through an electronic system to vehicle sensors in the pavement are used to reduce the speed limit during times of road congestion. The reduced speed limits promote a more even traffic flow which increases throughput and improves road safety.

Provincial / Employer Led TDM Programs

Currently operating Transportation Demand Management (TDM) programs could be improved by expanding the Metrolinx Smart Commute Program beyond the Greater Toronto and Hamilton Area (GTHA). In addition to providing broader coverage, this concept would also involve introducing a regional organization that would provide strategic direction and / or potentially reach out to employers. The program could be managed on a regional level.

Experience in other jurisdictions has shown that regional organization of TDM initiatives leads to operational and economic efficiencies that translate into increased awareness of the programs, a greater variety of services and higher utilization. This concept would also involve providing additional carpool parking lots at key locations.

Long Combination Vehicles (LCVs)

Long Combination Vehicles (LCVs) feature a single tractor with two 16m (53ft) trailers. MTO initiated a pilot program

to allow up to 100 LCVs on the provincial highway network. This program improves fuel efficiency and traffic operations for goods movement.

Ramp Metering

Ramp metering involves the implementation of traffic signal control on freeway entrance ramps to control the platoons of vehicles entering the highway and therefore provide a smoother downstream traffic flow. Ramp metering is already operating on portions of the Queen Elizabeth Way (QEW) in the City of Mississauga and Town of Oakville.

HOV / Transit Bypass at Key Locations

This concept involves providing bypass lanes on metered ramps, ramps accessing transit stations and ramps in vicinity of carpool lots for High Occupancy Vehicle (HOV) and transit vehicles. These ramps would allow HOV and transit vehicles to bypass traffic queues and access the corresponding facilities.

Improved Incident Management

This concept involves increased utilization of emerging technologies to improve detection of incidents, improve Emergency Medical Service (EMS) response times and, as a result, reduce the amount of congestion and delays resulting from traffic incidents.

On the basis of experience with similar systems in North America, there is potential for TDM and TSM initiatives to cause inter-regional auto travel to decline by 4% in the GTA West preliminary study area.

3.3.2. Assessment of Group #1

The high level assessment of the Group #1 Alternative based on potential community, economic, environmental impacts, as well as transportation considerations and costs, is summarized below:

Community

- Supports government policy in optimizing use of existing infrastructure;

- Minimizes footprint impacts to existing residences and community features;
- Will not fully accommodate future planned population and employment growth; and
- Does not provide improved connections between Urban Growth Centres.

Economy

- Minimizes footprint impacts to existing businesses; and
- Limited ability to support future economic, trade and tourism growth.

Environment

- Minimizes footprint impacts to Niagara Escarpment and Greenbelt lands;
- Minimizes footprint impacts to other natural and cultural features;
- Minimizes air quality impacts; and
- Minimizes resource consumption.

Transportation and Cost

- Utilizes innovative approaches to make best use of existing infrastructure;
- Relative costs are low in comparison to other alternatives;
- Helps to manage future travel demands, but cannot fully address future travel demands for people and goods movement; and
- Potential for inter-regional auto travel to decline by 4% in the GTA West preliminary study area.

The Group #1 strategies represent innovative and effective ways of improving and optimizing current transportation infrastructure. While these strategies provide an important foundation for improving the transportation system and helping to manage future congestion in a relatively cost effective and low impact manner, they will not address all of the identified transportation problems and opportunities.

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

The extensive transit recommendations embodied in the Metrolinx RTP and GO Transit’s GO 2020 Strategic Plan demonstrate the government’s commitment to making transit a viable alternative to the automobile. The concepts proposed by this study build upon the recommendations of the RTP and GO 2020.

3.4.1. Overview of Group #2

Group #2 includes significant transit, marine and air service expansion initiatives, as envisioned by many agencies, industry, Metrolinx and GO Transit. These include the following:

- Additional expanded and improved parking facilities at transit stations;
- New bus storage in Aberfoyle;
- Metrolinx RTP and GO 2020 Strategic Plan initiatives; and
- Freight rail, air and marine initiatives to be studied / pursued by others (including: grade separation of road and rail at key bottleneck locations; improved integration of rail and air transportation modes; and logistics hubs near airports / ports / rail yards / industrial parks).
- Rapid Transit along the following corridors:
 - Steeles Avenue area (Lisgar GO Station to Highway 427);
 - Highway 427 (Toronto Pearson International Airport to Queen Street);
 - Hurontario Street (Port Credit to 407 ETR);
 - Highway 10 (Mayfield West to Downtown Brampton);
 - Highway 7 (Peel-York boundary to Locust Hill / Markham);
 - 407 ETR (Halton to Durham);
 - Trafalgar Road / Main Street (downtown Milton to 407 ETR); and
 - Brampton Züm (Downtown Brampton to Peel-York Boundary).

- Regional Rail service:
 - Bolton to Union Station;
 - Toronto Pearson International Airport to Union Station;
 - Service expansion to Milton and Georgetown;
 - Potential service extension from Milton to Cambridge; and
 - Potential service extension from Georgetown to Kitchener (completed).
- Express Rail service:
 - Richmond Hill / Langstaff Gateway to Union Station;
 - Downtown Brampton to Union Station; and
 - Hamilton to Union Station along Lakeshore corridor.

In addition to these strategies, the Study Team identified a number of complementary strategies, which may be further supplemented and refined. These strategies are described in further detail below:

Expanded Inter-regional GO Bus Routes

Currently, GO Transit bus service is focused on the Toronto area and particularly Union Station. As such, the scheduling of these services is based on arrival / departure from Union Station during peak commuter times. In turn, commuters in areas west of Toronto may need to travel at less convenient times.

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

Transit Supportive Highway Corridors

This concept involves introducing reserved bus lanes, HOV lanes, bus bypass shoulders and other transit supportive measures within existing provincial facilities including

Highways 400, 410, 427 and 401 that would serve to make bus transit a more reliable and viable service. While these types of improvements could result in some level of impact to properties that abut these corridors, it is envisioned that these impacts would be relatively minor in nature and could be mitigated to a significant extent.

Inter-regional Transit Hubs – where local transit and GO Transit connect

This concept involves the placement of transit hubs in Downtown Guelph, Vaughan Metropolitan Centre, Toronto Pearson International Airport, Downtown Milton and Downtown Brampton. Transit hubs can result in land use improvements as they tend to attract more accessible development patterns.

New Bus Rapid Transit links between Urban Growth Centres

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

Expected benefits of the Group #2 Alternatives include improved mode choice for people and goods movement, and potential shift of 10% of long distance truck traffic (more than 500 kilometres) to alternative modes if infrastructure and policy support is provided.

3.4.2. Assessment of Group #2

The high level assessment of the Group #2 Alternative (which also includes Group #1) on the basis of potential community, economic, environmental impacts, as well as transportation considerations and costs, is summarized below.

Community

- Provides greater choice for commuters and tourists;
- May provide improved connections between Urban Growth Centres to a limited extent;
- Potential for minor impacts to existing residences and community features; and
- Does not fully accommodate future planned population and employment growth.

Economy

- Provides greater choice for shippers;
- Limited impact to agriculture lands;
- Limited ability to support future economic, trade and tourism growth.

Environment

- Potential for impacts to Niagara Escarpment and Greenbelt lands;
- Potential for impacts to Oak Ridges Moraine;
- Potential for impacts to other natural and cultural features; and
- Potential for impacts to air quality in built up areas.

Transportation and Cost

- Provides greater choice and a more balanced transportation system;
- Relative costs will vary in comparison to other alternatives; and
- Cannot fully address future travel demands for commuters, goods movement and tourists.

The Group #2 strategies build on Group #1 and represent important, sustainable means of moving people and goods by non-road infrastructure. While these strategies are an important element in improving the transportation system and helping to manage future congestion, they will not address all of the identified transportation problems and opportunities.

3.5. THE NEED FOR ROADWAY BASED SOLUTIONS

By 2031, the population in the GGH is expected to increase by almost four million people. In forecasting for the transportation system that will serve this growth, the following is assumed in the transportation model:

- Land use intensification targets prescribed in the *Growth Plan* will be fully achieved;
- Urban Growth Centres will be built with transit-supportive densities and a mix of compatible land uses;
- Development of compact, vibrant and complete communities will be fostered in which people will live, work and play;
- An additional 700 million trips within the Greater Toronto and Hamilton Area will be accommodated on transit;
- All current provincial transportation plans will be in place, including transit improvements that are consistent with Metrolinx RTP and GO 2020;
- More commuters will switch from single occupant cars to transit and carpools;
- A significant share of goods transport will be diverted from long distance trucks to other modes;
- The existing transportation infrastructure will be optimized through implementation of the Group #1 type initiatives (optimize existing transportation network); and
- More non-road based transportation improvements, including Group #2 initiatives (improve non-road infrastructure), will be implemented.

Based on the above, the potential of all transportation modes have been explored and together with the RTP and GO Transit’s *GO 2020 Strategic Plan*, the province is seeking to maximize the potential of existing infrastructure.

Even with these positive improvements, by the year 2031 significant roadway congestion will occur, particularly on inter-regional connections serving all types of travel, namely Highways 401, 400, 427 and 410.

To realize the vision of a functional transportation network that provides user choice and balance, additional inter-

regional roadway capacity will be required: either by widening existing highways (Group #3) and / or protecting for new transportation corridors (Group #4). While the overall Transportation Development Strategy (Strategy) will include recommendations for Group #3 and / or Group #4 Alternatives, it is envisioned that the government’s “transit first” priority will be reflected in the implementation of the Strategy.

3.6. GROUP #3 – WIDEN / IMPROVE EXISTING ROADS

The Group #3 Alternative has been developed to address the future transportation problems that have been identified within the GTA West preliminary study area. As such, the additional roadway widenings described below are based on providing adequate traffic capacity, operations and safety conditions on existing provincial facilities to the year 2031.

3.6.1. Overview of Group #3

Group #3 includes all of the elements from Group #1 and Group #2 as well as the widening of the following existing provincial inter-regional transportation facilities in various combinations:

- Highway 401
- Highway 410;
- 407 ETR;
- Highway 400;
- Highway 427;
- County Road 124 / Regional Road 24 / Highway 9;
- Highway 7;
- Highway 6;
- Mayfield Road / Kirby Road; and
- Trafalgar Road.

Roadway widening alternatives include:

- Highway widening; or
- Highway and arterial road widening.

Three alternatives were developed under Group #3 that considered the widening of existing road infrastructure

beyond the planned program. The degree of widening required under each Group #3 Alternative was based on the number and type of roadways to be widened. Under Alternative 3-1, where the preliminary study area’s provincial highways only are widened, lane requirements are as follows:

- Highway 401 – additional two to four lanes;
- Highway 427 – additional two lanes;
- 407 ETR – additional two to six lanes;
- Highway 410 – up to four additional lanes; and
- Highway 400 – additional two to four lanes.

The degree of widening that would be required to address the future transportation needs forms part of the basis for comparing Group #3 and Group #4 Alternatives, as discussed further below.

3.6.2. Assessment of Group #3

It should be noted that based on a high level screening evaluation, two of the Group #3 alternatives (namely, Alternative 3-2 and Alternative 3-3) were not carried forward for the detailed assessment of alternatives (in **Chapter 4**). These alternatives were considered to be inferior when compared to other alternatives in addressing future transportation needs.

Detailed assessment of the Group #3 Alternatives was carried out on the basis of potential community, economic, environmental impacts, as well as transportation considerations and costs, and is provided in **Chapter 4**.

3.7. GROUP #4 – NEW TRANSPORTATION CORRIDORS

3.7.1. Overview of Group #4

Group #4 includes all of the elements from Group #1 and Group #2 and potentially some of the highway widening and improvements identified in Group #3, as well as the following new corridor alternatives:

- New corridor connecting either:
 - Highway 400 to Highway 410;
 - Highway 400 to Highway 401 / 407 ETR;
 - Highway 400 to Highway 401 west of Milton urban area;

- Highway 400 to north of Guelph; or
- Highway 400 to south of Guelph.

These selected corridors represent the introduction of major capacity improvements in areas that have been identified as having significant transportation deficiencies. The focal area for improvement is along Highway 401 between Highway 400 and Highway 427. As a result, each new corridor alternative terminates at Highway 400; it is and will continue to be the most critical section of transportation deficiency in the area north and west of Toronto. The western termini of the Group #4 Alternatives have been identified to represent significantly different points of network connection that are anticipated to attract different trucking activity and commuters throughout the area.

3.7.2. Assessment of Group #4

Detailed assessment of the Group #4 Alternatives was carried out on the basis of potential community, economic, environmental impacts, as well as transportation considerations and costs, and is provided in **Chapters 4 and 5**.

Assessment of Group #3 and Group #4 Transportation Alternatives

4.1. ANALYSIS OVERVIEW

4.1.1. Triple Bottom Line Approach

The evaluation of Group #3 and Group #4 alternatives was divided into work streams, based on consideration of the “triple bottom line” (i.e. Environment, Community and Economy), as well as Transportation and Engineering considerations. The approach includes consideration of:

- Environment – typically include impacts to fish and fish habitat; terrestrial ecosystems; groundwater; etc.
- Community – typically include impacts to residences; businesses; agriculture; noise; air quality; built heritage; archaeology; etc.
- Economy – typically include economic benefits of increased transportation capacity to all sectors of the GGH economy, as well as the ability of each alternative to support future employment growth (including tourism) and municipal economic development objectives.
- Transportation & Engineering – future traffic capacity, operational and safety conditions as well significant constructability issues, and costs.

The evaluation factors (and criteria) stemming from the “triple bottom line” approach (as described in greater detail in subsequent sections) included Natural Environment, Land Use / Social Environment, Cultural Environment, Area Economy, Transportation and Cost / Constructability.

The Community work stream was divided into two factor groups, namely Land Use / Social and Cultural Environments, to differentiate the unique factors / criteria that fall under this stream and therefore require a more detailed analysis. The Transportation and Engineering work stream was also divided into two factor groups, namely Transportation and Cost / Constructability, to facilitate an assessment of transportation factors and criteria separately from cost and constructability related issues. For each criterion, potential effects were measured using qualitative and quantitative measures.

It should be noted that additional analysis was carried out

following the release of the draft Transportation Development Strategy Report (February 2011) in the Halton area. Findings of the additional analysis are documented in **Chapter 5** and should be read in conjunction with the evaluation results in **Chapter 4**.

4.1.2. Reasoned Argument

The environmental, community, economic, and transportation criteria to support the assessment of alternatives are outlined below. A “Reasoned Argument” method of evaluation was used to select a preferred alternative(s). The reasoned argument method highlights the differences in net effects associated with the various alternatives. Based on these differences, the advantages and disadvantages of each alternative are identified according to the evaluation of tradeoffs between the various evaluation factors, criteria and indicators. The relative significance of potential impacts is examined to provide a clear rationale for the selection of a preferred alternative(s). The rationale that favoured selection of one alternative over all others was derived from the following sources:

- Secondary source information (and mapping) of significant or sensitive environmental features;
- Government legislation, policies and guidelines;
- Municipal policy (i.e. official plans);
- Issues and concerns identified during consultation with ministries and agencies, municipalities, ratepayer and interest groups and the general public; and,
- Study Team expertise.

The reasoned argument method compares each alternative to others in each criteria and provides an overall assessment of each alternative (in all factor groups), as shown in **Exhibit 4-1**.

4.2. FACTORS AND CRITERIA

Evaluation factors and criteria used to evaluate the short-list of Area Transportation System Alternatives for Group #3 and #4 alternatives were consistent with the evaluation factor groups and assessment of the Alternatives to the Undertaking, established as part of the Terms of Reference (ToR) (July 2007, approved March 2008). The criteria in each factor group (and measures for each) were intended to assist the factor-specific environmental specialists in determining the overall impact of the various alternatives on the natural, social and cultural environments. In determining the overall impact, the specialists considered how the various factors and criteria interact and function together.

As previously noted, the evaluation factors and criteria used to assess the Group #3 and #4 alternatives at this stage of the study were divided into the following groups:

- Natural Environment;
- Land Use / Social Environment;
- Cultural Environment;
- Area Economy;
- Transportation; and
- Cost and Constructability.

Exhibit 4-2 (as presented at Public Information Centre (PIC) #4), which highlights and defines factors, sub-factors, evaluation criteria and measurements of the effects, was used for the assessment and evaluation of the short-listed Group #3 and Group #4 alternatives.

Each alternative was analyzed and evaluated on the basis of a confirmation of the following:

- Quantitative measures of potential “footprint” impacts;
- Qualitative measures of potential impacts; and
- Transportation and Economic benefits that could be anticipated.

The subsequent sections describe in further detail the evaluation process that considered the advantages and disadvantages of each alternative and the relative significance of the potential impacts, based on the following factors and criteria.

4.3. OVERVIEW OF EVALAUTION PROCESS FOR GROUP #3 AND GROUP #4 ALTERNATIVES

The evaluation of alternative corridors included three evaluation processes that are each documented in this report. The initial evaluation process of Alternatives 3-1, 4-1, 4-2, 4-3, 4-4, and 4-5 as described in Section 4.4 culminated in the decision to CARRY FORWARD Alternatives 4-2 and 4-3 since the selection process identified both alternatives to have comparable advantages and disadvantages at the level of detail that was adopted at the time.

The second evaluation process of Alternatives 4-2 and 4-3 as noted in Section 5.1 culminated in the preference for elements of Alternatives 4-2 and 4-3 as documented in the draft Transportation Development Strategy Report (February 2011).

On the basis of public input received on the draft Transportation Development Strategy Report (February 2011), a third round of analysis and evaluation was carried out to compare a “New Corridor” through Halton Hills and “Further widening of Highway 401” as an alternative. These were representative of elements of Alternative 4-2 and Alternative 4-3 as noted above. This evaluation process is described in Sections 5.2 to 5.8 and also as presented at Public Information Centre #5 (see Section 7.8.3).

4.4. ROAD BASED IMPROVEMENT ALTERNATIVES

Six alternatives (namely Alternatives 3-1, 4-1, 4-2, 4-3, 4-4 and 4-5) were evaluated as part of the initial evaluation process. All road improvement alternatives also include the Group #1 and Group #2 initiatives that would contribute to addressing the preliminary study area’s transportation problems and opportunities. These alternatives are shown in Exhibit 4-3 through Exhibit 4-8.

	Group 3-1	Group 4-1	Group 4-2	Group 4-3	Group 4-4	Group 4-5
Natural						
Land Use/Social (includes Air Quality)						
Cultural						
Economic						
Transportation						
Cost and Constructability						
SUMMARY						

Exhibit 4-1: Rationale for Decision Making and Identification of Preferred Alternative(s)

FACTOR	SUB-FACTOR	EVALUATION CRITERIA	MEASUREMENT OF THE EFFECTS
Natural Environment			
1.1 Fish and Fish Habitat	1.1.1 Fish Habitat	Potential to affect sensitive fish habitat and fish community	Qualitative assessment of the nature, significance and sensitivity of fisheries and aquatic habitat using the presence and density of watercourses and aquatic Species at Risk (SAR) as indicators
	1.1.2 Fish Community		Qualitative assessment using the presence and density of watercourses and aquatic Species at Risk (SAR) as indicators
1.2 Terrestrial Ecosystems	1.2.1 Wetlands	Potential to affect provincially and locally significant wetlands	Qualitative assessment considering the nature, significance and sensitivity of wetland units based on density and classification, including qualitative assessment of potential to avoid or mitigate impacts
	1.2.2 Woodlands and Other Vegetated Areas	Potential to affect significant forest and vegetation communities	Qualitative assessment of impacts to woodlots greater than 40 ha in size using linear distance impacts as indicator
	1.2.3 Wildlife Habitats and Movements (including Species at Risk (SAR))	Potential to affect significant wildlife habitat and wildlife movement opportunities	Qualitative assessment of nature, significance and sensitivity of significant wildlife habitat and landscape connectivity based on presence and density of SAR, known wildlife use (i.e., deer wintering, waterfowl staging etc.) and landscape – level habitat connectivity
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 soil type and permeability to identify areas of high, moderate, low groundwater recharge capability, including consideration of number and location of groundwater recharge and discharge areas
	1.3.2 Groundwater Source Areas and Wellhead Protection Areas	Potential to affect groundwater source areas and wellhead protection areas	Wellhead protection areas that are potentially affected and their location
1.4 Surface Water	1.4.1 Watershed / Sub-Watershed Drainage Features / Patterns	Potential to affect existing drainage systems associated with permanent watercourses	Qualitative assessment of new pavement area, and new / existing watercourse crossings

Exhibit 4-2: Evaluation Factors and Criteria

FACTOR	SUB-FACTOR	EVALUATION CRITERIA	MEASUREMENT OF THE EFFECTS
1.5 Designated Areas	<p>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. Examples of Designated Areas include:</p> <ul style="list-style-type: none">Niagara Escarpment;Oak Ridges Moraine;Greenbelt;Bruce Trail;TransCanada Trail;National and provincial parks;Designated federal wildlife/marine areas;RAMSAR wetlands;Remedial Action Plan (RAP) areas;International Biological Program areas;World Biosphere Reserves;Designated heritage rivers;Environmentally Sensitive Areas (ESAs);Environmentally Sensitive Policy Areas (ESPAs);Provincially Significant Areas of Natural and Scientific Interest (ANSIs); Conservation Authority parks/open space lands;Stewardship lands; andLand trust areas (such as Nature Conservancy of Canada and others).	Potential to affect designated areas	Qualitative assessment of nature, number and significance of designated areas potentially impacted, including consideration of ability to avoid designated area or mitigate impacts
Land Use / Social Environment			
2.1 Land Use Planning Policies, Plans, Goals, Objectives	2.1.1 Provincial/Federal land use planning policies/goals/objectives	Potential to support federal/provincial land use policies/plans/goals/objectives	Qualitative assessment of ability to support federal/provincial land use policies, plans, goals and objectives
	2.1.2 Municipal land use planning policies/goals/objectives	Potential to support municipal Official Plans	Qualitative assessment of potential to support municipal Official Plans

Exhibit 4-2: Evaluation Factors and Criteria

FACTOR	SUB-FACTOR	EVALUATION CRITERIA	MEASUREMENT OF THE EFFECTS
2.2 Land Use / Community	2.2.1 Indian Reserves	Potential to affect Indian Reserves	Qualitative assessment of potential to avoid Indian Reserves
	2.2.2 First Nations Sacred Grounds	Potential to affect First Nations Sacred Grounds	Qualitative assessment of potential to avoid First Nation Sacred grounds
	2.2.3 Residential (Urban and Rural)	Potential to affect urban and residential areas	Qualitative assessment of potential to affect urban and rural residential areas, using number of areas affected and potential to avoid or mitigate impacts as indicator
	2.2.4 Commercial / Industrial	Potential to affect commercial and industrial areas	Qualitative assessment of potential to impact commercial and industrial areas using estimated number of properties/industrial parks potentially impacted as indicator
	2.2.5 Tourism Operations	Potential to support tourist areas and attractions	Qualitative assessment of potential to impact or support tourist areas and attractions in the study area. NOTE: Potential impacts/benefits to tourism travel beyond the study area are dealt with under Area Economy
	2.2.6 Community Facilities / Institutions	Potential to affect major community facilities and institutions	Qualitative assessment of potential to affect major community facilities and institutions using approximate number and type as indicators
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 different types of noise impacts, locations of increased noise, proximity to NSAs and magnitude/severity of impacts
2.4 Air	2.4.1 Local Air Quality	Potential for exposure of sensitive receptors to various levels of air pollution (including extent and duration of exposure)	Potential for exposure of sensitive receptors to various levels of air pollution
	2.4.2 Regional Air Quality	Incremental annual amounts of air pollutants (criteria air contaminants emitted into the region for the horizon year)	Incremental annual amounts of air pollutants (air contaminants emitted into the region for the horizon year)
	2.4.3 Greenhouse Gas Emissions	Incremental annual amounts of greenhouse gas emitted per annum for the horizon year	Incremental annual amounts of greenhouse gases emitted per annum for the horizon year

Exhibit 4-2: Evaluation Factors and Criteria

FACTOR	SUB-FACTOR	EVALUATION CRITERIA	MEASUREMENT OF THE EFFECTS
4.3 Tourism and Recreation Industry		Potential to support tourism and recreation industry by efficient and reliable movement of people	Qualitative description of how provincial/ regional/municipal tourism and recreation are supported TREDIS economic impact evaluation of hotel/restaurant sector
4.4 Agriculture Industry		Potential to support area agriculture industry by efficient movement of goods	A qualitative assessment of potential impacts to farming operations and fragmentation of agricultural operations
Transportation			
5.1 Traffic Operations		Potential impact on traffic operations due to factors such as design features and transportation network connections	Peak period performance of key corridors – forecast volume/capacity issues at critical screenlines Peak period performance of key inter-regional corridors – forecast volume/capacity issues at critical screenlines Potential to provide for higher order inter-regional transportation corridors (qualitative) Percentage of inter-regional trips on key corridors at critical screenlines
5.2 Commuter Travel Characteristics		Potential impact on commuter trip distribution and trip length	Percentage of peak period self-containment of trips with the municipality/region Average automobile trip length (km) Potential to support transit opportunities on a new corridor
5.3 Efficient Movement of People		Potential to support the efficient movement of people between communities and regions by road	Percentage of inter-regional network operating better than LOS D (automobile km) Percentage of local road network operating better than LOS D (automobile km) Percentage of inter-regional automobile trips using the local road network Automobile hours of delay on the inter-regional transportation network (automobile hours) Average automobile vehicle occupancy Total persons moved in study area

Exhibit 4-2: Evaluation Factors and Criteria

FACTOR	SUB-FACTOR	EVALUATION CRITERIA	MEASUREMENT OF THE EFFECTS
5.4 Efficient Movement of Goods		Potential to support the efficient movement of goods between communities and regions by road	Percentage of inter-regional system operating better than LOS D (truck km) Percentage inter-regional truck trips using the local road network Truck hours of delay on the inter-regional transportation network
5.5 System Reliability / Redundancy		Potential to support system reliability and redundancy for travel (people and goods) between regions and communities during adverse conditions	Availability of alternate routes/facilities for inter-regional transportation between regions, communities and terminals (qualitative) Potential to improve transportation system reliability (qualitative)
5.6 Safety		Potential to improve traffic safety based on opportunity to reduce congestion on the area road network	Potential to improve response times for emergency service providers due to reduced congestion on the inter-regional road network (refer to volume-capacity ratio in Traffic Operations) Potential to reduce collisions due to improved network LOS (refer to LOS in Traffic Operations)
5.7 Modal Integration, Balance and Choice for Movement of People (commuters, recreation/tourist)		Potential to improve modal integration, balance and choice for person trips between communities, employment centres and major transit hubs	Potential to increase attractiveness/effectiveness of existing, new and improved transit services (qualitative) Peak period transit mode share (by destination) Provision of higher order inter-regional transit services (qualitative) Provision of linkages between inter-regional and regional/community (local) transit systems (qualitative) Bus operational performance on inter-regional road network (refer to LOS in Traffic Operations) Availability/provision of alternate travel modes for tourism/recreational travel (qualitative) Provision of/allowance for active transportation measures (e.g., bike lanes, bike racks on buses/trains) (qualitative)
5.8 Modal Integration, Balance and Choice for Movement of Goods		Potential to improve modal integration, balance and choice for goods movement between ports and terminals, communities and employment centres	Potential to improve accessibility of inter-modal centres, ports and terminals (qualitative)

Exhibit 4-2: Evaluation Factors and Criteria

FACTOR	SUB-FACTOR	EVALUATION CRITERIA	MEASUREMENT OF THE EFFECTS
5.9 Linkages to Population and Employment Centres		Potential to improve accessibility to Urban Growth Centres, Gateway Economic Centres and Gateway Economic Zones for people and goods movement based on higher order network continuity and connectivity	Availability/provision of higher order linkages between Urban Growth Centres, Gateway Economic Centres and Gateway Economic Zones (qualitative) Accessibility of Urban Growth Centres, Gateway Economic Centres and Gateway Economic Zones (qualitative) Percentage change in peak hour travel times between Urban Growth Centres
5.10 Recreation and Tourism Travel		Potential to support recreation and tourism travel within and to/from the study area	Directness of routes between population centres, international gateways and tourist/recreation destinations (qualitative) Peak period (summer/weekend) transportation system performance on key inter-regional corridors – forecast volume/capacity issues at critical screenlines Diversion of summer recreational trips from local and regional roadways (qualitative)
6.0 Cost and Constructability			
6.1 Potential to Ease Implementation Considering Relative Cost, Relative Property Impacts, Feasibility / Difficulty and Requirements for Environmental Mitigation.	6.1.1 Cost (range)		“Order of magnitude” range of cost
	6.1.2 Feasibility of implementation (including interchange reconstruction requirements, impacts on existing schemes, etc.).		Qualitative assessment of feasibility of construction
	6.1.3 Potential transportation construction staging impacts.		Qualitative assessment of potential construction staging impacts
	6.1.4 Requirements for environmental mitigation / compensation / restoration.		Qualitative assessment of potential environmental mitigation required

Exhibit 4-3: Road Improvement Alternative 3-1 - Widening Existing Provincial Highways

