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

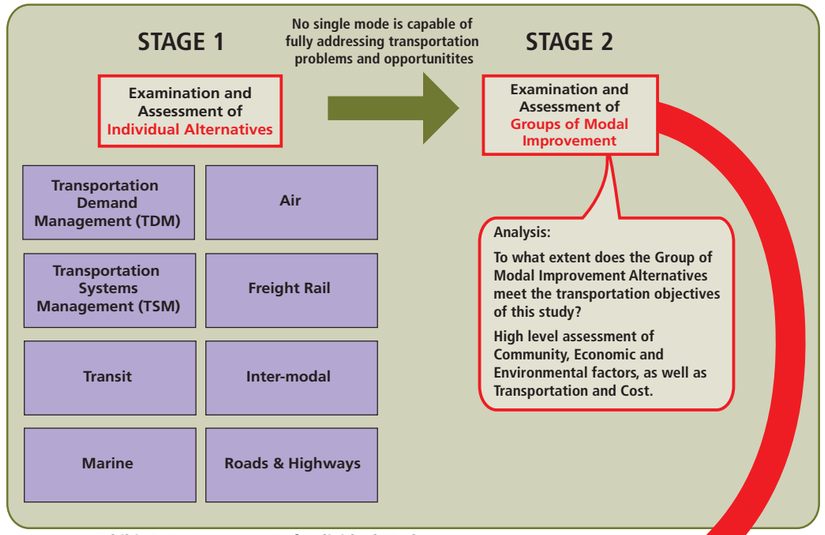

Exhibit 3-1a: Assessment of Individual Modes

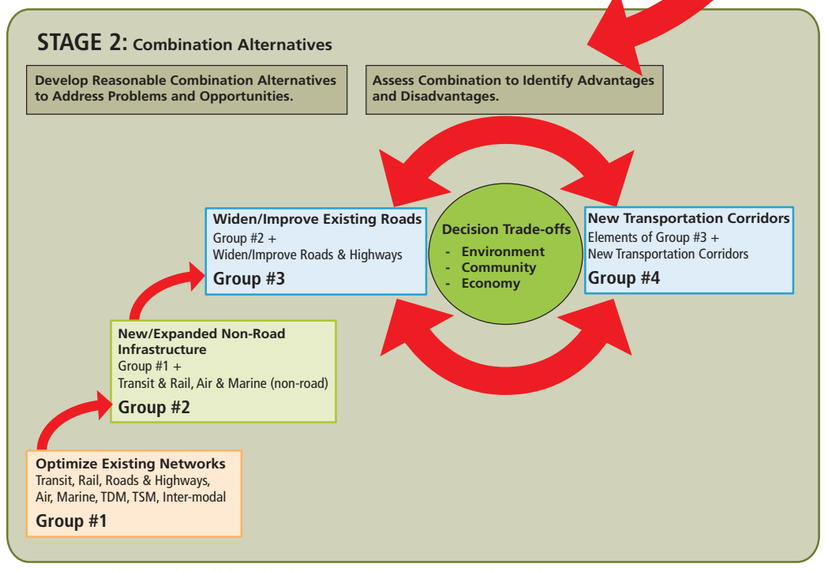

Exhibit 3-1b: Building Block Approach to Groups of Alternatives

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During the EA, the term "Do Nothing" was superseded by the use of the term "Base Case" as it was considered to be more meaningful in explaining the inclusion of the broad range of planned improvements and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**.