Ontario

Ministry of Transportation
Transportation Planning Branch

407 East

Environmental Assessment
Terms of Reference

As amended November 29, 2004

"Ce document hautement spécialisé n'est disponsible qu'en anglais en vertue du règlement 411/97, qui en exempte l'application de la Loi sur les services en français. Pour obtenir de l'aide en français, veuillez communiquer avec le Ministère des Transports, Bureau des Services en Français au: 905-704-2045 ou 905-704-2046."

Table of Contents

1.0 INTRODUCTION

1.1 Background

Strategic planning studies, including the 2003 Durham Transportation Master Plan (TMP) and the Highway 407 Overview Study conducted by the Ministry of Transportation of Ontario (MTO) in 1989, concluded that additional east-west and north-south transportation capacity will be required within and through Durham Region to accommodate forecast growth in the movement of both people and goods over the next three decades. The forecast growth in the movement of people and goods is a direct result of population, employment and tourism growth within the Greater Golden Horseshoe (GGH) area, including the Region of Durham and its constituent municipalities and areas to the north and east of Durham..

On the basis of recent and past transportation studies that have identified transportation deficiencies, the MTO has commenced this formal Environmental Assessment (EA) process to consider alternatives to address these deficiencies. The first phase of the process for an individual EA is the preparation of an Environmental Assessment Terms of Reference (EA ToR). In support of the EA ToR process, MTO completed extensive municipal, agency, stakeholder and public consultation between September 2002, culminating in the submission of this document (see *Consultation Record* under separate cover).

This EA ToR document is being submitted to the Ministry of the Environment (MOE) under Section 6(2)(a) of the *Ontario Environmental Assessment Act*. As such, the subsequent individual EA will consider every phase of the planning process including Need, Alternatives to the Undertaking, Alternative Methods and recommendations for specific infrastructure, as required.

The EA ToR will establish minimum requirements to be followed during the preparation of the subsequent individual EA. The ToR recognizes the need for the individual EA to retain flexibility to consider enhancements to the process, as required, based on study progress and findings, as well as input received during the course of the Study.

Following approval of the EA ToR by the Minister of the Environment, MTO will proceed with the individual EA Study. Should studies associated with the individual EA Study reveal the need for a linear transportation corridor or corridors within Durham, the individual EA may identify a route location and, subject to approval of the EA, permit the Province to initiate property protection activities.

1.2 Federal/Provincial Environmental Assessment Co-ordination

1.2.1 Need for Federal/Provincial EA Co-ordination

The proponent's undertaking is subject to the requirements of the *Ontario Environmental Assessment Act.* The requirements of the *Canadian Environmental Assessment Act* (CEAA) may also apply. The proponent intends to work in a co-ordinated way with provincial and federal governments. Both governments have informally agreed to co-ordinate their respective EA processes established by the applicable environmental assessment legislation.

1.2.2 Co-ordinated EA Process For MTO Projects

The federal/provincial co-ordination process chart outlined in Document A of the supporting documentation will guide the proponent. This proposed approach is designed to address the information requirements of both federal and provincial environmental assessment Acts in a timely manner that ensures effective and efficient coordination of the provincial and federal EA processes.

1.2.3 Application of the Co-ordinated EA Process to the 407 East Project

It is recognized by both the Canadian Environmental Assessment Agency (on behalf of the federal authorities), and the proponent, that ongoing dialogue is required throughout the EA process as more is learned about the specifics of the undertaking. As such, it may be necessary for the proponent to provide additional or more detailed information as the EA process proceeds. It is intended that a single EA body of documentation on environmental effects to meet all of the information needs of both the federal and provincial governments will be produced. To the extent practical, federal/provincial information requirements regarding potential factors to be assessed in the context of this study have been integrated in this document. General information requirements under CEAA can be found in the supporting documentation (Document A) of this ToR.

1.3 Submission Statement

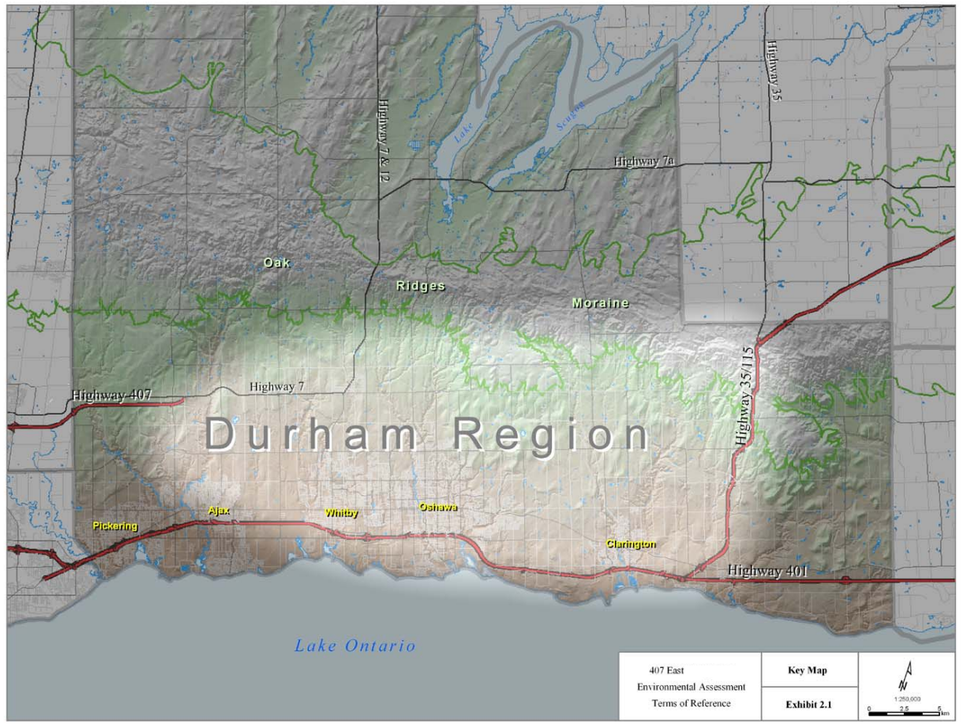
Based upon previous studies, the Ontario Ministry of Transportation is of the opinion that additional east-west and north-south transportation capacity for people and goods movement may be required within and through the Region of Durham over the next 30 years and beyond. Consequently, and as the additional capacity may be provided through the development of a provincial transportation corridor, MTO has identified itself as the proponent for this Environmental Assessment Terms of Reference. This document has been prepared in accordance with Section 6(2)(a) of the Ontario Environmental Assessment Act.

2.0 PURPOSE OF THE UNDERTAKING

As part of the routine management of the provincial transportation system, the MTO conducts needs assessment and/or area transportation studies. These studies include a preliminary identification of present and future transportation problems, deficiencies and/or opportunities. The purpose of this individual EA is to assess existing and future anticipated transportation capacity deficiencies within the Region of Durham and to determine the transportation needs from a Provincial perspective. The Province, Region, and local municipalities that comprise the Region have recognized that major deficiencies exist within the transportation system in Durham, negatively affecting the movement of people and goods. As the community grows, this situation will be exacerbated unless additional east-west and north-south system capacity is provided. In addition to recognized system constraints in Durham, there are existing and anticipated capacity constraints on key linkages between Durham and communities to the west (GTA) and east, including the City of Kawartha Lakes and the Counties of Northumberland and Peterborough and the City of Peterborough.

The work associated with the individual EA will build upon and include a review of recent transportation planning work undertaken in the Region, including, but not limited to, work associated with the Region of Durham Transportation Master Plan (TMP), approved by Regional Council in 2003.

A preliminary identification of transportation problems and opportunities (as identified in previously completed studies) within and surrounding Durham Region is included in this ToR document. **Exhibit 2.1** shows the area in which transportation problems and opportunities have been and will be considered. All problems and opportunities will be revisited during the individual EA.



2.1 Policy Framework

Existing Provincial, Regional and local policy documents such as those listed below will provide a policy framework for the 407 East individual EA. This list of documents will be updated throughout the individual EA to incorporate the most recent policy directions:

- Greenbelt Draft Plan, Government of Ontario, October 2004;
- Discussion Paper: Places to Grow, Better Choices, Brighter Future, A Growth Plan for the Greater Golden Horseshoe , Ministry of Public Infrastructure Renewal, July 2004;
- Toward a Golden Horseshoe Greenbelt, Greenbelt Taskforce Advice and Recommendations, August 2004;
- Provincial Policy Statement: Draft Policies Consultation Discussion Paper #2, Ministry of Municipal Affairs and Housing, June 2004;
- Straight Ahead – A Vision for Transportation in Canada, Transport Canada, February 2003;
- The Region of Durham Official Plan, Region of Durham, March 2004 Consolidation;
- The Region of Durham Transportation Master Plan, Region of Durham, December 2003;
- Central Ontario Strategic Transportation Directions Study, MTO, (Draft) February 2002;
- Oak Ridges Moraine Conservation Plan, 2002; and
- Official Plans of the Municipality of Clarington, the City of Oshawa, the Town of Whitby, the Town of Ajax, the City of Pickering, the Municipality of Uxbridge, the Township of Scugog and the Township of Brock.

In general, there are a number of consistent themes and principles embodied in the above documents and other relevant planning, transportation and policy documents that relate to the provision of transportation services within the Province and the Region of Durham. These themes and principles will be used to guide the selection and evaluation of alternatives to the undertaking. The common themes and principles are:

- Manage economic growth and accommodate the future employment and population growth forecasted for the GGH;
- Make effective and efficient use of existing infrastructure;
- Develop a network that results in the safe and efficient movement of people and goods;
- Develop an integrated transportation network that provides choice for users; and
- Develop a network, mobility strategies and technologies that foster a clean and healthy environment.

2.2 Overview and Outlook

Consideration of the purpose of the undertaking for a transportation project requires a clear understanding of the problems and opportunities that exist within a geographical area and within

a planning horizon timeframe, in this case approximately 30 years. The following sections provide a general overview of the factors that affect transportation within and across Durham Region, recognizing that transportation requirements within Durham are affected by growth in population, employment and tourism both within Durham and in areas outside of the Region, including the remainder of the GTA to the west, and Kawartha Lakes, Peterborough County, Northumberland County and the City of Peterborough to the east and north. The information provided in the following sections has been extracted from numerous transportation and planning studies conducted by both the Province and the Region of Durham.

2.2.1 Population and Employment Growth

Development, whether it is residential, commercial, industrial or other, generates travel demand. Durham Region continues to be one of the major areas of growth in the GTA. The 2004 Region of Durham population of more than 550,000 is expected to reach 1,055,000 by 2031.

The existing employment level of Durham Region is 170,000. Employment levels are forecast to almost double over the next 30 years to 311,000 by 2031.

Major areas of planned growth, including major initiatives such as the University of Ontario Institute of Technology in north Oshawa and the proposed Pickering Airport in north Pickering, are outside of the immediate area served by the Highway 401 corridor and GO Transit's Lakeshore East Rail Corridor.

As previously noted, forecasted growth in demand for the movement of people and goods within and through the Region of Durham also results from population, employment and tourism growth in areas to the east and north of Durham. **Table 2.1** provides an overview of population and employment growth for three of these communities.

Table 2.1
Population and Employment of Municipalities External to Durham Region

Location	Population		Employment	
	2001 (est.)	2021	2001 (est.)	2021
Peterborough County (incl. City of Peterborough)	125,900	178,900	46,700	66,400
Kawartha Lakes	73,700	92,600	27,800	35,000
Northumberland	88,200	115,800	29,000	37,100

Source:
- *2001 Population – Census*
- *2021 Population – Municipal planning estimates in conjunction with 2000 OGTA forecasts and 1999 Ministry of Finance estimate*
- *2001 and 2021 Employment – existing employment-to-population ratios(32% to 37%)*

The Region of Durham is part of the Greater Golden Horseshoe, one of the fastest growing areas in North America. The communities included in the Greater Golden Horseshoe (GGH) are shown in **Exhibit 2.2**.

Exhibit 2.2
Greater Golden Horseshoe

As articulated in the provincial *Places to Grow* discussion paper released in the summer of 2004, during the 30 year period between 2001 and 2031, the population of the GGH will grow by almost four million, bringing the GGH population to over 11 million people by 2031. During the same period; almost two million jobs are expected to be created in the GGH. It is this growth that will facilitate continued economic prosperity, as the GGH will generate nearly two-thirds of Ontario's Gross Domestic Product (GDP) and near one-third of Canada's output.

2.2.2 Trade

Over 25% ($2.3 billion) of the Region of Durham's total GDP is accounted for by the manufacturing sector. About 22% of the Region's labour force are currently employed in the manufacturing sector, with the services sector employing over 25% of the labour force. Both the manufacturing and service sectors depend on a reliable and efficient transportation system for employee commuting, goods movement, "just-in-time delivery" production systems and accessibility to markets within the GTA, the rest of the province, Canada, the USA and Mexico.

The Provincial highway network and the existing rail lines within the Region of Durham represent a significant trade corridor for the Greater Golden Horseshoe. Commercial vehicle movements along Highway 401 in 2001 ranged from 13,000 per day through Clarington to 32,000 per day at the Durham/York Boundary, with more than 50% of this volume travelling

through Durham (i.e. neither origin nor destination in Durham). As well, approximately 30% of the commercial vehicles travelling to the Greater Golden Horseshoe area are either destined to, or pass through the Region of Durham.

This role as a significant trade corridor will continue into the future as it is anticipated that commercial vehicle travel in and through the Region of Durham will continue to increase at a rate of approximately 3% per annum. For goods movement within Durham itself, most freight is carried by truck.

Several major rail lines linking the GTA to Eastern Ontario and Eastern Canada traverse the Region of Durham. However, even with the existence of these major rail lines, commercial vehicle traffic carries a large percentage of goods through Durham and will continue to do so.

2.2.3 Tourism and Recreation

Tourism is currently Ontario's fifth largest export industry and is projected to become the fourth largest in the near future. It is estimated that upwards of 17 million tourists visit the Toronto Census Metropolitan Area annually, with over 70% of these tourists arriving in the Toronto area travelling by automobile. Tourism is forecasted to grow by 40% over fifteen years. As the Region of Durham is the 'eastern gateway' to the Greater Toronto Area, tourism growth will result in increased tourist travel on the transportation system through Durham Region.

In addition, tourism and recreation are growing industries in the Region of Durham itself and in Kawartha Lakes, City of Peterborough, Peterborough County and Northumberland County, north and east of the Region. Tourist/recreational traffic destined to Durham Region, or areas to the east and north of the GTA is dependent on both the arterial road and provincial highway systems. Available data indicates that Friday traffic on Highway 401 during the summer months can be 25% higher than on an average summer weekday. As a result of congestion on Highways 401 and 407, which currently terminates at Brock Road/Highway 7 in the City of Pickering, many regional and local roads in the Region of Durham currently experience increased periods of congestion on summer Friday and Sunday evenings. Some of this traffic currently uses roads not intended to carry this volume of non-local traffic.

2.2.4 Economic

Transportation access and mobility are two important factors that industry and business owners and operators consider when assessing potential new business locations.

Travel reliability for commercial vehicles is a concern given the existing levels of congestion due to growing travel demand. Reliability is further affected when construction, maintenance or collisions occur. "Just-in-time delivery", important to the manufacturing sector in the GGH, including Durham, is impacted by traffic congestion, particularly when delivery or travel times cannot be accurately predicted. It is also important to note that travel reliability and congestion within Durham affects industry and commercial activity in communities located to the east and north of the Region of Durham, as a significant portion of goods and raw materials either originates in or is destined for areas to the west.

Existing freeway congestion constrains commuter, trade, tourism and recreational travel, which in turn inhibits economic growth, not only in Durham, but well beyond its boundaries in other parts of the GGH. The review of outlooks for land use growth, trade and tourism as summarized in transportation and planning documents indicates significant potential growth in these sectors across the GGH. In order for this growth to be realized, an efficient transportation system to move both people and goods within and through the Region of Durham is considered fundamental.

The recently published *Places to Grow* discussion document prepared by the Ministry of Public Infrastructure Renewal (MPIR), suggests that "planning is necessary to lay out future economic corridors." The document also indicates that the GGH area acts as a node for the rest of the Province and Eastern Canada, providing critical economic links in the Central Ontario transportation network to support provincial and national economic needs.

2.2.5 Transportation

Traffic congestion occurs regularly on Durham Region's road network during a.m. and p.m. peak periods for commuter travel, as well as during peak travel periods for tourist and recreational travel. Travel demand forecasts for 2021 and 2031, based on population and employment growth projections produced by the Region of Durham, clearly suggest that planned growth will require improvements to the regional road system, the local transit systems, heavy rail passenger and goods services, GO Transit and the provincial transportation system to ease congestion in Durham Region and on linkages between Durham and communities to the east, north and west.

2.2.5.1 Rail System

Rail facilities carry goods and people both into and through Durham Region and are an integral part of the transportation system. Rail services in Durham Region are provided by Canadian Pacific Railway, Canadian National, GO Transit (stations in Pickering, Ajax, Whitby and Oshawa) and VIA Rail (station in Oshawa). The existing and potential future role of rail in Durham is described in this section.

Passenger Rail

GO Transit operates daily commuter trains and buses through Durham Region between Clarington and downtown Toronto. Monday to Friday GO Rail services operate as far east as Oshawa, while weekend service operates from the Pickering GO Rail Station. VIA Rail services Durham Region through the Oshawa Rail Station as part of VIA's Toronto-Ottawa/Montreal service. GO Transit continues to be an effective way of moving people to Toronto, and particularly the Central Business District (CBD), from the Region of Durham.

Opportunities for increasing commuter rail travel between Durham and the rest of the GTA are being investigated by GO Transit and the municipalities. GO Transit's 1998 report, *Year 2021 Plan, Preparing for the Future*, notes one component of the plan is to add a third track between Union Station and Scarborough, where the Stouffville Line connects to the Lakeshore East Line, in order to provide additional capacity for improved service along both lines. Once this has been completed, extension of GO Lakeshore East service into Clarington can be considered. The current Durham Region Official Plan (OP) shows a future GO station in east Oshawa and one in

the vicinity of Courtice Road. In 1994, the Municipality of Clarington examined station locations in Bowmanville, should GO Rail service be extended further east, and selected a site near Martin Road (Regional Road 57) south of Highway 2.

In the GO Transit 2000 report *Route Map to the Future*, extension of the Stouffville Line to Uxbridge was discussed. This extension would also require the completion of the third track from Union Station to Scarborough. Another opportunity for improving GO Rail service to Durham, and ultimately to Peterborough, is to make use of the CP Havelock subdivision. A GO Rail station in the vicinity of Taunton and Brock Roads in north Pickering could be located along this line. This service could connect with either Union Station or a new mid-Toronto GO Rail corridor on the existing CP line. These possible future GO Rail improvements are shown in Durham's Official Plan. In general, rail improvements requiring new trackage or stations are subject to the environmental assessment process.

In March 2003, the Federal government announced its contribution towards improvements to the GO Transit rail network. The initiatives mentioned of interest to Durham included new rail-bus service to Peterborough and a third track from Union Station to Scarborough.

In the March 2003 provincial budget, the Province noted its commitment to working with the Federal government and municipalities to provide more frequent GO trains on existing corridors, new GO Transit services (rail and bus) to cities and towns surrounding Toronto, and other new transit services.

Freight Rail

The use of rail is one component of efficient and effective goods movement, especially for inter-city and long haul operations. Within the GTA, rail is challenged to compete with the road system. In *Moving Goods in the New Economy* (Transport Canada, 2000) notes that almost half the truck trips in the GTA (including the Region of Durham) are between local points (i.e. both origin and destination in the GTA), while only 11% are through trips. The remainder, approximately 40%, has either an origin or destination in the GTA.

Through the *Places to Grow* document, the provincial government has suggested grade separating the east-west freight rail corridor from the north-south GO rail corridors within the GTA to maximize the efficiency of the rail network.

2.2.5.2 Road System

Roads, along with transit, serve the daily travel needs of Durham residents and those passing through the Region. The existing traffic conditions for the provincial highway and arterial road systems serving the eastern portion of the Greater Toronto Area (GTA), and more specifically the Region of Durham, are discussed below.

Provincial Highways

The provincial highway system serving the GTA consists of approximately 400 km of freeways (MTO Traffic Count Database) serving a local population of over 5 million for both short and long distance travel. The existing provincial highway system within the Region of Durham

consists of Highway 401, Highway 407, Highway 7, Highway 7A, Highway 12 and Highway 35/115.

In Durham Region, Highway 401 is the only east-west freeway and Highway 35/115 is the only north-south divided highway (the southern section of it has been built to a lower standard than is normally required for a "standard" freeway). In urbanized areas, a freeway grid system with spacing in the order of 10 km as part of a hierarchical network (freeways, arterials, collectors and local roadways) is considered desirable.

Regional Roads

The Type A arterials of the regional road system in Durham Region are intended to move large volumes of traffic, including truck traffic, and are generally designed to provide a high level of service, relative to other arterials. Type A arterials south of Highway 7 include:

- Taunton Road (RR 4);
- Bayly/Victoria/Bloor Street (RR 22);
- Brock Road (RR 1);
- Lake Ridge Road (RR 23);
- Thickson Road (RR 26);
- Harmony Road (RR 33);
- Courtice Road (RR 34); and
- Martin Road (RR 57).

East-west travel in the southern part of Durham Region is constrained at the Durham/Toronto-York boundary in the area of the Rouge River valley. The capacity constraint created by the limited crossings of the Rouge valley impacts travel patterns and results in diversion of traffic to roadways not intended to carry high volumes of commuter traffic. North-south travel is served by a number of arterials across the Region. In addition to the Type A arterials noted above, there are a range of Regional roads that accommodate north-south travel, including Altona Road, Whites Road, Westney Road, Baldwin Avenue/Brock Street, Thornton Road, Simcoe Street, Holt Road and Liberty Street.

The Region of Durham TMP also identifies a "Priority Transit Network for Durham" consisting of both major and minor transit corridors. Major transit corridors, or "transit spines" are identified as corridors expected to provide higher levels of transit service within urban areas. Brock Road, Baldwin Street/Brock Street and Simcoe Street are regional north-south transit spines while Highway 2 and Taunton Road are regional east-west transit spines. The Region of Durham has recommended that any future extension of Highway 407 into Durham also be designated as a transit spine. The Region plans to co-ordinate transit infrastructure with the Province.

The Region of Durham TMP also identifies minor transit corridors along Rossland Road, Highway 401, Bayly/Victoria/Bloor Street, Whites Road, Salem Road, Thickson Road, Harmony Road and Courtice Road.

2.3 Transportation Problems

Previous studies undertaken by the Province and the Region of Durham have documented a number of transportation problems within Durham Region and with linkages to communities in the west (GTA), east and north. It has long been recognized that major deficiencies exist within the transportation network that affect the movement of people and goods within and through Durham. As the community grows, this situation will be exacerbated unless additional east-west and north-south capacity is provided.

The following previous studies have been reviewed as part of the preparation of this ToR and will be used as supporting information together with updated data that becomes available in the assessment of transportation need to be undertaken as part of the individual EA.

- Highway 407 Overview Study, MTO, 1989;
- Highway 407/Transit Transportation Corridor Route Planning and Environmental Assessment Study, Highway 48 to Whitby/Oshawa Boundary, Route Planning Report, MTO, 1995;
- Highway 407/Transit Transportation Corridor Route Planning and Environmental Assessment Study, Whitby/Oshawa Boundary to Highway 35/115 Route Planning Report, MTO, 1995;
- Oshawa/Clarington Freeway Link Environmental Assessment Interim Report - Route Planning Phase, MTO, 1995;
- Pickering/Ajax/Whitby Freeway Link Route Planning and Environmental Assessment Study Route Planning Report, MTO, 1995;
- Pickering/Ajax/Whitby Freeway Link Route Planning and Environmental Assessment Study - Whitby Review Team, 1995;
- Highway 407/Transitway Markham Road Easterly to Highway 7 East of Brock Road, EA, MTO, 1997;
- Central Ontario Strategic Directions Study, MTO, (Draft), 2002;
- Durham Transit Improvement Plan (TIP) Study, Region of Durham, 2003; and
- Durham Transportation Master Plan (TMP), Region of Durham, 2003.

Forecasts undertaken by the Region of Durham as a part of the work associated with the TMP indicate that by 2031 there will be a large east-west capacity deficiency across the Region for the movement of both people and goods. The same study found that additional capacity for the movement of people and goods is required in the north-south direction.

Failure to address these transportation deficiencies will result in increased traffic congestion and travel delay that will be costly to manufacturers and shippers, deter recreational and tourist

travel, and will divert inter-regional commuter traffic to the municipal road system. The reduction in mobility and access will restrict the ability of Durham Region and communities to the north and east, including Kawartha Lakes, City of Peterborough, Peterborough County and Northumberland County, to attract new business and promote economic growth. Further, congested conditions will result in an increase in collisions, greater levels of fuel consumption and higher levels of vehicle emissions (decreased air quality), greater stress for travellers and reduced quality of life for travellers, commuters, and residents.

It should be noted that these transportation deficiencies could occur earlier and/or increase in duration, extent or severity if higher population, tourism or economic growth scenarios are realized or if forecasts are achieved earlier than anticipated (See Section 2.2.1).

Specific problems identified in previous studies include:

- Any reduction in capacity on Highway 401 due to weather, collisions, construction and/or maintenance activities results in increased congestion on all east-west roads in Durham Region, including freeway, arterials and some local roads;
- Inadequate east-west capacity and no freeway alternative to Highway 401 east of Brock Road in Durham Region causes delays to autos and commercial vehicles as well as affecting accessibility to/from the local communities. A lack of east-west capacity also results in community impacts, including traffic infiltration and reduced levels of safety;
- There are significant challenges that currently limit the potential for a modal shift for goods from road to rail due to rapid growth of north-south (US-Canada-Mexico) trade: the current trend towards "just-in-time" manufacturing; the North American Free Trade Agreement (NAFTA) that prohibits governments from providing subsidies to encourage modal shifts, if they target benefits to the export of specific commodities, goods or market segments or direct them to specific gateways or corridors; and inter-modal facilities that place demands on the adjacent road network and result in negative impacts on communities and the environment, compromising their acceptance and effectiveness;
- Improvements planned by Durham Region for the regional road system and the transit system will not resolve congestion during peak travel periods with the forecasted population/employment growth, despite allowing for a quadrupling of transit ridership (a 15% reduction in automobile travel by 2021) without additional provincial transportation corridor capacity;
- Four separate transit operators and GO Transit provide service in Durham. Improved inter-municipal transit integration and service enhancements are needed to increase local ridership and links between Durham and adjacent centres in Toronto and York Region (Scarborough, Markham, etc.). The current transit mode split of 8% in peak hours must increase substantially in order to achieve the auto trip reduction target of the Region of Durham. The feasibility of a regional transit system within the Region of Durham (an amalgamation of current local services) is currently being studied;
- Auto occupancy across the GTA has declined in recent years, emphasizing auto dependant travel, not only in Durham but also in the GTA and across North America. This trend results in significant pressures on the road network;

- Restrictions of the limited access portion of Highway 35/115 between the junction of Highways 35 and 115 and Highway 401 impact the roadway and transportation network within the Region of Durham as motorists and commercial vehicle traffic use regional and local roadways in east Durham to avoid this facility;
- An increase in population and employment densities in Durham is required to support increased transit service. The prevailing low densities, varied origin-destination trip patterns and spatial distribution of residential development inhibits the effectiveness and attractiveness of transit;
- Tourist/recreational traffic destined to tourist/recreational venues in Durham Region or the City of Kawartha Lakes, Peterborough/Northumberland Counties from the GTA relies on both the arterial and provincial highway systems. Excess demand results in lengthening periods of congestion on many regional and local roads in the Region of Durham; and
- Travel reliability for commercial vehicles, which is a significant concern with the existing levels of congestion, is further affected when roadway are under construction or collisions occur – particularly on Highway 401.

Additional definition of the transportation problems in Durham will be completed as part of the individual EA.

2.4 Transportation Opportunities

Opportunities exist to proactively plan for modifications to the transportation system to respond to the stated problems in an environmentally sensitive and sustainable way.

The individual EA will consider the following opportunities:

Transportation

- Reduction of traffic congestion, delay, collisions, fuel consumption and emissions on the existing area transportation system;
- Improvement to system user safety through the provision of additional capacity, reduction in travel demand and the implementation of state-of-the-art transit, traffic and information systems technology;
- Support for a multi-modal strategy to effect a balanced transportation system that provides more transportation choices;
- Reduction in travel demand and the optimization of existing infrastructure through the use of innovation/technologies such as Transportation Demand Management (TDM), Transportation System Management (TSM) and Intelligent Transportation Systems (ITS);
- Improvements to passenger rail service to help the Region of Durham in meeting its targets for increased transit ridership;
- Improvements to local, inter-municipal and inter-regional transit services and technologies;

- Reduction of the amount of overall new infrastructure by optimizing the use of existing and planned infrastructure/rights-of-way; and
- Expansion of existing transportation system components to defer or negate the need for new infrastructure.

Economy

- Additional infrastructure combined with increased capacity in the system will improve the efficiency and effectiveness of the system and reduce costs associated with moving goods through the area. This includes goods or materials produced or required within Durham or areas to the east and north;
- Improvement of transportation system connectivity (road, rail, transit) between regional economic centres east, north and west of Durham;
- Improvements to rail service for the movement of goods to provide an additional choice for manufacturers and transportation service providers;
- Fostering of partnerships between two or more agencies to co-operatively respond to common problems and/or shared objectives;
- Development of transportation infrastructure that assists in directing and facilitating economic growth in the Region of Durham, and GGH area;
- Development of transportation infrastructure that facilitates growth in trade, tourism and economic development (including agriculture);
- Improved accessibility for industry, commerce and tourism/recreation; and
- Support for provincial, regional and municipal economic, planning and policy objectives including growth and sustainability.

Environment

- Development of infrastructure that facilitates opportunities to preserve or enhance natural heritage systems;
- Development of infrastructure that protects and enhances existing built communities;
- Development of infrastructure that recognizes natural heritage system connectivity;
- Development of infrastructure that addresses the recommendations of environmental management plans and strategies; and
- Development of transportation systems which supports sustainable community design.

Additional definition of transportation opportunities to respond to the stated problems will be completed as part of the individual EA.

As previously discussed, a number of studies have been completed over the last two decades addressing various aspects of the transportation system within Durham. In December of 2003,

Durham Regional Council adopted the Durham TMP, a document that summarized an investigation of the transportation needs of the community. The study addressed transportation needs for a 20 year planning horizon at the Regional and Provincial levels and addressed all modes of transportation. The study concluded that physical expansion to all aspects of the transportation network, along with more aggressive transportation demand management strategies, would be required to meet future travel demand and to achieve the Region's mode share targets. From a provincial perspective, the TMP identified improvements to Highway 401 and the extension of Highway 407 between Brock Road in Pickering and Highway 35/115 as key elements of the transportation network and further indicated that these initiatives are fundamental to preserving and enhancing Durham's economic competitiveness.

The Durham TMP indicates that without the expansion of Highway 401 and the implementation of Highway 407, the Regional roadway network would be unable to accommodate future travel demand.

Highway 407 is specifically identified in the recently released *Places to Grow* discussion document as a future economic corridor critical to the economic wellbeing of the GGH.

Planning studies conducted in the 1950s and 1960s indicated a need for a Highway 407, an east-west freeway north of Metropolitan Toronto, running between Highway 401 in Milton and Highways 35/115. The section from the Freeman Interchange at the QEW in Burlington easterly to Highway 5 was originally planned and designated as part of Highway 403. The section from Highway 5 in Burlington easterly to Markham Road was included in, and approved under, the Parkway Belt West Plan in 1978.

The need for the section of Highway 407 from Highway 48 in Markham easterly to Highway 35/115, recognized in previous studies, was reconfirmed by MTO's Highway 407 Overview Study (September 20, 1989). The Overview Study assessed the traffic demands in the GTA and surrounding municipalities. It concluded that there was a need to protect property for a freeway network including:

- Highway 407 easterly from Markham Road to Highway 35/115 to address deficiencies in meeting east-west travel demands;
- Two Highway 401 to Highway 407 freeway links: one link to be located near the Oshawa-Clarington boundary and the other in the Pickering/Ajax/Whitby area; and
- An east-west transit corridor (transitway) as far east as the proposed Oshawa-Clarington link.

The Overview Study also indicated an immediate need to locate and to protect these transportation corridors due to the pressures for development in these areas and recommended that route location and environmental assessment studies be carried out.

In 1989, MTO initiated Route Planning/Environmental Assessment studies for Highway 407 and an adjacent transitway east of Highway 48. Route planning of Highway 407 was conducted in two sections as two separate studies, each approximately 30 km in length:

- From Highway 48 in Markham to the Whitby/Oshawa boundary (approx. 29.6 km); and
- From the Whitby/Oshawa boundary to the junction of Highways 35 and 115 in the Municipality of Clarington (approximately 31.5 km).

In 1990, Route Planning studies for two Highway 401 to Highway 407 links were initiated. Each study area was approximately 10 km in length, connecting Highway 401 to proposed Highway 407:

- Highway 401 to 407 in the Pickering/Ajax/Whitby area; and
- Highway 401 to 407 in the Oshawa/Clarington area.

All route-planning/environmental assessment studies carried out in the early 1990s were designed and conducted to be in accordance with the requirements of the Provincial Environmental Assessment Act as it applied to the undertaking at that time.

When these projects were initiated, the *Canadian Environmental Assessment Act* (CEAA) had not been enacted; however, it should be noted that the studies included extensive consultation with Government of Canada regulatory agencies. These included: Environment Canada; Fisheries and Oceans Canada; Indian and Northern Affairs; Public Works Canada and Transport Canada. These agencies were consulted at each stage of the studies regarding findings and recommendations.

Although technically preferred routes for these facilities were identified and presented to the public, planning was completed and Environmental Assessment Reports were prepared and submitted only for the section of Highway 407 East from Markham Road easterly to Highway 7 east of Brock Road ("Highway 407 East Partial Extension").

In 1997, in response to traffic issues from the termination of Highway 407 at Markham Road MTO completed the *Highway 407/Transitway Markham Road Easterly to Highway 7 East of Brock Road Environmental Assessment Report* ("Highway 407 East Partial Extension"). The work associated with this study included further consideration of the need for Highway 407 east of Brock Road. The study concluded that there would be significant deficiencies in transportation capacity east of Brock Road by 2011 and that improvements to Highway 401 alone within Durham Region would not resolve east-west capacity constraints in the Region. The study recommended significant improvements to transit infrastructure to handle future travel demand and that the Highway 407 corridor was a suitable location to accommodate higher-order transit service, requiring a dedicated corridor. The study recommended a "balanced" transportation plan comprising road, transit, and transportation demand management strategies to accommodate future travel demand within the Region. The Minister of the Environment approved this EA Report in June 1998.

In 2002, MTO published the *Central Ontario Strategic Transportation Directions*, Draft (COSTD), which provided an overview of the transportation network for the geographical area bounded by Peterborough in the northeast, Barrie in the north, Kitchener-Waterloo in the west and the Niagara Peninsula in the south. The study examined the need for various transportation modes to satisfy future travel demand, the social and economic factors that affect transportation, patterns of growth, and the resulting impact on transportation. Its purpose was to define a strategy for the transportation network in Central Ontario. The themes of the *Strategic Transportation Directions* document were fiscal management, economic development, safety, user needs and environmental quality. These reflected the values of the community, as articulated to the government of the day through a series of consultation sessions held across Ontario. This study recommended that the province "pursue the planning and development of

407 East Completion to Highway 35/115" as part of the strategy for building system capacity to meet demand for the future (COSTD, pg. 18).

As previously discussed, the recently published *Places to Grow* discussion document recognized Highway 407 as a future economic corridor, providing a link to the GTA and regions to the east.

The recommendations of the above noted previous studies have been provided to explain the history of potential provincial initiatives in Durham and not to identify a potentially preferred alternative.

2.5 Summary

The purpose of the undertaking is to address long standing transportation problems in the Region of Durham by providing additional east-west and north-south transportation capacity within and through the Region for a 30 year planning horizon and beyond. The interactions among Durham, the GTA, the City of Kawartha Lakes, the City of Peterborough and the Counties of Northumberland and Peterborough will become even more critical as population and employment levels in all of these areas continue to grow.

The specific need for any proposed undertaking(s) and a description of any proposed undertaking(s) will be developed during the individual EA through the preparation of a Transportation Planning/Need Report. The Transportation Planning/Need Report will be undertaken at the start of the individual EA and will include demand forecasting and transportation analysis for the 2011, 2021 and 2031 planning horizons.

3.0 POTENTIAL ENVIRONMENTAL EFFECTS

The proposed individual EA Study will utilize a study process that seeks to avoid, minimize or prevent detrimental environmental effects. For the purposes of this study, the term "environment" reflects the definition in the *Ontario Environmental Assessment Act*. Specific mitigation measures and the approaches for management of environmental effects will be developed and addressed during the individual EA.

Secondary source environmental research was undertaken during the course of preparing the EA ToR. This information has led to a basic understanding of the existing environment and major environmental features in Durham Region. Further environmental investigations, including secondary source reviews and field investigations will occur during the individual EA, once a study area has been formally defined.

This environmental work will be undertaken to further identify environmental conditions and to develop mapping describing environmental conditions in more detail. This will assist in the generation, assessment and evaluation of alternative methods. As the study progresses and the range of alternatives becomes more focussed, more detailed environmental investigations will be undertaken. Environmental investigations will be outlined in Workplans to be reviewed with the stakeholders for comment during the individual EA.

As outlined in Chapters 4 and 5, the main objective of the process of generating, assessing and evaluating alternatives and selecting a preferred alternative(s) is to avoid, minimize or prevent detrimental environmental impacts while developing a transportation solution that addresses the identified problems and opportunities.

This document outlines objectives for generating alternatives to avoid or minimize adverse environmental impacts and describes how impacts associated with alternatives will be assessed. Table 5.1 of this document lists the various environmental factors and objectives that will be used to generate alternative methods. Table 5.2 outlines a set of evaluation criteria and indicators/effects to be used to identify impacts on each component of the environment (i.e. Natural Environment, Social Environment, Economic Environment, Cultural Environment and Technical Requirements/Considerations) associated with alternative methods. The evaluation criteria provide an indication of the potential environmental effects. Environmental factors, criteria and indicators/effects will be further developed during the individual EA.

4.0 ALTERNATIVES TO THE UNDERTAKING

Alternatives to a proposed undertaking can be defined as functionally different ways of approaching and addressing a specified problem or opportunity.

The process for identifying and assessing the alternatives to the undertaking is described in the following sections.

4.1 Identifying and Assessing Alternatives to the Undertaking

Alternatives to the Undertaking (commonly called transportation planning alternatives) represent reasonable means of resolving the stated transportation problems and opportunities, as well as meeting the purpose of the undertaking, as defined in this document.

Objectives that will guide the identification of Alternatives include:

- Meeting the purpose of the undertaking, which is to assess existing and future anticipated transportation capacity deficiencies within the Region of Durham and to determine the transportation needs from a Provincial perspective;
- Considering policy framework themes and principles in identification, assessment and evaluation of alternatives to the undertaking, that include:
    - Managing economic growth and accommodate the future employment and population growth forecasted for the GGH;
    - Making effective and efficient use of existing infrastructure;
    - Developing a network that results in the safe and efficient movement of people and goods;
    - Developing an integrated transportation network that provides choice for users; and
    - Developing a network, mobility strategies and technologies that foster a clean and healthy environment.
- Addressing the transportation problems and opportunities that will be further refined in the individual EA.

In addition to "Do Nothing", alternatives that address deficiencies in transportation system capacity typically include those that increase system capacity or manage/reduce transportation demand, or combinations thereof.

The planning alternatives discussed below were generated on the basis of the themes or objectives embodied in planning and transportation policy documents considered in the preparation of this ToR. A listing of the relevant documents and a discussion of the themes from these materials are provided in Section 2.1 of this document.

The individual EA will, as a minimum, include the examination and assessment of the following alternatives to the undertaking:

- **Do Nothing** – "Do Nothing" is considered the status quo, where the transportation system would be limited to the implementation of approved Provincial, Regional and local Municipal initiatives;
- **Travel Demand Management (TDM)** – TDM strategies include measures implemented that improve the operation of the current transportation system by managing travel demand, independent of other structural initiatives (i.e. constructing or expanding roads). The emphasis of TDM strategies is to reduce overall demands on the network, shift demands to time periods outside of the critical congestion periods, and shift demands to alternative modes of transportation; principally transit, cycling and walking;
- **Transportation Systems Management (TSM)** – The objective of TSM is to improve the efficiency and safety of the transportation system and optimize the use of existing and planned infrastructure through a wide range of strategies and technology policies and initiatives. Measures include initiatives such as transit priority facilities, ITS (intelligent transportation system) strategies, High Occupancy Vehicle (HOV) lanes and Reserved Bus Lanes (RBL), Park'n'Ride facilities and intersection improvements;
- **Improved Air Transport Service** – Modifications to existing air transport services and any associated structural modifications/new infrastructure can potentially result in a change in travel patterns for both passenger and freight;
- **Improved and/or New Passenger Rail Service** – Increased or new passenger rail service (i.e. for commuter and tourist travel) within existing rail corridors and/or along new rail corridors;
- **Improved and/or New Goods Movement by Rail** – Increased freight rail services for goods movement within existing rail corridors and/or along new rail corridors will encourage the diversion of freight from trucks. The ability to expand rail service and divert longer haul goods to rail may provide some relief to network congestion both on regional arterials and on the provincial highway network;
- **Improved and/or New Marine Service** – Bordering on three lakes; Lake Ontario, Lake Simcoe and Lake Scugog, the Region of Durham has over 132 km of shoreline. With seven of eight of the area municipalities having access to these shorelines, there is potential to use waterways (as seasons/weather permits) as a component of the transportation network;
- **Improved and/or New Roadways/Transitways** – The provision of improved capacity and operations on existing facilities and/or accommodating required capacity on new facilities may increase the performance of the transportation network. Continuance of current dependence on auto for travel by residents of Durham will place additional pressures on area roadways. Congestion may be relieved through additional capacity on existing roadways or by introducing capacity in new corridors;
- **Improved and/or New Transit Services** – Expanding the capacity of the transit system through increased services within the existing transportation network and/or accommodating new transit services on new infrastructure may relieve congestion and increase the performance of the transportation network; and
- **Combinations of the above** - As a transportation system comprises of many elements, including all of the individual planning alternatives noted above, it is proposed to establish

additional "combined" planning alternatives that represent potential "futures" or "visions" for the system within Durham and the Greater Golden Horseshoe.

These "futures" represent combinations of individual alternatives and will include, but may not be limited to, the following:

- A network where current travel trends are accommodated; i.e. current mode share of 8% (8% of peak period trips on transit) is maintained and new roads are constructed as necessary;
- A network where transit and other non-road initiatives become the focus of a system expansion directed at addressing future travel demand;
- A network where expansion of the transit system(s) is combined with strategic roadway improvements and other non-structural (TDM) type improvements; and
- A network that supports the long term transportation planning principles and directions outlined in the Places to Grow Discussion Paper and provincial land use planning initiatives currently underway.

As noted, the above list represents a minimum number of alternatives to the undertaking that will be examined within the individual EA. During the individual EA, the MTO will provide opportunities for interested members of the public, stakeholders and agencies to review and comment on: the range of alternatives to the undertaking; the factors and criteria used to assess alternatives; and the assessment and evaluation process for selection of a preferred alternative to the undertaking or preferred combination of alternatives to the undertaking. Input received from interested parties, agencies, stakeholders, etc., will utilized in the assessment and evaluation to select a preferred alternative to the undertaking.

The assessment of alternatives to the undertaking provides an opportunity to examine fundamentally different ways of resolving transportation problems. In recognition of these fundamental differences among the alternatives to the undertaking, it is appropriate to assess the effectiveness of each type of alternative to resolve the prevailing and anticipated future problems. The alternatives will be assessed using the Reasoned Argument evaluation method as described in Section 5.2.2.

4.1.1 Assessment and Evaluation of Alternatives to the Undertaking

Each of the alternatives to the undertaking discussed previously will be carried forward to the individual EA. **Table 4.1** identifies a listing of factors and criteria to be considered for assessing and evaluating transportation planning alternatives. Each of the alternatives to the undertaking will be assessed against the Transportation, Economy, and Environment criteria to determine:

a) Expected effects and impacts;

b) General actions that may mitigate or remedy the identified effects; and

c) Advantages and disadvantages of each alternative to the undertaking.

The assessment of alternatives to the undertaking will be performed at a more general and strategic level based primarily on secondary sources, prediction models and consultation with affected stakeholders.

A sound evaluation process is based on five key principles:

- The evaluation of alternatives must be **comprehensive**;
- The process must be **understandable**;
- The results must be **replicable**;
- The data must be **traceable**; and
- The entire activity must be completed in **consultation** with the public, stakeholders, regulatory agencies, and municipalities.

TABLE 4.1
FACTORS AND CRITERIA FOR ASSESSING ALTERNATIVES TO THE UNDERTAKING

FACTOR	CRITERIA
Transportation	• The degree to which the proposed transportation system modification supports the movement of people and goods • The degree to which the proposed transportation system modification reduces growth in peak hour travel demand • The degree to which the proposed transportation system modification resolves the defined problems • The degree to which use of the existing road and transit system is maximized and optimized through the use of TDM and TSM strategies • The degree to which the proposed system modification enhances interconnectivity between regional economic centres and designated growth areas by individual travel modes • The degree to which the proposed transportation system modification improves modal choice and creates a more balanced transportation system • The degree to which the proposed transportation system modification supports, or is consistent with federal, provincial and municipal plans and policies
Economy	• The degree to which the proposed transportation system modification supports provincial, regional and municipal policies for: - Trade - Tourism & Recreation • Economic development (including agriculture)The degree to which the proposed transportation system modification supports existing land use and growth including recognition of growth management plans and policies as articulated in provincial, regional and municipal plans and policy documents (existing or amended, including the proposed Greenbelt and proposed Greater Golden Horseshoe Growth Plan)
Environment	• The degree to which the proposed transportation system modification impacts environmental features, functions, systems and communities. • The degree to which the proposed transportation system modification minimizes resource consumption (e.g. mineral, aggregate, agricultural land). • The degree to which the proposed transportation system modification minimizes toxic and greenhouse gas emissions. • The degree to which the proposed transportation system modification supports federal, provincial and municipal environmental protection policies, existing or amended, including the proposed Greenbelt and proposed Greater Golden Horseshoe Growth Plan.

It should be noted that **Table 4.1** represents the **minimum considerations** concerning the assessment of alternatives to the undertaking. This list is subject to refinement and modifications

based on input received, study findings and **specific measures** to be applied to the criteria that **will be developed during the individual EA.**

4.2 Selecting the Preferred Alternative To The Undertaking (Planning Alternative)

The assessment of the alternatives to the undertaking will identify the recommended alternative(s) to be carried forward for further consideration in the individual EA study. The selected alternative(s) will be those that best resolve the specified problems in recognition of the defined opportunities. A detailed rationale for the selection of the preferred alternative will be provided in the EA report.

To determine next steps, the selected planning alternative will be placed into one of the following four categories:

1. If the **Preferred Planning Alternative is "Do Nothing"** – the EA process is complete and no further study will be initiated.
2. If the **Preferred Planning Alternative is a transportation mode or solution that is outside the jurisdiction of the MTO** – the current EA process will be halted; the MTO will refer the planning alternative to the appropriate agency or jurisdiction for further review and action.
3. If the **Preferred Planning Alternative is entirely within the jurisdiction of the MTO (with the MTO as the proponent)** – the EA process continues and MTO will proceed to the Alternative Methods stage as outlined in this ToR document, or to the appropriate MTO Class EA process, as will be determined during by the individual EA.
4. If the **Preferred Planning Alternative is <u>a combination</u> of solution(s) that are within the jurisdiction of MTO and mode(s) or solution(s) that are outside the jurisdiction of the MTO** – the EA process continues; the MTO proceeds to the Alternative Methods stage as outlined in this ToR document or to the appropriate MTO Class EA Process. Planning alternatives that are outside MTO jurisdiction are referred to the appropriate agency for further review and action.

The context for considering alternatives to the undertaking within the overall process of generating and evaluating alternatives is schematically illustrated in the supporting documentation, Document B.

5.0 ALTERNATIVE METHODS

Once the preferred alternative to the undertaking has been identified, the next steps to be undertaken during the individual EA will be to identify a study area and commence the process of generating, assessing, evaluating and selecting the preferred alternative method(s) to resolve the defined transportation problems.

The following sections outline the process for generating a study area and generating, assessing and evaluating alternative methods.

5.1 Process for Generating a Study Area

The study area is defined as the geographic area where alternative methods will be generated. It is fundamental to note that the study area does not limit the potential to examine environmental impacts and effects outside of its boundaries.

The MTO Project Team will generate a study area through consultation with affected stakeholders. The following input will be used to guide the generation of study area limits:

- Identified transportation problems and opportunities;
- Significant natural, socio-economic and cultural environmental features or constraints (as identified through secondary source data and previously completed planning studies);
- Current government land use planning policies and initiatives; and
- Existing transportation infrastructure.

Throughout the course of the EA study, the study area limits can be refined or modified, if required, to accommodate any reasonable alternatives that may be identified during the course of the study.

5.2 Generating, Assessing and Evaluating Alternative Methods

The following sections outline how alternative methods will be generated, assessed and evaluated. The process for the generation, assessment and evaluation of alternative methods is schematically illustrated in the supporting documentation, Document B.

5.2.1 Process to Generate Alternative Methods

The individual EA study process includes a multi-step process for the development, assessment and evaluation of alternative methods. The process outlined in this section is applicable to transportation solutions that fall within the mandate of MTO. Should the assessment of alternatives to the undertaking identify other/additional solutions, an appropriate study process may be pursued by the appropriate agency/jurisdiction that will act as proponent(s).

Alternative methods will be generated based on the following guiding principles:

- **Utilize existing infrastructure to the maximum extent** - Taking advantage of existing transportation and other linear corridors may reduce impacts to the natural, social and economic environments;
- **Minimize impacts to existing land uses;**
- **Minimize impacts to significant natural features, functions, systems and communities**;
- **Minimize impacts to urban/rural areas** - Such areas generally provide a focus for cultural, recreational, social and economic activities; and
- **Resolve transportation problems and take advantage of existing and future opportunities recognizing project need** - As determined during the initial stages of the individual EA process.

The objectives and rationale outlined in **Table 5.1** will be used to generate alternative methods. **.** Table 5.1 references specific sections of policy documents. Such references may change if the documents are updated during the course of the individual EA.

The alternative methods generation criteria are subject to refinement and modification during the individual EA based on study findings and input received from stakeholders.

Data necessary to support the generation of alternative methods will be collected primarily from secondary sources such as aerial photography and large-scale constraint mapping (i.e., GIS data), compiled from information provided by external agencies and from Municipal Official Plans, as well as information collected during previous MTO studies in Durham Region. This information will potentially be supplemented by data collected from interested groups and individuals and discussions with ministries, agencies and the public.

During the individual EA, a preliminary list of alternative methods developed by the MTO Project Team will be reviewed with municipalities, regulatory agencies and the public. This consultation phase is critical to developing a reasonable set of alternative methods. Local residents can add valuable information to the database gathered by the Project Team. Refinements to the alternative methods suggested by municipalities, regulatory agencies and the public would be integrated, where warranted. A finalized set of alternative methods will be taken through the evaluation process.

TABLE 5.1
ALTERNATIVE METHODS GENERATION - OBJECTIVES

OBJECTIVE	RATIONALE
1. Avoid where possible, or minimize encroachment on or loss of water bodies and associated riparian zones 2. Avoid where possible, or minimize encroachment on or loss of critical fish habitat features	• It is an objective of the Provincial Policy Statement (PPS) to protect or enhance the quality and quantity of surface water, including headwaters. Surface water features are an important part of the natural, economic and cultural landscape (Policy 2.4.1 (or as amended)). Alternatives should avoid, where possible, or minimize encroachment on, or loss of known or potential hazards, such as floodplains, erosion sites or unstable slopes associated with watercourses or lakes. The Navigable Waters Protection Act (NWPA) protects navigation access on water bodies. Riparian zones may contain hazard lands and provide a separation distance from the stream to allow for the incorporation of stormwater management facilities. • The Federal Fisheries Act prohibits the harmful alteration, disruption or destruction of fish habitat, the introduction of deleterious substances to fish habitat and the blockage of fish passage. Where impacts to habitat cannot be mitigated, a Fisheries Compensation Plan is prepared in consultation with the Conservation Authority/Department of Fisheries and Oceans to address agency concerns/ requirements. The PPS permits development and site alteration in fish habitat if it can be demonstrated that there will be no negative impacts on the natural features or functions for which the area is identified (Policy 2.3.1 (b) (or as amended))
3. Avoid where possible, or minimize encroachment on or loss of species of conservation concern (vegetation, fish and wildlife) 4. Avoid where possible, or minimize encroachment on or loss of critical habitat of Species at Risk	• The presence of species identified by COSEWIC and COSSARO as species of special concern, threatened or endangered (species at risk) requires consideration in the generation of concept design alternatives. The project must also conform with the Federal Species At Risk Act (SARA) for wildlife species and their critical habitat or residences. Species or populations may be under pressure or susceptible to stress as a result of development. Since habitat for this species is often limited, the generation of design alternatives will seek to avoid or minimize impacts to areas where the presence of species at risk is suspected or confirmed. The assessment will have regard for the PPS objective that development and site alteration will not be permitted in significant portions of the habitat of Threatened and Endangered Species. The reported presence of Species of Conservation Concern [as defined by MNR in the Significant Wildlife Habitat Technical Guides (SWHTG – MNR, 2000)] will also be considered.
5. Avoid where possible, or minimize encroachment on or loss of encroachment into ecologically functional areas	• Not only is it important to consider the individual environmental factors or habitats, it is also important to recognize identified ecologically functional linkages that contribute to landscape connectivity and provide important wildlife movement corridors. The assessment will have regard for PPS Policy 2.3.3 (or as amended) that the diversity of natural features in an area, and the natural connections between them should be maintained and improved where possible. Secondary information on ecosystem linkages (aquatic and terrestrial) will be reviewed and supplemented by other available sources (including contacts with specialists and field findings) e.g. defined Terrestrial Natural Heritage System (TNHS).

TABLE 5.1
ALTERNATIVE METHODS GENERATION - OBJECTIVES

OBJECTIVE	RATIONALE
6. Avoid where possible, or minimize encroachment on or loss of important wildlife areas and travel corridors. Other areas to be considered are any identified wildlife management, rehabilitation and research program sites	• Important habitat areas and travel corridors, that may not be associated with other features protected by other means (Areas of Natural and Scientific Interest (ANSI), Environmentally Sensitive Areas (ESAs) and Provincially Significant Wetlands), require consideration during the generation of alternative methods. These areas/corridors may be of local or regional significance to wildlife that is not necessarily at risk. Other areas may be identified as important habitat for wildlife species requiring larger habitat blocks (e.g. interior forest habitat, important bird areas) or with specialized habitat requirements (e.g. Jefferson Salamander). The assessment will have regard for PPS Policy 2.3.1(b)(or as amended). Development and site alteration may be permitted in significant wildlife habitat if it can be demonstrated that there will be no negative impacts on the natural features or functions for which the area is identified
7. Avoid where possible, or minimize encroachment on or loss of Provincially Significant Wetlands (PSWs) and avoid impairment to wetland functions, including ecological function 8. Avoid where possible, or minimize encroachment on or loss of all other evaluated and unevaluated wetlands	• PPS Policy 2.3.1 (a) (or as amended) prohibits development and site alteration in significant wetlands located south and east of the Canadian Shield. The assessment will have regard for this objective. Provincially significant wetlands are scattered throughout Durham Region along riparian systems, as isolated blocks or as components of a wetland complex. Wetlands serve ecological functions to varying degrees including groundwater recharge/discharge, flood attenuation, wildlife movement corridors, habitat for flora and fauna and water filtration • The Federal Policy on Wetland Conservation promotes the goal of no net loss of wetland function in areas where wetland loss has reached critical levels
9. Avoid where possible, or minimize encroachment on or loss of designated significant woodlands	• The PPS Policy 2.3.1(b) (or as amended) permits development and site alteration in significant woodlands south and east of the Canadian Shield if it has been demonstrated that there will be no negative impacts on the natural features or the ecological functions for which the area is identified. The assessment will have regard for the PPS protection objectives. Each watershed will be assessed at the EA stage to determine woodland significance. Significance is based on several factors that **could** include size, shape, association to other features, linkages, diversity, management value, age and presence of species at risk, etc.
10. Avoid where possible, or minimize encroachment on or loss of other important woodlands	• Other important woodlands will be determined based on existing information collected and a series of woodland metrics determined, including woodland size, shape, proximity to other features and landscape connectivity

TABLE 5.1
ALTERNATIVE METHODS GENERATION - OBJECTIVES

OBJECTIVE	RATIONALE
11. Avoid where possible, or minimize encroachment on known groundwater recharge and discharge areas; as well as identified wellhead and source protection areas and areas susceptible to groundwater contamination	• PPS Policy 2.4.1 (or as amended) identifies that the quality and quantity of groundwater and the function of sensitive groundwater recharge/discharge areas and aquifers will be protected or enhanced. The assessment will have regard for this objective. Transportation facilities have the potential to impact groundwater resources through removal of recharge areas, interference with discharge areas/shallow groundwater zones, and introduction of contaminated runoff. Consequently, areas identified as being susceptible to groundwater contamination and/or interference should be avoided wherever possible
12. Avoid where possible or minimize encroachment on, loss of, or impairment of ecological function to environmentally significant features, and where appropriate associated functions, including Significant Valleylands, ESAs, ANSIs, or other areas of provincial, regional or local significance	• There are several provincially or regionally significant ANSIs scattered throughout Durham Region. They are most prevalent along the Lake Iroquois Shoreline and often associated with riparian systems • ESAs are not explicitly included in the Provincial Policy Statement, but are often associated with other features subject to the policy statement (e.g. PSWs, ANSIs, significant woodlands, valleylands, and wildlife habitat). They are also reflected in the Conservation Authority Plans and municipal land use plans. The Regional Official Plans also identify ESAs • Significant Valleylands are typically associated with watercourses and are identified in agency/municipal documents. As well they will have associated hazard lands and potential erosion sites and slope stability issues • Policy 2.3.1(b) (or as amended) permits development in significant ANSIs if it has been demonstrated that there will be no negative impacts on the natural features or the ecological functions for which the area is identified. The assessment will have regard for this PPS protection objective.
13. Avoid where possible, or minimize encroachment on loss of, or impairment of ecological function to special spaces (including recreational activity zones)	• There are several unique landscape features in Durham Region, including the Oak Ridges Moraine and Lake Iroquois Shoreline, which have significant local and regional functions and associated biodiversity • The Oak Ridges Moraine Conservation Plan (ORMCP) came into effect in 2002. While the Plan allows for transportation corridors within the Moraine, it also requires that the need for the route in the Moraine be adequately justified, and that transportation projects be subject to specific land use and natural heritage policies within the ORMCP
14. Maximize separation distance from sensitive receptor locations	• Sensitive receptors [i.e., existing approved plans for residential development, rural landscapes, natural heritage features and sensitive ecosystems] should be separated as much as possible from the alternative as their use/enjoyment can be negatively affected by noise, air quality impacts, lighting, etc. • Sensitive receptors, such as wildlife or natural features, may also be affected by light and noise

TABLE 5.1
ALTERNATIVE METHODS GENERATION - OBJECTIVES

OBJECTIVE	RATIONALE
15. Avoid where possible or minimize encroachment on, or loss of developed properties	• Minimizing the need for developed property (including major utilities) will reduce impacts on individuals and businesses as well as reducing costs
16. Minimize access impacts	• A barrier to movement can be created that impacts the community fabric both socially and economically
17. Maximize the access provided to major generators of economic activity	• Improving access conditions can further the potential for economic development
18. Avoid where possible, or minimize encroachment on, or loss of prime agricultural areas and agricultural infrastructure	• Prime agricultural areas (including specialty cropland and Class 1, 2 and 3 soils in this order of priority) are important Provincial resources that should be protected for future use • Agricultural areas include a variety of other support systems, without which the community and businesses cannot function properly
19. Avoid where possible, or minimize encroachment on, or loss of mineral, petroleum and mineral aggregate resources	• Mineral, petroleum and /or mineral aggregate resources are important Provincial resources that should be protected for future use
20. Avoid operating and "non-operating" waste disposal sites	• Localized significant sources of property contamination can be operating and closed waste disposal sites, the latter being of more significance due to difficulties with locational accuracy. Consideration should be given to avoiding the “area of influence” of waste disposal sites
21. Avoid where possible, minimize encroachment on, or loss of known archaeological sites/built heritage features/cultural heritage landscape areas of extreme significance	• Disturbance or destruction of certain known provincially registered archaeological sites, areas having archaeological potential or built heritage features, heritage conservation districts and cultural heritage landscape areas of extreme local, provincial or national interest represents a significant cultural loss. Such sites/features, if any, should be avoided
22. Generate alternatives that are efficient and direct, while meeting standards for design	• Minimizing length/size of alternatives reduces costs and impacts. Reducing travel time increases the transportation service level, is more economical, may reduce greenhouse gas emissions and will decrease the amount of land altered to achieve the transportation solution. Less land required will reduce impacts to farmland, natural features and built communities

5.2.2 Assessment & Evaluation of Alternative Methods

The evaluation of alternative methods is a two-step process. The first step entails a detailed field inventory of conditions associated with each alternative method. Each environmental feature is examined to determine the extent of impact. Net impacts will then be identified on the basis of the effects on the environment that remain after standard mitigation measures have been applied to reduce the extent of the impact. Technical work plans which elaborate on methodologies and measurement criteria for each discipline will be developed during the individual EA.

The second stage is the evaluation itself. This stage builds upon the information obtained from the impacts assessment stage and involves a comparative analysis of the advantages and disadvantages of the alternatives considered to select a preferred alternative. At this stage, the relative importance of the environmental features is determined. A “Do Nothing” scenario will be carried forward to represent a base case for comparison to the preferred alternative method.

5.2.2.1 Evaluation Method

The evaluation of alternative methods is an integral component of the EA. A sound evaluation process is based on five key principles:

- The evaluation of alternatives must be **comprehensive**;
- The process must be **understandable**;
- The results must be **replicable**;
- The data must be **traceable**; and
- The entire activity must be completed in **consultation** with the public, stakeholders, regulatory agencies, and municipalities.

The Ministry of Environment Interim Guidelines on Environmental Assessment Planning and Approvals (July, 1989) recommend that the evaluation approach be clearly described and government ministries, agencies and the public be asked for their comments early in the individual EA study. The method(s) used to predict net environmental effects and evaluate advantages and disadvantages must, according to the Guidelines, clearly identify the relative differences and key impact trade-offs.

Two complementary evaluation approaches will facilitate the selection of a preferred alternative for this undertaking. A Reasoned Argument or Trade-off method will be used as a primary tool to identify a preferred alternative method. An Arithmetic or Weighting-Scoring method will be employed as a secondary tool to verify the results of the Trade-off method. Both approaches will use the same factors/criteria and indicators to permit verification and comparison of results between the two evaluation methodologies.

Additional approaches may be considered through consultation with stakeholders, if necessary, to facilitate the selection of the preferred alternative method.

The Reasoned Argument evaluation component will provide a clear presentation to stakeholders of the key trade-offs between the various evaluation factors and the reasons why one alternative is preferred over another. The Arithmetic evaluation provides a means to compare the

alternatives based on a numerical scaling with weights assigned by the ministry and other stakeholders as determined through the individual EA study consultation. A numerical approach is a good sensitivity analysis tool to determine if the conclusions resulting from application of the reasoned argument approach are valid and appropriate. During the individual EA study, the decision making process will be clearly documented to make it traceable and understandable by those who may be affected by the decisions. Details on the Reasoned Argument and Arithmetic evaluation methodologies are outlined in the following sections.

Reasoned Argument (Trade-off) Method

This method will be the primary evaluation method employed to select a preferred alternative. It highlights the differences in net impacts associated with the various alternatives. Based on these differences, the advantages and disadvantages of each alternative are identified. The relative significance of the impacts are examined to provide a clear rationale for the selection of a preferred alternative. The rationale that favours the selection of one alternative over all others will be derived from the following sources:

- 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
- Project Team expertise.

Arithmetic Evaluation Method

The Arithmetic Evaluation method will be the secondary method of evaluation and will incorporate both the level of importance of each environmental attribute, referred to as the *weight*, and the magnitude of the impact or benefit associated with an alternative, referred to as the *score*. Numerical values are derived for both the weight and the score associated with each alternative.

The weight is multiplied by the score to obtain a total. The totals for each alternative are compared to determine the preferred alternative method. This evaluation method also allows for sensitivity testing as numerous weighting scenarios can be applied.

Scoring of Impacts

The score assigned to each environmental criterion is relative to the impact generated and the potential to effectively mitigate it. Relative impacts can range from a positive benefit to the environment to a negative impact or detriment to the environment.

The assessment of impacts will be derived from field measurements, prediction model results, secondary data sources and other means, as necessary.

Weighting the Level of Importance

Generally, more weight is assigned to those factors that are considered to be more important in assessing impacts generated by alternatives, and less weight is given to those factors that are considered to be less important.

Weighting scenarios will be developed in consultation with the public, regulatory agencies and municipalities. It should be noted that weighting scenarios may vary for different regions of the study area. In addition, numerous sensitivity tests will be run to reflect input received from stakeholders and the public. Such input will provide the Project Team with an understanding of community values with respect to the relative importance of each environmental feature.

5.2.2.2 Implementation of Evaluation Approaches

As previously noted, the Reasoned Argument method will be the primary evaluation tool used to select a preferred alternative with the Arithmetic Evaluation method used to substantiate the findings. The two evaluation approaches will be implemented concurrently. For example, the Project Team's assumptions and rationale behind its assessment of the level of importance of environmental attributes will be documented along with the corresponding arithmetic value assigned to the impact. In addition, input from stakeholders and the public will be coordinated through public information centres and other public consultation activities to ensure that issues, concerns and the magnitude of potential impacts are properly identified and understood by the Project Team.

The results of the two approaches will be compared and the differences identified. The results will be re-analyzed to determine the key weight-score combinations. Similarly, the rationale for each Trade-off decision will be revisited to determine if the Project Team's decision was appropriate. If the rationale supporting the trade-off decisions is valid and appropriate, the preferred alternative method identified by the Reasoned Argument method will stand. However, if the results of the Arithmetic Evaluation lead to modifications to the Trade-off decisions' rationale, the preferred alternative method resulting from the Reasoned Argument approach may be revised. The decision making process will be clearly documented and presented for stakeholders to comment on. During the individual EA additional evaluation methodologies may be utilized to ensure that the nature and magnitude of potential impacts (of significant community and/or environmental value) are accurately identified and mitigated.

Data necessary to support the evaluation of alternative methods will be collected from secondary sources, prediction models and site-specific field investigations. **Some of the existing information sources are identified in the supporting documentation** and will be expanded upon initiation of the EA and in consultation with the stakeholders. **The precise nature and scope of field investigations will be determined during the individual EA** and outlined in workplans for review and comment by stakeholders. This information will be supplemented based on input received from interested stakeholder groups, municipalities, regulatory agencies and members of the public.

The data collected will assist in identifying the types of impacts expected from each alternative method on each component of the environment. Environmental factors include:

- Natural Environment;

- Social Environment;
- Economic Environment;
- Cultural Environment; and
- Technical Considerations.

Alternative methods will be evaluated against the factors, criteria and indicators/effects as outlined in **Table 5.2**. Further detail on these criteria is contained in the supporting documentation, Document C. Factor-specific technical work plans for assessing potential environmental effects will be completed during the individual EA.

The alternative methods evaluation criteria are subject to **refinement and modification** during the individual EA based on study findings and input received from stakeholders.

TABLE 5.2
EVALUATION FACTORS, CRITERIA AND INDICATORS

FACTOR/CRITERIA	INDICATOR/EFFECTS
Natural Environment	
Groundwater	• Effect on groundwater recharge areas • Effect on groundwater discharge or flow path • Municipal and private water supply wells within 500 m of alternative • Changes to groundwater quality
Surface Water Quality and Quantity	• Watercourse crossings (permanent and ephemeral) • Crossings or encroachment on floodplain or meander belt • Riparian Areas crossed or encroached upon • Encroachment on sensitive headwaters areas • Channel/shoreline alterations anticipated • Changes to surface water quality • Implications for watercourse management programs
Fisheries and Aquatic Habitat	• Coldwater fishery crossings • Warm water fishery crossings • Riparian vegetation removal • Loss of or encroachment on habitat of known species of conservation concern or Species At Risk • Areas of specialized, critical and/or limiting fish habitat • Implications on habitat rehabilitation programs or long-term management goals
Vegetation	• Degree of encroachment on or severance of woodlots/forest areas/upland vegetation units • Significant flora/communities • Implications on forest management/research programs • Loss of encroachment on habitat of known species of conservation concern or species at risk • Effect on total cover in watershed
Wetlands	• Loss or alteration of Provincially or locally significant wetland area or function (e.g. connectivity, hydrology) • Loss or alteration of unevaluated wetland area or function

TABLE 5.2
EVALUATION FACTORS, CRITERIA AND INDICATORS

FACTOR/CRITERIA	INDICATOR/EFFECTS
Wildlife	• Loss of wildlife • Effects of noise and lighting on wildlife • Encroachment on, severance of, or loss of important or ecologically functional wildlife habitat areas • Loss of, or encroachment on habitat/occurrence of known identified species of conservation concern or Species At Risk • Impacts to wildlife movement corridors
Environmentally Significant Features	• Loss of or encroachment on identified ESAs and ANSIs.
Landscape Connectivity	• • Severance, encroachment on, or interruption of linkages between natural heritage areas on tablelands • Severance, encroachment on, or interruption of linkages between natural heritage areas in valleylands • Severance, encroachment on, or interruption of linkages between tablelands and valleylands
Special Spaces	• Implications on special spaces (e.g. Oak Ridges Moraine) • Compatibility with the Oak Ridges Moraine Conservation Plan
Air Quality	• Separation distance to sensitive receptors
Social Environment	
Noise	• Effect on noise sensitive receivers (NSAs as defined in the MTO/MOE Protocol).
Community Fabric	• Encroachment on or severance of established and/or proposed settlement areas • Likely effects on planned/approved community structure, as may be identified or proposed in provincial land use planning policies, local and/or regional official plans within and east of the study area • Delivery of community services (emergency, school bus) • Urban or rural barrier effects
Recreational Opportunities	• Effect on hiking, hunting, fishing, nature viewing and educational opportunities

Property Impacts	• Residential, commercial, industrial, institutional and recreational property effects:
	  • Full removal
	  • Frontage
	  • Backlot
	  • Severance
	  • Loss of Access

Traffic Nuisance	• Potential for diversion of longer distance travel to/from local roadways
Visual Aesthetics	• Total aesthetic value of visibly accessible landscape components • Total scenic value based on composition, arrangement and sequence of landscape components • Total potential visual impact on sensitive viewer groups based on sensitivity, proximity and frequency of viewer groups
Light	• Effect on light sensitive receivers

TABLE 5.2
EVALUATION FACTORS, CRITERIA AND INDICATORS

FACTOR/CRITERIA	INDICATOR/EFFECTS
Economic Environment	
Provincial/Municipal/Private Land Use Development Strategies	• Degree of compatibility with municipal and regional development goals and objectives • Capability to provide transportation service/stimulate development of major development initiatives (Seaton, Pickering Airport) • Compatibility with federal/provincial/municipal planning goals/objectives/policies, including principles and policy directions under development in the proposed Greater Golden Horseshoe Growth Plan, the proposed Greenbelt Plan, the proposed Watershed based Source Protection Planning, and the proposed GTA Transportation Strategy • • Effects on approved private development proposals
Non-Farm Commercial Activities	• Businesses displaced • Businesses with access affected • Number of employees working for businesses displaced within the right-of-way • Changes (+/-) in business exposure • Construction impacts on businesses
Mineral Aggregate Resources	• Effect on licensed aggregate resource facilities • Effect on aggregate resource areas
Agriculture	• Removal or sterilization of Class 1-3 agricultural land(s) • Specialty crops/cropland affected • Dairy/livestock operations affected • Field crop operations affected • Farm properties greater than 20 ha affected • Severed parcels greater than 20 ha affected • Severed parcels less than 20 ha affected • High investment operations affected • Farm equipment transportation routes affected • Division of agricultural community areas
Property Contamination	• Encroachment on, or disturbance of commercial/industrial properties in urban areas • Encroachment on, or disturbance of isolated pockets of commercial/industrial properties and service stations in rural areas
Waste Management	• Encroachment on, or disturbance of operating and closed waste disposal sites
Cultural Environment	
Archaeological Features	• Disturbance or destruction of known significant archaeological sites • Disturbance of areas of archaeological potential
Built Heritage Features	• Displacement or disruption of built heritage features
Cultural Landscape Units	• Displacement or disruption of cultural landscape features • Significance of displaced or disrupted cultural landscape features

TABLE 5.2
EVALUATION FACTORS, CRITERIA AND INDICATORS

FACTOR/CRITERIA	INDICATOR/EFFECTS
Technical Considerations	
Technology	• Flexibility of solution to accommodate a range of alternative technologies
Overall Transportation System Performance	• Average system travel time/speed and total trips in peak period
Transportation System Compatibility	• Compatibility of each alternative with the existing/proposed transportation system and the ability to meet future needs
Transportation System Connectivity	• Ability of each alternative to support or connect to existing or proposed travel modes
Screenline Performance	• Ability of each alternative to meet screenline demand
Critical Link Performance	• Levels of congestion (volume/capacity ratio) at select locations associated with each alternative
Design Criteria	• Compliance with appropriate design criteria
Accessibility	• Accessibility of alternative to population and employment centres
Emergency Access	• Impact of alternative on emergency access to adjacent lands
Future Expansion	• Flexibility for future expansion
Cost	• Examines the short and long term costs associated with each alternative

5.3 Concept Design

A concept design (including plan and profile) will be prepared for the preferred alternative method. A cumulative effects analysis will be performed on the preferred alternative method. **This process will be further defined during the individual EA**. During concept design, approvals requirements, mitigation or compensation measures and enhancement opportunities will be addressed with agencies and other stakeholders. The process for generating, assessing and selecting the preferred concept design alternative will be developed in consultation with interested stakeholders during the individual EA.

Recognizing that there could be an extended time period between approval of the individual EA and implementation of the study recommendations, a process will be developed through the individual EA to identify potential revisions to the concept design to reflect advancements in transportation and environmental mitigation practices. The individual EA will commit to subsequent processes to evaluate the need for additional mitigation measures/technological advances.

6.0 MONITORING STRATEGY AND SCHEDULE

During the individual EA, MTO will commit to developing a strategy and schedule for monitoring the implementation of any recommended alternative(s).

A monitoring strategy and schedule will be developed in accordance with MOE requirements to demonstrate how MTO will ensure that commitments made during the individual EA are translated into future Environmental Assessments and design and implementation processes including construction, operation and maintenance of any modification to the transportation system.

A monitoring program is necessary to identify potential non-compliance with environmental design and protection requirements and to initiate corrective action to bring the work into compliance with environmental requirements committed by the Environmental Assessment Report and any subsequent environmental documentation for this undertaking. The program will address the roles and responsibilities of the various stakeholders in the process.

Monitoring and follow-up programs will continue beyond the end of the implementation phase. The duration of the monitoring and follow-up programs will vary and will depend on the conditions of permits and approvals granted by regulatory agencies.

7.0 CONSULTATION

7.1 Consultation in Preparation of the EA Terms of Reference

Consultation activities were conducted during the EA Terms of Reference to introduce the Study and to receive comments on the draft EA Terms of Reference. Consultation was undertaken with regulatory agencies, municipalities and members of the public from September 2002 to July 2004. A detailed summary of the consultation undertaken during the preparation of the EA Terms of Reference is provided in the *Consultation Record*, under separate cover.

7.2 Individual EA Consultation

Consultation is an integral component of the Environmental Assessment (EA) process. Consultation provides opportunities for input and two-way communication with affected and interested stakeholders. Consultation activities also enable the identification of potentially significant environmental issues early in the decision making process and ensure that they are given the appropriate consideration. All consultation to be undertaken during the EA will be completed in accordance with the Ontario Environmental Assessment Act and the Canadian Environmental Assessment Act.

The consultation program for the individual EA is based on the following principles:

- All reasonable efforts will be made to ensure that potentially affected or interested parties are given the opportunity to participate in the process;
- Stakeholders may provide input at any time during the study; however, structured opportunities for input will occur at key study stages;
- MTO will constructively address input received during the consultation process;
- MTO will make reasonable efforts to resolve concerns; and
- Consultation plans and process will be sufficiently flexible to permit responses to new issues that may arise as the study proceeds.

Various forms of consultation will take place throughout the different project phases. The Project Team can be contacted for information or to leave comments via a toll-free telephone number, fax, email and regular mail throughout the study. The project web site offers the opportunity to submit comments to the Project Team via electronic comment forms.

Consultation activities will not necessarily be limited to those described in this section. **The Project Team may consider additional enhancements to the EA consultation plan if deemed to be of value to the Study.** See Document B of the supporting documentation for points of consultation that are planned to occur at each of the key study phases of the EA.

Stakeholders will be able to use a number of different options to provide input and comments at any time throughout the individual EA study. The more structured consultation activities undertaken during the EA will focus on the following four stages of the study:

1. Present and gain input on the Transportation Planning/Need (includes transportation problems and opportunities), Alternatives to the Undertaking and the EA Study Area;
2. Present and gain input on preliminary alternative methods, assessment factors/criteria and measures and evaluation methodology; obtain comments on possible refinements and identify issues prior to assessing these alternative methods to ensure that all reasonable alternatives are considered;
3. Present and gain input on potential impacts associated with the preferred alternative method(s) and seek input on potential planning and/or concept design refinements to minimize adverse environmental impacts in specific areas; and
4. Present those refinements that were incorporated into the preferred alternative method and concept design, and seek input on proposed design and implementation commitments and monitoring to be included in the Environmental Assessment Report prior to submission for formal review and approval.

Consultation at each of these stages will include contact with regulatory agencies, municipalities and the public. Consultation methods are described in the following sections.

7.3 Public Consultation

7.3.1 Notification

Implementation of the public consultation plan will require MTO to develop an initial contact list. Examples of individuals and groups that should be placed on a contact list include affected or interested environmental associations, ratepayer groups, recreational groups, agricultural groups and individuals who previously identified an interest in this study. The Consultation Database developed for this EA ToR will serve as a starting point for this list. Those listed in the Consultation Database will be notified of project activities including Study Commencement, Public Information Centres (PICs) and follow-up activities (as appropriate). Individuals and groups on the contact list will receive direct mailings notifying them of key milestones and structured opportunities for consultation. Additional notification methods include local and regional newspaper advertisements, posters located in high traffic public locations and advertisements posted on municipal and other stakeholder web sites. Information will also be posted on the project web site, www.407eastea.com. In addition, when a preferred alternative method has been identified, letters will be sent directly to all potentially affected landowners.

7.3.2 Toll-Free Phone Number

To ensure that all public stakeholders have access to the Project Team throughout the study, a toll-free number will be posted on the web site and advertised during PICs. Callers can leave a comment or ask a question and receive a response, generally within 48 business hours.

7.3.3 Web site

The Web site will advertise study events and give stakeholders easy access to documentation and information including study reports, maps, etc. A “contact us” section will be provided allowing stakeholders to e-mail comments and questions directly to the Project Team using a standard

form. The Web site address www.407eastea.com was used for the development of the ToR and will continue to be the project Web site during the preparation of the individual EA.

7.3.4 “Paper” Access Features – Mail, Fax and Comment Sheets

To ensure that all interested stakeholders, governments and agencies have sufficient options for providing comments, paper access in the form of letters, faxes and comment sheets from the Public Information Centres will be utilized.

7.3.5 Public Information Centres

One method to engage the public will be Public Information Centres that will be arranged as drop-in centres (open house format) to allow the public to review results, exchange information and ask one-on-one questions to the Project Team. It is proposed that a minimum of four rounds of PICs be held during the individual EA to coincide with the above noted planning stages. Each round of PICs will include four individual meetings held across Durham Region. The precise locations/venues of each PIC will be determined during the individual EA based on project needs/issues, input from municipalities and the availability of venues. The PICs serve an important function in providing an opportunity for members of the Project Team to ask questions of the public to gain further understanding of specific conditions, issues and concerns regarding the study.

PIC formats will be sufficiently flexible to allow the Project Team to actively engage the public throughout the various stages of the EA process. PIC formats could vary, and include presentations by the Project Team to assist the public in understanding technical issues, and/or workshops to allow for public input into key decision-making points during the study process.

7.3.6 Individual Meetings and Presentations to Stakeholder Organizations

Individual meetings and presentations to organized groups may be held to allow for informal discussions of any serious issues that may be identified during the study. Specific need for these types of meetings will be determined during the individual EA study.

7.3.7 Community Advisory Group (CAG)

Selected representatives of non-governmental organizations and resident/interest groups will form the CAG membership. A CAG was used during the development of the EA ToR and this group will continue to operate during the individual EA study. The mandate of this group will be to provide the Project Team with input, advice and local information that will be valuable for early identification and understanding of local environmental and community issues throughout the EA. The mandate, membership and operating procedures of the CAG will be further defined prior to reconstituting the CAG at the commencement of the individual EA.

A minimum of four CAG meetings will be held to coincide with the key study phases. Meetings will be facilitated and recorded to ensure efficient use of time and to maximize the effectiveness of recommendations to the Project Team. Summaries and recommendations will be made public on the project web site and available at the local project office.

7.4 Municipal Consultation

All municipalities in Durham Region will be consulted through all phases of the individual EA to obtain information on study area features, exchange pertinent study information and obtain input on project issues pertaining to each municipality. In addition, staff will be consulted to determine the appropriate method and timing for study team involvement with regional and local councils. In recognition of the impact that transportation improvements within Durham may have on adjacent communities to the north and east of the Region, it is suggested that the City of Toronto, York Region, City of Kawartha Lakes, Peterborough County and Northumberland County be included in the formal consultation process.

7.4.1 Municipal Technical Advisory Group (MTAG)

The Municipal Technical Advisory Group will include staff from municipalities within the Region of Durham. The representatives from MTAG established for the ToR will continue their role during the individual EA Study. Operating procedures of this group will be re-examined at the start-up of the individual EA. This group will provide input relating to municipal planning, transportation, environmental and other issues during the conduct of the individual EA. A minimum of four MTAG meetings will be held to coincide with the key study phases.

7.4.2 Presentations to Local and Regional Councils

Municipal and Regional councils are key stakeholders within the Environmental Assessment process. Presentations to councils and/or committees will be made on an “as requested basis” or as deemed necessary by MTO in consultation with Municipal/Regional staff.

7.4.3 Consultation with other Municipalities

It is recognized that municipalities outside of Durham may be directly or indirectly impacted as a result of changes to the transportation system in Durham. As a result, it is recommended that municipalities including, but not limited to, York Region, the City of Toronto, the City of Kawartha Lakes, Peterborough County and Northumberland County, be consulted from time to time, and when deemed necessary by the MTO Project Manager. To maintain flexibility in the process, it is suggested that the method of consultation could involve attendance of staff representing these municipalities at MTAG meetings, separate meetings with staff and Council, written communication or a combination of these techniques.

7.5 External Agency Consultation

Regulatory agencies provide valuable input by identifying compliance issues (laws, regulations, policies and programs) and other areas of concern within their jurisdictions. Provincial ministries as well as federal, provincial and municipal regulatory agencies will be asked to participate and comment throughout the process.

7.5.1 Regulatory Advisory Group (RAG)

Potentially affected provincial ministries, agencies, conservation authorities and federal departments will comprise the Regulatory Advisory Group. A RAG was utilized during the preparation of the EA ToR. The representatives from RAG established for the EA ToR will

continue their role during the individual EA Study. A minimum of four RAG meetings will be held to **coincide with the key study phases**. Additional meetings/discussions with individual regulatory agencies to address specific issues will be undertaken on an “as requested basis”.

7.6 First Nations

The Ontario Native Affairs Secretariat and Indian and Northern Affairs Canada have been contacted to review any First Nations presence within Durham Region. All potentially affected parties have been contacted to seek their interest in participating in a consultation process in the manner best suited to their needs. The First Nations Consultation Plan will be cooperatively developed during the individual EA study with any potentially affected groups that wish to participate in the individual EA study process.

7.7 Pre-Submission Review of the Draft Environmental Assessment Report

An Environmental Assessment (EA) Report will be prepared at the conclusion of the individual EA to document all phases of the study. At a minimum, the EA Report will document the need and justification for the undertaking, alternatives considered (alternatives to the undertaking and alternative methods), consultation undertaken, the recommended plan, environmental impacts and proposed mitigation measures associated with the recommended plan, a monitoring program and future commitments to be satisfied at subsequent design stages prior to implementation. Details regarding "Activities Following Approval of the individual EA" are provided in the supporting documentation, Document D.

A draft EA Report will be made available for municipal, regulatory agency, public and First Nations review prior to formal submission to the Ministry of the Environment (MOE). The purpose of the pre-submission review is to ensure accuracy of the report and to gain support for recommendations, mitigation plans and commitments. The documentation will be available at government offices, public libraries and on the project Web site.

Subsequent to the pre-submission review and incorporation of any comment received, the EA Report will be formally submitted to the Minister of the Environment for review and approval. MOE will then undertake a formal public and agency review process for the EA Report.

Ontario

Ministry of Transportation
Transportation Planning Branch

407 East

Environmental Assessment Terms of Reference -

Supporting Documentation

As amended November 29, 2004

"Ce document hautement spécialisé n'est disponsible qu'en anglais en vertue du règlement 411/97, qui en exempte l'application de la Loi sur les services en français. Pour obtenir de l'aide en français, veuillez communiquer avec le Ministère des Transports, Bureau des Services en Français au: 905-704-2045 ou 905-704-2046."

Ontario

Ministry of Transportation
Transportation Planning Branch

407 East

Environmental Assessment
Terms of Reference
Supporting Document A – Federal/Provincial Co-ordination

As amended November 29, 2004

"Ce document hautement spécialisé n'est disponsible qu'en anglais en vertue du règlement 411/97, qui en exempte l'application de la Loi sur les services en français. Pour obtenir de l'aide en français, veuillez communiquer avec le Ministère des Transports, Bureau des Services en Français au: 905-704-2045 ou 905-704-2046."

INFORMATION TO BE PROVIDED
FOR AN ENVIRONMENTAL ASSESSMENT
UNDER THE CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA)

Under *CEAA*, the following information needs to be provided in an environmental assessment conducted as a screening (paraphrasing):

- a description of the existing environment;
- any change the project may cause in the environment including: land, water, air, organic and inorganic matter, living organisms, and the interaction of natural systems;
- any effects that the project may cause to a listed wildlife species, its critical habitat or residences of individuals of that species, as those terms are defined in subsection 2(1) of the *Species at Risk Act*;
- the effects of a project-related environmental change on: health and socio-economic conditions; physical and cultural heritage; the current use of lands and resources for traditional purposes by aboriginal persons; and any structure, site or thing that is of historical, archeological, paleontological or architectural significance;
- any such project change or effect occurring both within or outside Canada;
- all environmental effects that may result from the various phases of the project (construction, operation, modification, abandonment and decommissioning);
- the environmental effects of accidents and malfunctions;
- the effects of the environment on the project (including effects due to climate change);
- the cumulative environmental effects of this project that are likely to result from the project in combination with other projects or activities that have been or will be carried out[1];
- the likelihood of significant adverse environmental effects;
- the need for and requirements of a follow-up program;
- comments from the public obtained in accordance with *CEAA*;
- any measures to be taken that would mitigate identified environmental effects;
- any other matter that the responsible authority deems to be necessary including those required for a comprehensive study, mediation or panel.

Additional factors to be considered for a comprehensive study, mediation or panel include:

- the purpose of the project;
- alternatives means of carrying out the project;
- design of a follow up program;
- the capacity of renewable resources affected by the project to meet the needs of the present and those of the future.

[1] For more information on cumulative effects assessment please refer to the Canadian Environmental Assessment Agency's operational policy statement on cumulative effects, http://www.ceaa-acee.gc.ca/013/0002/cea_ops_e.htm

If the decommissioning and abandonment phases are not currently part of the proposed project, the proponent may explain this in its EA document, and the responsible authority under *CEAA* may decide not to require further analysis on these phases of the project as part of the current assessment.

Nothing in this document will limit the prerogative of federal authorities to seek additional information as more is learned about the specifics of the projects and its potential effects. Responsible authorities will be making a judgment about the likelihood of significant adverse environmental effects after mitigation, and they have the discretion to determine what information they require before making such a judgment.

Federal/Provincial Coordination Process for Individual EAs/Screenings
Key Steps

EA Terms of Reference stage

Individual Environmental Assessment stage

ToR Approval

"Alternatives To"

Alternative Methods

Preferred Method
(undertaking/project)

EA Decision

Selection of Preferred "Alternative To"

Selection of Preferred Method

Proponent to:
- **Contact MOE and Agency regarding initiation of EA ToR**
- **Provide a preliminary schedule for the submission of ToR and commencement of EA**
- **Provide a copy of draft ToR**

MOE to:
- **Provide ToR guidance to the proponent**
- **Liaise with the CEA Agency**
- **Establish Government Review Team**
- **Act as lead coordinator for formal comments (assumes MOE is lead party for fed/prov EA coordination)**

CEA Agency to:
- **Act as FEAC**
- **Provide advice to proponent through MOE**
- **Contact FA(s) with likely interest**
- **Liaise with MOE**

Proponent to:
- **Provide study area**
- **Provide Project Description**

CEA Agency to:
- **distribute project description to likely RA(s) and expert FA(s)**
- **establish federal project committee**
- **Coordinate involvement of RA(s) and expert FA(s)**

RA(s) to:
Provide guidance on:
- **Intention on scope (where possible)**
- **Information they may require to assess environmental effects**

Proponent to:
- **Provide additional information as required by RA(s)**
- **Provide draft EA for review**
- **Provide final EA**

MOE to:
- **Act as lead coordinator for formal comments**
- **Carry out technical review of EA**

CEA Agency to:
- **coordinate federal review of the draft and final EAs**

RA(s) to:
- **Formally trigger CEAA**
- **Provide scope of project and scope of assessment**
- Review and comment on draft and final EA Reports

MOE to:
- **Minister makes decision on EA**

RA(s) to:
- **Make decision on likelihood of significant adverse environmental effects**
- **Make decision on follow-up**

CEA Agency and MOE to:
- **Coordinate timing of decision-making and form of announcement**

Coordination begins

Federal authorities actively engaged
Consultation with federal authorities to ensure information requirements satisfactorily addressed

Public and agency consultation as required

May 2004

Ontario

Ministry of Transportation
Transportation Planning Branch

407 East

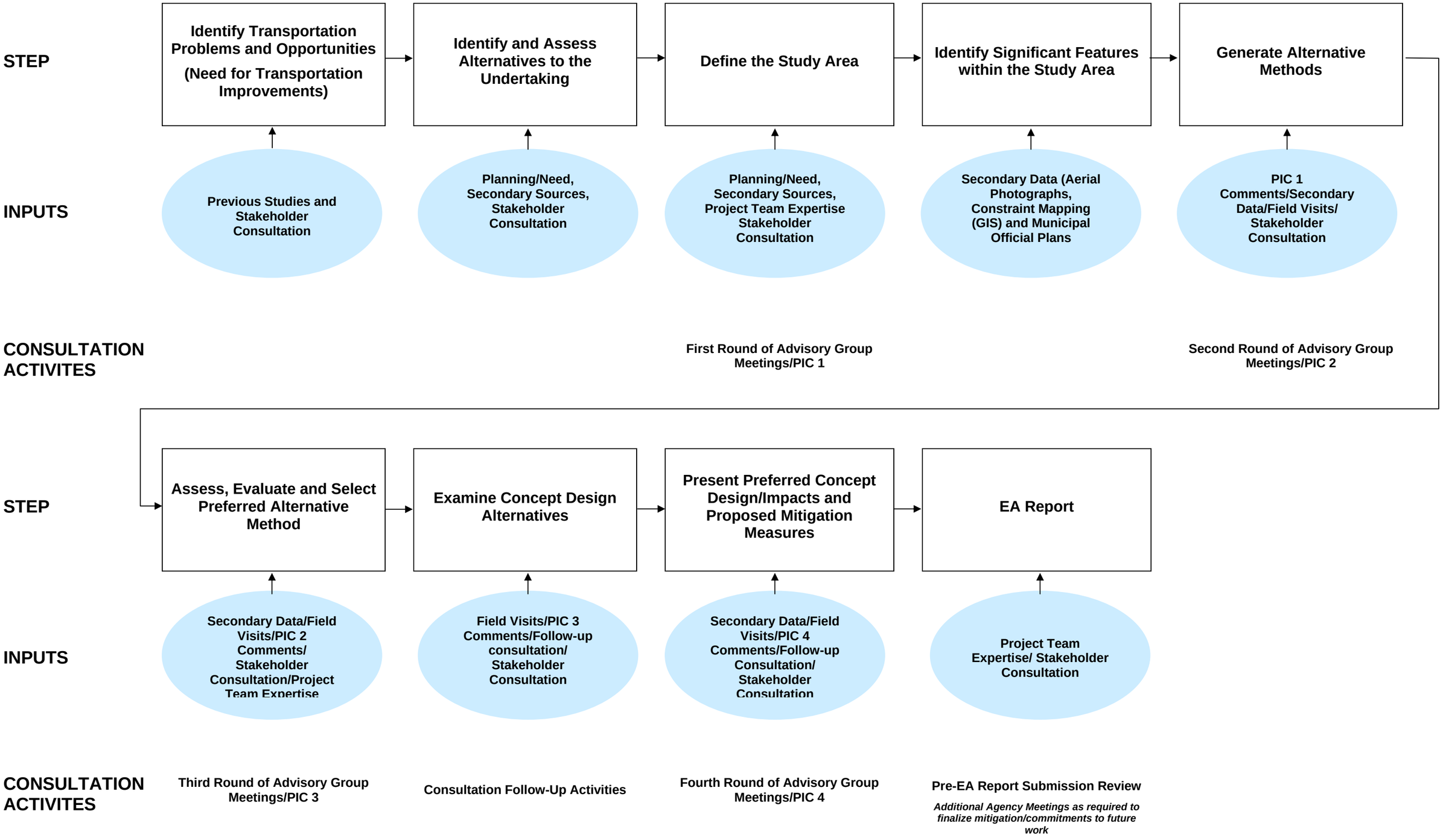
Environmental Assessment
Terms of Reference

Supporting Document B –

Individual EA Study Process & Schedule

November 29, 2004

"Ce document hautement spécialisé n'est disponsible qu'en anglais en vertue du règlement 411/97, qui en exempte l'application de la Loi sur les services en français. Pour obtenir de l'aide en français, veuillez communiquer avec le Ministère des Transports, Bureau des Services en Français au: 905-704-2045 ou 905-704-2046."



Proposed 407 East Individual EA Study Process

Note: Various interim documents will be developed for consultation purposes. Specific deliverables will be determined during the Individual EA.

PROPOSED INDIVIDUAL EA STUDY SCHEDULE

Task Description	2004				2005												2006											
	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Submit EA Terms of Reference to Minister of the Environment	★																											
Terms of Reference Review (MOE)		▬	▬	▬																								
Transportation Planning/Need					▬																							
Identify and Assess Alternatives to the Undertaking						▬																						
Selection of Preferred Alternative to the Undertaking							▬																					
Identification of EA Study Area							▬																					
Formal Consultation Round #1								▬																				
Existing Conditions							▬	▬	▬	▬	▬	▬	▬															
Generate Preliminary Alternative Methods								▬	▬	▬																		
Develop Preliminary Assessment factors/criteria/measures											▬	▬																
Develop Preliminary Evaluation Methodology											▬	▬																
Formal Consultation Round #2													▬															
Assessment and Evaluation of Alternative Methods													▬	▬	▬													
Identification of Preferred Alternative Method																▬	▬											
Formal Consultation Round #3																		▬										
Refinements/Mitigation																		▬	▬	▬								
Generate Concept Design Alternatives																			▬	▬	▬							
Assessment and Evaluation of Concept Design Alternatives																				▬	▬	▬						
Identification of Preferred Concept Design																						▬						
Formal Consultation Round #4																							▬					
Preparation of EA Report																						▬	▬	▬	▬	▬		
Submit EA Report to Ministry of Environment																												★

407 EAST EA TERMS OF REFERENCE
PROPOSED EA STUDY SCHEDULE

Ontario

Ministry of Transportation
Transportation Planning Branch

407 East

Environmental Assessment Terms of Reference *Supporting Document C – Criteria for Evaluating Alternative Methods*

As amended November 29, 2004

"Ce document hautement spécialisé n'est disponsible qu'en anglais en vertue du règlement 411/97, qui en exempte l'application de la Loi sur les services en français. Pour obtenir de l'aide en français, veuillez communiquer avec le Ministère des Transports, Bureau des Services en Français au: 905-704-2045 ou 905-704-2046."

Env. Factor/Criteria	Indicators	Data Source	Measures
NATURAL ENVIRONMENT			
Groundwater	1. Effect on groundwater recharge areas 2. Effect on groundwater discharge or flowpath. 3. Municipal and private water supply wells within 500 m of the alternative 4. Changes to groundwater quality	• Use existing information to determine areas of high water table, areas of groundwater discharge, areas of high groundwater overburden permeability and location and usage of private and municipal wells • Information gathered in previous Environmental Assessment studies (1989-1994) • MOE well records • York-Peel-Durham-Toronto Groundwater Study	1. Area (m^2) of the alternative crossing areas potentially sensitive to groundwater contamination or alteration (e.g. high water table, high permeability soils). 2. Number of locations where the alternative crosses identified/requires deep road cuts that could intercept/interfere with groundwater 3. Number and type of wells (such as Municipal, private, shallow [<15 m] based on MOE well records and any additional information on wells 4. Qualitative assessment of changes to groundwater quality
Surface Water Quality and Quantity	5. Watercourse crossings (permanent and ephemeral). 6. Crossings or encroachment on floodplain or meander belts 7. Riparian Areas crossed or encroached upon 8. Encroachment on sensitive headwaters areas 9. Impacts to surface water quality 10. Channel alterations anticipated. 11. Implications for watercourse management programs	• 1:50 000 topographic maps; air photos • 1:10 000 base maps • MOE, Conservation Authorities, interest groups, municipal government • CA floodplain mapping • Watershed and Subwatershed studies • Information gathered in previous Environmental Assessment studies (1989-1994) • Lakewide Management Plans (Lake Ontario) • Canadian Water Quality Guidelines for the Protection of Aquatic Life • Provincial Water Quality Objectives of the Ministry of the Environment • Ontario Drinking Water Objectives • Protection and Management of Aquatic Sediment Quality in Ontario • Fill Quality Guidelines for Lakefilling in Ontario	***5.*** Number of watercourse crossings (permanent and ephemeral– see definitions under ***Fisheries and Aquatic habitat).*** 6. Area (m^2) of floodplain crossed. 7. Area (m^2) of reparian areas crossed or encroached upon by the alternative 8. Area (m^2) of headwater area crossed by the alternative, considering the significance and sensitivity of the headwater areas affected. 9. Potential of alteration of stream water quality by runoff from hard surfaces considering sensitivity of the watercourse and potential to mitigate or improve existing conditions 10. Number and area (m^2) of waterbodies (permanent and ephemeral) where channel alteration/realignment or filling may be required. 11. Number and nature (such as MOE, Conservation Authority, interest group, municipal) of watercourse management or other environmental resource programs identified and potentially affected by the alternative.
Fisheries and Aquatic Habitat	12. Coldwater fishery crossings 13. Warm water fishery crossings 14. Riparian vegetation removal. 15. Loss of or encroachment on habitat of known species of conservation concern or Species At Risk of specialized, critical and/or limiting fish habitat 16. Areas of specialized, critical and / or limiting fish habitat 17. Implications on habitat rehabilitation programs or long term management goals	• Existing information gathered during the ToR will be supplemented with information from MNR, Conservation Authorities, Interest Groups, public consultation, municipalities • Information gathered in previous Environmental Assessment studies (1989-1994) • Existing fish community and habitat mapping collected for 407 EA 2001 • 1:10 000 base mapping • MNR (Natural Resource Values Inventory Systems (NRVIS) mapping • Air photos • Reconnaissance data from Terms of Reference supplemented by site specific field reconnaissance • NHIC • Watershed and subwatershed studies http://www.sararegistry.gc.ca/species/default_e.cfm http://www.on.ec.gc.ca/wildlife/sar/sar-e.html • Species at Risk Recovery Plans and Management Guidelines, Fisheries Management Plans	12. Number of times the alternative crosses a coldwater or potential coldwater fisheries watercourse as defined by MNR, CA, and/or field observations. Wetlands identified by the agencies as providing or supporting such a fishery and crossed by the alignment will be included in the crossing totals. 13. Number of times the alternative crosses a warmwater or potential warmwater fisheries watercourse as defined by MNR, CA, and/or field observations. Wetlands identified by the agencies as providing or supporting such a fishery and crossed by the alignment will be included in the crossing totals. 14. Area (m^2) and nature of riparian vegetation affected by the alternative footprint, where riparian vegetation is defined as part of or on the bank of the watercourse 15. Qualitative assessment based on the number of waterbodies crossed providing documented known or potential habitat for species of conservation concern or Species At Risk as identified by MNR, CA, or other resource groups. Field observations of habitat conditions in identified areas will also be used to supplement this assessment where required. 16. Number of watercourses with migratory fish runs (coldwater or warmwater) identified by resource agencies/groups that are crossed by the alternative. 17. Number and nature (such as MNR, CA, interest group, municipal) of watercourse fisheries rehabilitation programs identified and potentially affected by the alternative, as well as opportunities to correct existing problems through the implementation of the project.
Vegetation	18. Degree of encroachment on or severance of woodlots/forest areas/upland vegetation units. 19. Significant flora/communities 20. Implications on forest management/research programs 21. Loss of encroachment on habitat of known species of conservation concern or species at risk 22. Effect on total cover in watershed	• Identify vegetation units through air photo interpretation • Information gathered in previous Environmental Assessment studies (1989-1994) • 1:10 000 base mapping and topographic mapping • Field assessment of habitat types and significance/quality in areas of particular interest or where data gaps exist • Existing information from NHIC, naturalist clubs, public consultation, consultant reports • Species at Risk Recovery Plans	18. Number and area of woodlots/forest habitat crossed by the alternative (excluding riparian areas). Degree of impact (increased edge or fragmentation, and loss of interior forest habitat and to patch size) is also summarized for the alternative. 19. Potential effect on significant flora/communities based on the number of documented sites either severed, encroached on, or within 50 m of the alternative (adjacent land area within which direct impacts might be expected). 20. Number and nature (such as MNR, Woodlot Improvement Act, plantation, research plots) of forest management and/or research sites that have been identified and that are potentially affected by the alternative (intrusion or within 50 m of the management area). 21. Measure to be developed 22. Measure to be developed
Wetlands	23. Loss or alteration of Provincially or locally significant wetland area and function (e.g. connectivity, hydrology). 24. Loss or alteration of unevaluated wetland area and function.	• Information gathered in previous Environmental Assessment studies (1989-1994) • Use existing wetland mapping from the Terms of Reference (MNR Source) • Field assessment of habitat types and significance/quality • Existing information residing with MNR, Conservation Authorities, NHIC, local field naturalists	23. Area (m^2) of Provincially or Locally Significant Wetland and adjacent lands crossed by the alternative and identifies the PSW complexes affected. Adjacent lands are those lands within 120m of an individual wetland or individual wetland within a wetland complex. 24. Area (m^2) of unevaluated wetlands, identified according to ELC and which have an area >0.5ha crossed by the alternative - Potential alteration of ground and/or surface water quantity and patterns - Potential alteration of ground and/or surface water quality - Potential alteration of linkages with upland habitats

Note: Evaluation factors, criteria and indicators are subject to refinement and modification during the individual EA based on study findings and input received from stakeholders.

Env. Factor/Criteria	Indicators	Data Source	Measures
Wildlife	25. Loss of Wildlife 26. Effects of noise on wildlife. 27. Encroachment on, severance of, or loss of important or ecologically functional wildlife habitat areas 28. Loss of or encroachment on habitat/occurrence of known species of conservation concern or Species At Risk 29. Impacts to wildlife movement corridors	• Air photos • Information gathered in previous Environmental Assessment studies (1989-1994) • 1:10 000 base mapping • MNR NRVIS mapping • Field inventories breeding birds, amphibians and species at risk • Existing information from the Breeding Bird Atlas, NHIC • Existing or ongoing research being conducted in the area (breeding bird surveys, herptiles; Bird Studies Canada) • Consultation, consultation with interest groups, Provincial Parks, Conservation Authorities • Scientific literature http://www.sararegistry.gc.ca/species/default_e.cfm http://www.on.ec.gc.ca/wildlife/sar/sar-e.html • Species at Risk Recovery Plans	25. Area (m^2) of wildlife habitat removed by an alternative. 26. Distance that known or area sensitive wildlife habitats are from the alternative and the potential to have noise impacts 27. Area (m^2) of wildlife habitat (e.g., area sensitive, breeding pools, specialized habitat types, known breeding areas, deer yards etc) affected by the alternative. 28. Number and area (m^2) of habitat areas supporting documented presence of species of concern or Species At Risk that are either encroached upon, lost, severed by or within 50 m of the alternative. 29. Measure to be developed
Environmentally Significant Features	30. Loss of, or encroachment on identified ESAs and ANSIs.	• Existing information ESA reports, ANSI reports collected during the Terms of Reference from MNR, Conservation Authorities, NHIC • Field surveys to verify area boundaries	30. Degree to which access to, encroachment on, loss or severance of identified Environmentally Sensitive/Significant Areas (ESAs) and provincially significant Areas of Natural and Scientific Interest (ANSIs) is impacted by the alternative.
Landscape Connectivity	31. Severance, encroachment on, or interruption of linkages between natural heritage areas or tablelands 32. Severance, encroachment on, or interruption of linkages between natural heritage areas in valleylands 33. Severance, encroachment on, or interruption of linkages between tablelands and valleylands	• Aerial Photographs • Existing natural heritage information • 1:10 000 base mapping • MNR NRVIS mapping • Consultation with interest groups, Conservation Authorities, Ministry of Natural Resources	31. Measure to be developed. 32. Encroachment on, interruption, or severance of functional wildlife movement corridors through valleylands. Regional and local corridors will be identified. 33. Measure to be developed.
Special Spaces	34. Implications on special spaces. (e.g. Oak Ridges Moraine). Compatibility with the Oak Ridges Moraine Conservation Plan.	• Existing official plans, local or regional policy pertaining to development activities within Durham Region. • Oak Ridges Moraine Conservation Plan and supporting documentation from MNR and MOE • Consultation with the Province and municipal governments.	34. Measures the degree of access to, encroachment on, loss or severance of identified special spaces (including Oak Ridges Moraine, Lake Iroquois Shoreline, urban separators, major open space lands, and Conservation Areas).
Air Quality	35. Separation distance to sensitive receptors	• 1:10 000 Ontario base maps • Alternative locations • Aerial photographs	35. Number of sensitive receptors within the predicted concentration separation distance, including homes, institutional uses and businesses.
SOCIAL ENVIRONMENT			
Noise	1. Effect on noise sensitive receptors (NSAs as defined in the MTO/MOE Protocol):	• Aerial Photographs • Municipal land use information • 1:50,000 or 1:25,000 topographic maps • 1:10,000 Ontario Base Maps • Traffic data • Public consultation • Municipal By-laws • Engineering Drawings • Field Monitoring / Measurements	1. Effect on noise sensitive receivers (NSAs as defined in the MTO/MOE Protocol): - Qualitative assessment to determine the study area - Qualitative assessment of the number of existing and proposed residential developments to determine noise sensitive areas - Quantitative and qualitative analysis to determine ambient sound levels - Quantitative analysis to determine future “no-build” and future “build” sound levels - Quantitative analysis to predict noise impacts between future “nobuild” and future “build” - Quantitative and analysis of noise mitigation requirements - Quantitative and analysis of construction noise and vibration impacts

Env. Factor/Criteria	Indicators	Data Source	Measures
Community Fabric	2. Encroachment on or severance of established and/or proposed settlement areas. 3. Likely effects on planned/ approved community structure, as may be identified or proposed in provincial land use policies and/or regional official plans, within and east of the study area. 4. Delivery of community services (emergency, school bus). 5. Urban or rural barrier effects.	• Information gathered in previous Environmental Assessment studies (1989-1994) • Existing land use mapping and Regional and Local Official Plan will be used as the source to determine where the alternative creates these barriers. • Regional and Local Official Plans and existing Land Use Maps (as compiled through windshield surveys and/or air photo interpretation).	2. Qualitative assessment based on the number of settlement areas severed, the extent to which the alternative encroaches upon the area, and whether or not the settlement area is existing (built) or proposed (not yet built, but designated in the Official Plan), will all be considered. 3. Qualitative assessment of the extent to which the alternative would be compatible with the approved urban structure, as set out in the Local and Regional Official Plan and supplemented by interviews with Regional staff and a planning analysis. 4. Qualitative assessment based on the ability to efficiently and safely provide an alternative route for services, such as school buses, ambulances and fire trucks. 5. Qualitative assessment based on the extent to which the alternative creates physical and psychological barriers between and within communities.
Recreational Opportunities	6. Effect on hiking, hunting, fishing, nature viewing and educational opportunities	• Ministry of Natural Resources	6. Loss of hunting opportunities; loss of nature-related recreational opportunities, such as, hiking, nature viewing and education.
Property Impacts	7. Residential, commercial, industrial, institutional and recreational property effects: • Full removal • Frontage • Backlot • Severance • Loss of Access	• Information gathered in previous Environmental Assessment studies (1989-1994) • Site visits and interviews with residents potentially displaced. • Land use surveys • Windshield surveys • Municipal mapping and regional land use plans • Air photos • MPAC files • Conservation Authorities • MNR	7. Number of properties displaced for each of the land use types impacted and the area (ha.) of property required for each. Type of impact will also be determined for each of the land uses, which include: - Full removal - Frontage - Backlot - Severance - Loss of Access
Traffic Nuisance	8. Potential for diversion of longer distance travel to/from local roadways	• Traffic volume projections from Region of Durham and local municipalities.	8. Level of traffic infiltration experienced in adjacent areas (volumes)
Visual Aesthetics	9. Total aesthetic value of visibly accessible landscape components. 10. Total scenic value based on composition, arrangement and sequence of landscape components. 11. Total potential visual impact on sensitive viewer groups based on sensitivity, proximity and frequency of viewer groups.	• Windshield surveys • Site visits • Interviews with business owners/operators	9. Qualitative assessment based on the number of positive and negative aesthetic elements as well as the quantity and quality of natural and man-made features. 10. Qualitative assessment of variety, accessibility and composition of views/vistas from the alternative. 11. Quantitative assessment of number of residences affected by a negative visual impact
Light	12. Effect on light sensitive receptors	• To be identified during the individual EA	12. Measure to be developed

Note: Evaluation factors, criteria and indicators are subject to refinement and modification during the individual EA based on study findings and input received from stakeholders.

Env. Factor/Criteria	Indicators	Data Source	Measures
ECONOMIC ENVIRONMENT			
Provincial/Municipal/ Private Land Use Development Strategies	1. Degree of compatibility with municipal and regional development goals and objectives. 2. Capability to provide transportation service/stimulate development of major development initiatives (Seaton, Pickering Airport). 3. Compatibility with federal/provincial/municipal planning goals/objectives/policies, including principles and policy directions under development in the proposed Greater Golden Horseshoe Growth Plan and proposed Greenbelt Plan, the proposed Watershed based Source Protection Planning and the proposed GTA Transportation Strategy 4. Effects on approved private development proposals.	• Provincial, municipal land use plans • Federal/provincial land use goals, objectives, policies and Policy Statements • Current land use proposals • Public consultation • Municipal zoning by-laws • Land Use Management Plans • Oak Ridges Moraine Conservation Plan, land use mapping • Municipal and Agency consultation	1. Qualitative assessment of the compatibility of the project with approved land use policies based on Regional and Local Official Plans, current proposals and interviews with key stakeholders. 2. Qualitative assessment of the alternative's ability to provide transportation services and stimulate planned and projected growth based on approved land use policies, current proposals and interviews with key stakeholders. 3. Qualitative assessment based on compatibility with other Provincial /Federal Planning goals/objectives/policies including those which have not been formally incorporated into the planning process as Policy Statements or other legislation. 4. Qualitative assessment of the potential effect of the alternative on approved, but not constructed, private development proposals based on interviews with key stakeholders. \
Non-Farm Commercial Activities	5. . Businesses displaced. 6. Businesses with access affected. 7. Number of employees working for businesses displaced within the right-of-way. 8. Changes (+/-) in business exposure. 9. Construction impacts on businesses	• Public consultation • Land use plans • Interviews with business owners/operators • Municipal mapping • MPAC files	5. Quantitative assessment of number of businesses within the property/ right-of-way displaced based on land use information. The analysis to include un-built approved facilities and businesses on farms 6. Qualitative analysis of the impacts of changed accessibility to businesses, both positive and negative. The qualitative assessment of negative impacts will be based on loss of access to and within a property or changes necessary to retain access to a property. The analysis to include un-built approved facilities and to be based on land use information and interviews if needed. 7. Number of employees displaced. 8. Qualitative assessment based on improved/reduced visibility of a business due to its proximity to the new alternative based on interviews or information obtained from local sources. **9.** Quantitative and qualitative analysis of the number and types of businesses affected by construction in terms of access, dust, noise and other similar activities based on interviews or information obtained from local sources (quantitative analysis).
Mineral Aggregate Resources	10. Effect on licensed aggregate resource facilities. 11. Effect on aggregate resource areas.	• Information gathered in previous Environmental Assessment studies (1989-1994) • Ministry of Northern Development and Mines (MNDM) mapping and data on current value of resource • Official plans • Surficial Geology mapping; soils mapping	10. Degree of access to, or encroachment on existing licensed aggregate resource operations. The number of directly or indirectly (within 50m) affected sites are counted for the alternative. 11. Degree of access to, encroachment on or severance of primary and secondary aggregate resource areas that have been identified and mapped by Ministry of Northern Development and Mines (MNDM). The number of directly or indirectly (within 50 m) affected sites are counted for the alternative.

Env. Factor/Criteria	Indicators	Data Source	Measures
Agriculture	12. Removal or sterilization of Class 1-3 agricultural land(s) 13. Specialty crops/cropland affected. 14. Dairy/livestock operations affected. 15. Field crop operations affected. 16. Farm properties greater than 20 ha affected. 17. Severed parcels greater than 20 ha affected. 18. Severed parcels less than 20 ha affected. 19. High investment operations affected. 20. Farm equipment Transportation routes affected. 21. Division of agricultural community areas	• Information gathered in previous Environmental Assessment studies (1989-1994) • Canada Land Inventory mapping (1:50 000) will be used to identify capability ratings of soils within the study area. • Terms of Reference Study • OMAF land use mapping • Windshield surveys • Air photo interpretation • Public consultation • Municipal mapping • Individual Property Assessment	12. Area (m2) of affected Class 1-3 land removed by the alternative. 13. Number of specialty crop operations affected by the alternative. 14. Direct count of separate operations impacted by the alternative as well land potentially impacted or lost from production. 15. Number of individual field crop operations that will be impacted by the alternative as well as the areas of land impacted or lost from farming production. 16. Number of properties greater than 20 ha impacted by the alternative. 17. Number of parcels greater than 20 ha that are severed from farm property by the alternative. 18. Number of parcels smaller than 20 ha that are severed from farm property by the alternative. 19. Number of high capital investment operations crossed by the alternative. 20. Number of disturbances to inter-property movements and property/market movements that may be interrupted by the alternative. 21. Impact of the alternative on agricultural communities.
Property Contamination	22. Encroachment on, or disturbance of commercial/industrial properties in urban areas. 23. Encroachment on, or disturbance of isolated pockets of commercial/industrial properties and service stations in rural areas.	• Field Reconnaissance • Historical Plans • MOE Waste Generator Database • MOE PCB Storage Site Database • MOE Waste Disposal Site Inventory • Technical Standards & Safety Authority • Aerial Photographs • Municipal Directories • Municipal Assessment Maps • OBM and NTS Mapping • Soils, Hydrogeological and Geological Maps • Libraries • Historical Archives • Land Registry Offices	22. Identify the number and size of commercial/industrial areas affected in urban areas considering the significance of each of the properties with respect to potential site contamination (i.e., low, moderate or high potential) based on current and historical land use; and visual evidence of potential site contamination such as surface staining, waste piles/debris and storage drums and tanks. 23. Identify the number and size of commercial/industrial areas affected in rural areas considering the significance of each of the properties with respect to potential site contamination (i.e., low, moderate or high potential) based on current and historical land use; and visual evidence of potential site contamination such as surface staining, waste piles/debris and storage drums and tanks.
Waste Management	24. Encroachment on, or disturbance of operating and closed waste disposal sites.	• Field Reconnaissance • Historical Plans • MOE Waste Generator Database • MOE PCB Storage Site Database • MOE Waste Disposal Site Inventory • Technical Standards & Safety Authority • Aerial Photographs • Municipal Directories • Municipal Assessment Maps • OBM and NTS Mapping • Soils, Hydrogeological and Geological Maps • Libraries • Historical Archives • Land Registry Offices	24. Identify the number and size of closed and operating waste disposal sites in proximity to the alternative, considering the significance of each of the properties with respect to potential site contamination (i.e., low, moderate or high potential). This will be based on current and historical land use; and visual evidence of potential site contamination such as surface staining, waste piles/debris and storage drums and tanks.

Env. Factor/Criteria	Indicators	Data Source	Measures
CULTURAL ENVIRONMENT			
Archaeological Features	1. Disturbance or destruction of known significant archaeological sites 2. Disturbance of areas of archaeological potential	• Ontario Ministry of Culture (Ontario Archaeological Sites Database) • Archaeological/heritage studies and reports • Historic mapping • Other published and unpublished archaeological literature, as appropriate • Topographic maps • Field review as appropriate • Local museums • Other local informants as appropriate • First Nation groups	1. Number of known sites in within or proximate to the alternative a) Type of sites b) Significance of sites c) Proximity of known archaeological sites 2. Number of sites with Archaeological potential, within or proximate to the alternative determined by: d) Proximity of water sources e) Historic land use f) Other physiographic indicators of archaeological potential
Built Heritage Features	3. Displacement or disruption of built heritage features	• Historical mapping, photographs, municipal, provincial and federal inventories, listings and plaques and/or heritage reports and designations of National Historic Sites and under the Ontario Heritage. • Windshield survey of the study area. • Consultation with municipal and regional heritage planning staff or designates, municipal heritage committees, historical societies and other heritage groups as necessary. • Consultation with Ministry of Culture.	3. Number of built heritage features displaced or disrupted within the property (or ROW) assessed for significance or importance and sensitivity.
Cultural Landscape Units	4. Displacement or disruption of cultural landscape features 5. Significance of displaced or disrupted cultural landscape features	• Historical mapping, photographs, municipal, provincial and federal inventories, listings and plaques and/or heritage reports and designations of National Historic Sites and under the Ontario Heritage. • Windshield survey of the study area. • Consultation with municipal and regional heritage planning staff or designates, municipal heritage committees, historical societies and other heritage groups as necessary. • Consultation with Ministry of Culture.	4. Number of cultural landscape features displaced or disrupted, adjacent to or within the property assessed for significance or importance and sensitivity. 5. Qualitative assessment of the significance of cultural landscape features that are displaced or disrupted.
TECHNICAL CONSIDERATIONS			
Technology	1. Flexibility of solution to accommodate a range of alternative technologies	▪ Design standards and policies of federal, provincial and municipal governments.	1. Degree of flexibility to accommodate a alternative technologies (Low, Medium, High)
Overall Transportation System Performance	2. Average System travel time/speed and total trips in peak period	▪ Travel Demand Forecasting Model results	2. Measures: - Average Travel Time/Speed on the transportation system - Total number of trips made on system - Screenline volume/capacity (2021, 2031)
Transportation System Compatibility	3. Compatibility of each alternative with the existing/proposed transportation system and the ability to meet future needs.	• Durham Transportation Master Plan • Durham Transit Improvement Plan • GO Transit Expansion Plans • Greater Toronto Area Airport Authority Expansion Plans	3. Measures: - Qualitative effect on travel performance on parallel/crossing system links - Person-kilometres of travel - Percentage of system over capacity
Transportation System Connectivity	4. Ability of each alternative to support or connect to existing or proposed travel modes	• Federal, provincial, GO Transit and municipal studies and reports regarding existing and proposed transportation system improvements	4. Measures: - Number of possible connection nodes between alternative and other modes (existing) - Number of possible connection nodes between alternative and other modes (planned)
Screenline Performance	5. Ability of each alternative to meet screenline demand	• Travel Demand Forecasting Model results	5. Screenline volume to capacity ratio (v/c) in peak hour(s) in 2031
Critical Link Performance	6. Levels of congestion (volume/capacity ratio) at select locations associated with each alternative	• Travel Demand Forecasting Model Results	6. Link volume to capacity ratio (v/c) in peak hour(s) in 2031

Note: Evaluation factors, criteria and indicators are subject to refinement and modification during the individual EA based on study findings and input received from stakeholders.

Env. Factor/Criteria	Indicators	Data Source	Measures
Design Criteria	7. Compliance with appropriate design criteria	▪ Federal, provincial and municipal government design criteria	7. Degree of compliance with design criteria (Low, Medium, High)
Accessibility	8. Accessibility of alternative to population and employment centres	▪ Official Plans ▪ Base Mapping ▪ Aerial Photography	8. Qualitative measure of proximity of alternative to trip origin/destinations
Emergency Access	9. Impact of alternative on emergency access to adjacent lands	▪ Emergency Services locations (ambulance stations, hospitals, etc) ▪ Base mapping	9. Qualitative impact of chance in emergency access/routing
Flexibility for Future Expansion	10. Flexibility for future expansion	• Existing and planning future transportation system • Constraints Mapping • Base Mapping • Aerial Photography	10. Degree of flexibility for future expansion (none, moderate, full)

Cost	11. Examines the short and long term costs associated with each alternative	• MTO, Region and Municipal data on:
		  • Unit costs for construction
		  • Unit costs for operation
		  • Life-Cycle maintenance costs
		  • Property cost estimates
			11. Costs:
			  - Construction
			  - Operation
			  - Maintenance

Note: Evaluation factors, criteria and indicators are subject to refinement and modification during the individual EA based on study findings and input received from stakeholders.

Ontario

Ministry of Transportation
Transportation Planning Branch

407 East

Environmental Assessment
Terms of Reference
Supporting Document D – Activities following Approval of the Individual EA

As amended November 29, 2004

"Ce document hautement spécialisé n'est disponsible qu'en anglais en vertue du règlement 411/97, qui en exempte l'application de la Loi sur les services en français. Pour obtenir de l'aide en français, veuillez communiquer avec le Ministère des Transports, Bureau des Services en Français au: 905-704-2045 ou 905-704-2046."

Activities Following Approval of the Individual EA

When the individual EA is approved, Class Environmental Assessment/Preliminary Design and subsequently Detail Design studies will be undertaken for the preferred alternative. These studies will be subject to the requirements of the EA Report and any conditions of approval and monitoring requirements, as noted in Section 6.0 of the EA TOR.

Specific environmental protection measures for construction, operations, and maintenance will be further developed in consultation with potentially affected stakeholders. Environmental documentation will be prepared at future design stages to document the preliminary, potential environmental impacts and measures for reducing project impacts.

During detailed design, the preliminary design is further refined to develop detailed construction drawings and specifications. At this stage, the proponent generates, assesses, and evaluates detailed design alternatives and determines specifically how the proposed transportation solution will look. This is where the details of specific environmental protection measures are put onto design drawings and into construction contract documents. The design and specifications / provisions included therein will reflect the environmental commitments and mitigation carried forward during preliminary design and finalized in the detail design stage. Additional environmental investigations and consultation will occur during this detail design stage to address agency concerns, public issues and obtain relevant approvals.

Other Approvals Required

It is recognized that a number of approvals may be required for this project. Consultation with approval agencies undertaken during the Individual EA will have identified approval requirements to ensure that approvals are ultimately obtainable. As details proceed, the specific nature of impacts are refined and as a result the need for the approvals will be confirmed along with submission requirements, timing and co-ordination among permitting agencies. Potential permits/approvals/authorizations and agreements required include but are not limited to the following:

- Navigable Waters Protection Act Approval (Federal Government)
- Fisheries Act Approval (Federal Government)
- Ontarians with Disabilities Act
- Ontario Water Resources Act
-
- Canadian Environmental Quality Guidelines
- Environmental Protection Act
- Canada Transportation Act
- Lakes and Rivers Improvement Act
- Public Lands Act
- Endangered Species Act/Species At Risk Act
- Migratory Birds Conservation Act

407 East
Environmental Assessment Terms of Reference

- Canada Wildlife Act
- Agreements with local utilities
- Railway Crossing Agreement
- Hydro Construction Agreements (Hydro One Networks)
- TransCanada Pipeline Crossing Permit
- Inter-Provincial Pipeline Crossing Permit
- Conservation Authority Fill/Alteration to Waterbody Permit
- Other agency approvals as required