



Ministry of Transportation

# Highway 7&8 Transportation Corridor Planning and Class EA Study

Greater Stratford to New Hamburg Area  
MTO Group Work Project # 13-00-00

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Report G: Working Paper – Generation of Detailed  
Planning Alternatives for Provincial Roadways

**DRAFT**

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July, 2009

[www.7and8corridorstudy.ca](http://www.7and8corridorstudy.ca)

This report is presented in draft format in order to obtain information and comments from stakeholders. Your input is requested by September 30, 2009 so the report can be finalized.

**AECOM**

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## 1.0 INTRODUCTION

### 1.1 Introduction to the Highway 7&8 Transportation Corridor Planning and Class EA Study

The Ministry of Transportation (MTO) is undertaking a Highway 7&8 Transportation Corridor Planning and Class Environmental Assessment (Class EA) Study, from Greater Stratford to New Hamburg area. The study will:

- develop a plan that addresses:
  - capacity, operation and safety needs along the 2-lane and 4-lane sections of Highway 7&8 between Stratford and the New Hamburg area and through the urban centres (Stratford, Shakespeare and New Hamburg) along Highway 7&8 for the movement of people and goods; and
  - linkage needs between the analysis area and transportation corridors serving other regions in the province.
- prepare a preliminary design for the provincial roadway components of that plan; and
- be documented in a Transportation Environmental Study Report for public review at study completion.

This study will also:

- review and build on the findings of the MTO Highway 7&8 Study Design – Greater Stratford to New Hamburg Area, December 2005;
- address the transportation policies and growth forecasts of the final Growth Plan for the Greater Golden Horseshoe (recognizing that the easterly portion of the analysis area for this project lies within the Greater Golden Horseshoe);
- recognize other relevant transportation corridor studies being undertaken by MTO; and
- be carried out as a Group ‘A’ project, in accordance with the Class Environmental Assessment for Provincial Transportation Facilities.

Access to the above documents can be obtained through the project website at [www.7and8corridorstudy.ca](http://www.7and8corridorstudy.ca).

A major component of the study is an outreach and consultation program structured around six key points of decision-making, each of which will be supported by:

- the release of a newsletter;
- the release of draft reports for review and comment;
- a round of Public Information Centres (PICs);
- posting of information on the study web site; and
- newspaper notices announcing the above.

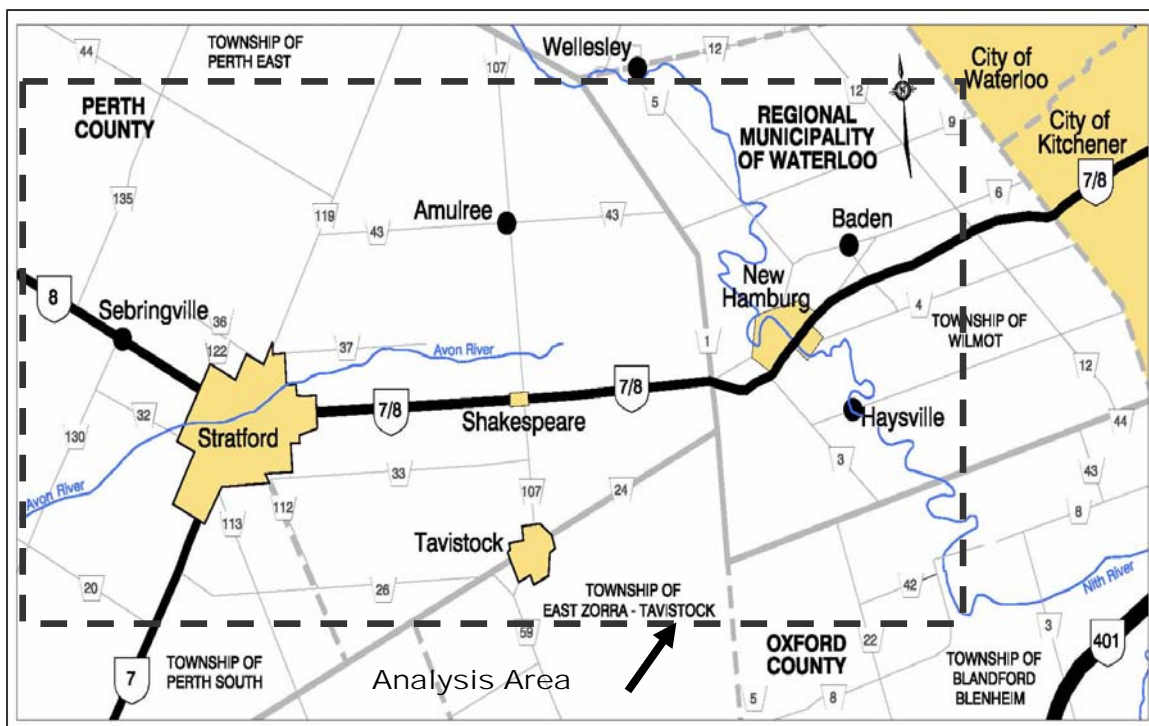
At the completion of the study, the filing of a Transportation Environmental Study Report (TESR) will be announced through newspaper notices. Decisions on funding and timing of detail design and construction are based upon environmental clearance of the TESR, since it determines the type of transportation facilities and their location.

## 1.2 Analysis Area

The Analysis Area was established to identify transportation problems and opportunities associated with Highway 7&8 from the Greater Stratford to New Hamburg Area plus the broader 'Area Transportation System' (including Highway 8) between Highway 7&8 and Highway 401. The Analysis Area was not intended to represent a Study Area for the planning alternatives to be generated during the course of the study. The selection of a Study Area within the Analysis Area is documented in Report E and summarized in Section 2 of this report.

For orientation and reference, a map of the Analysis Area is provided in **Exhibit 1.1** below.

**Exhibit 1.1: Map of Analysis Area**



## 1.3 Purpose, Relevance and Position of Report “G” Within the Study Process

The purpose of Report G is to document the generation of detailed planned alternatives (widening/route alternatives) within the preferred corridor, including:

- Refined Study Area;
- Description of widening alternatives generated for existing roadway segments of the preferred corridor;
- Description of route alternatives generated for new corridor segments of the preferred corridor; and
- Process for the assessment and evaluation of the detailed planning alternatives.

As can be seen in **Exhibit 1.2** below, Report G is the eighth of 11 reports to be prepared for this study and the second report of Phase 4, Detailed Planning.

<b>Exhibit 1.2: Summary of Reports</b>	
<b>Highway 7&amp;8 Transportation Corridor Planning and Class EA Study</b>	
<b>STUDY PHASE 1: STUDY PLAN</b>	
<ul style="list-style-type: none"> <li>• Report “A” Study Plan For Technical Work, Outreach And Consultation</li> </ul>	
<b>STUDY PHASE 2: AREA TRANSPORTATION SYSTEM PLANNING</b>	
<ul style="list-style-type: none"> <li>• Report “B”: Working Paper – Overview of Transportation, Land Use and Economic Conditions Within the Analysis Area</li> </ul>	
<ul style="list-style-type: none"> <li>• Report “F” -1<sup>st</sup> Part: Working Paper - Environmental Conditions And Constraints</li> </ul>	
<ul style="list-style-type: none"> <li>• Report “C”: Working Paper – ‘Area Transportation System’ Problems and Opportunities</li> </ul>	
<ul style="list-style-type: none"> <li>• Report “D”: Working Paper – Area Transportation System Alternatives</li> </ul>	
<b>STUDY PHASE 3: PRELIMINARY PLANNING</b>	
<ul style="list-style-type: none"> <li>• Report “E”: Milestone Report – Highway 7&amp;8 Transportation Corridor Needs Assessment</li> </ul>	
<b>STUDY PHASE 4: DETAILED PLANNING FOR PROVINCIAL ROADWAYS</b>	
<ul style="list-style-type: none"> <li>• Report “F” 2<sup>nd</sup> Part: Working Paper - Environmental Conditions And Constraints</li> </ul>	
<ul style="list-style-type: none"> <li>• <b><i>Report “G”: Working Paper – Generation of Detailed Planning Alternatives for Provincial Roadways</i></b></li> </ul>	
<ul style="list-style-type: none"> <li>• Report “H”: Milestone Report - Selection of Detailed Planning Alternatives for Provincial Roadways</li> </ul>	
<b>STUDY PHASE 5: PRELIMINARY DESIGN FOR PROVINCIAL ROADWAYS</b>	
<ul style="list-style-type: none"> <li>• Report “I”: Working Paper - Generation of Provincial Roadway Preliminary Design Alternatives</li> </ul>	
<ul style="list-style-type: none"> <li>• Report “J”: Milestone Report - Selection of Preliminary Design Alternatives for Provincial Roadways</li> </ul>	
<b>STUDY PHASE 6: TRANSPORTATION ENVIRONMENTAL STUDY REPORT</b>	
<ul style="list-style-type: none"> <li>• Report “K”: Transportation Environmental Study Report (documents overall study)</li> </ul>	

## 2.0 AREA TRANSPORTATION SYSTEM STRATEGY

The area transportation needs assessment detailed in Report D identified the selection of highway corridor improvements (i.e. widening of existing Highway 7&8 or a new highway corridor) plus inter-regional transit and transportation demand management to address the area transportation system problems and opportunities.

**Exhibit 2.1** summarizes the overall area transportation system strategy that includes all of the above noted elements. **Exhibit 2.2** illustrates the preferred highway corridor and the associated Study Area for the generation of detailed planning alternatives. During the study, the Study Area limits may be refined or modified as required to accommodate any reasonable alternatives that may be developed.

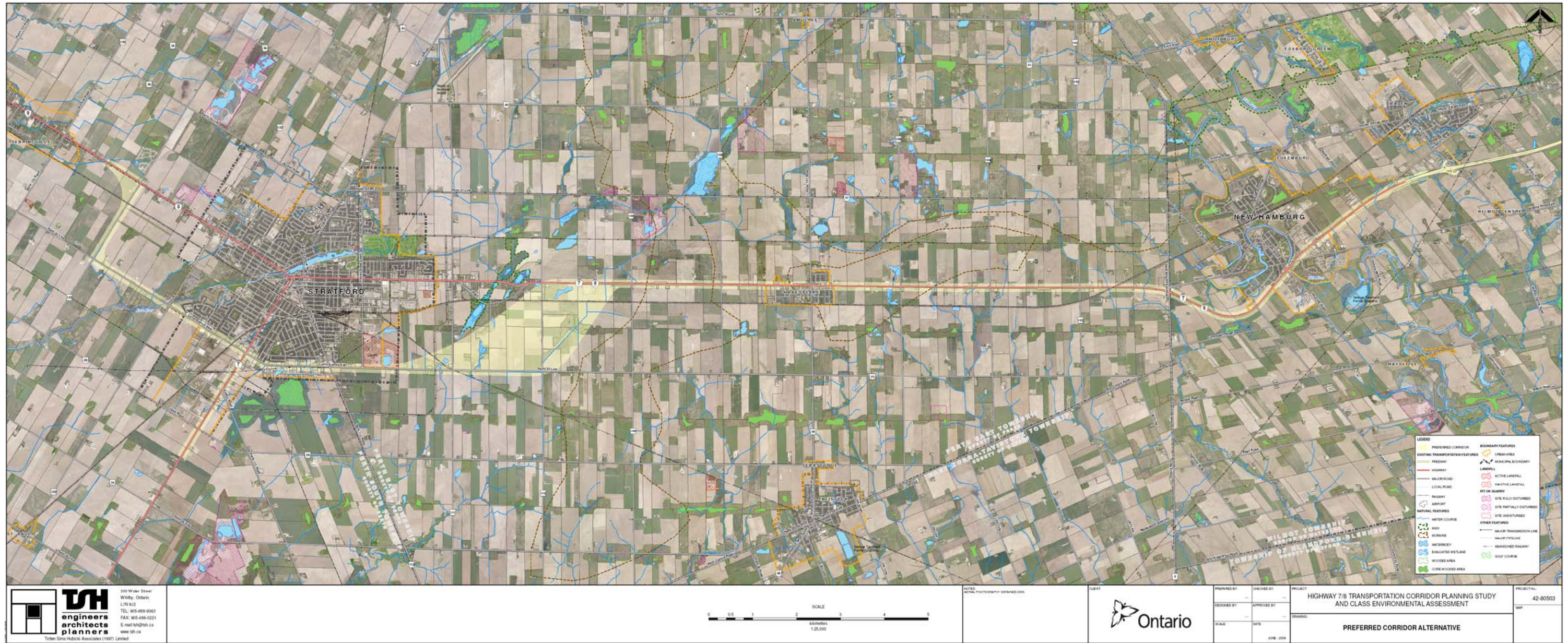
<b>Exhibit 2.1: Area Transportation System Strategy</b>	
<b>Strategy Component</b>	<b>Description</b>
<b>Highway Corridor</b>	<p><u>From west of Stratford to Highway 7</u></p> <ul style="list-style-type: none"> <li>• 2-lane Highway 8 with geometric improvements from mid-way between Perth Roads 130 and 125 to Perth Road 125;</li> <li>• Modification of intersection at Highway 8 and Perth Road 125;</li> <li>• 2-lane Perth Road 125 with geometric improvements from Highway 8 to Perth Line 32/Lorne Avenue;</li> <li>• Modification of intersection at Perth Road 125 and Perth Line 32/Lorne Avenue;</li> <li>• 2/3-lane Perth Line 32/Lorne Avenue with geometric improvements from Perth Road 125 to Highway 7.</li> </ul> <p><u>From Highway 7 to East of Stratford</u></p> <ul style="list-style-type: none"> <li>• Widen Highway 7 from 2 to 4 lanes from south of Perth Line 29 to Lorne Avenue;</li> <li>• Widen Lorne Avenue from 2 to 4/5 lanes from Highway 7 to Perth Road 111;</li> <li>• New 4-lane highway from Lorne Avenue at Perth Road 111 to Highway 7&amp;8 east of Perth Road 110.</li> </ul> <p><u>From East of Stratford to West of New Hamburg</u></p> <ul style="list-style-type: none"> <li>• Widen Highway 7&amp;8 from 2 to 4/5 lanes from east of Perth Road 110, through Shakespeare, to mid-way between Perth Road 102 and Wilmot–Easthope Road (railway structure).</li> </ul> <p><u>From West of New Hamburg to East of New Hamburg</u></p> <ul style="list-style-type: none"> <li>• Widen Highway 7&amp;8 from 2 to 4/5 lanes from mid-way between Perth Road 102 and Wilmot–Easthope Road (railway structure) to existing 4-lane section immediately west of Wilmot–Easthope Road;</li> <li>• Modification of intersection at Wilmot–Easthope Road;</li> <li>• Modification of Highway 7&amp;8 through New Hamburg with median barrier, modification or closure of intersections, plus possible service road.</li> </ul>



**Exhibit 2.1: Area Transportation System Strategy**

<b>Strategy Component</b>	<b>Description</b>
<b>Inter-Regional Transit</b>	Referred to appropriate agency for further review and action
<b>Transportation Demand Management</b>	Referred to appropriate agency for further review and action

**Exhibit 2.2: Map of Preferred Corridor Alternative and Associated Study Area**



### **3.0 PROCESS AND CRITERIA TO GENERATE AND EVALUATE DETAILED PLANNING ALTERNATIVES**

#### **3.1 Process Overview for the Development, Assessment and Evaluation of Detailed Planning Alternatives For Provincial Roadways**

The process for the identification, assessment and evaluation of the detailed planning alternatives for provincial roadways is the following:

- 1 Identify Detailed Planning Alternatives for Existing Provincial Highway and/or New Provincial Roadway Routes (provincial highway/provincial transitway)
  - Description and rationale for detailed planning alternatives (presented in Report G).
- 2 Additional Information Obtained/Confirmed through Field Investigations
  - Obtain additional information regarding environmental conditions/features within the analysis area through field investigation (inventory, survey and testing, as appropriate).
- 3 Identify Factors, Sub-factors, Criteria and Indicators for Evaluation of Detailed Planning Alternatives
  - Each of the alternatives will be evaluated against the environmental and transportation factors and sub-factors identified in **Exhibit 3.2** at the end of this section.
- 4 Comparative Evaluation of Detailed Planning Alternatives by Reasoned Argument and Augmented by Arithmetic Methods (as appropriate)
  - Each alternative will be evaluated using the reasoned argument and arithmetic methods (as appropriate) and the identified factors, criteria and measures (refer to preliminary listing of proposed factors and criteria provided in **Exhibit 3.2**).
- 5 Identify Recommended Detailed Planning Alternative for Existing Provincial Highway and/or New Provincial Routes (provincial highway/provincial transitway)
  - Selection of recommended detailed planning alternative based on results of comparative evaluation and taking into consideration stakeholder input received through consultation and outreach program (to be presented in Report H).

#### **3.2 Summary of Detailed Planning Alternatives for Provincial Roadways**

Based on the selected Preliminary Planning Alternatives carried forward from the preliminary planning phase, the Highway 7&8 Transportation Corridor Planning and Class EA Study considered specific location / type / character and template “footprints” for the following categories of provincial roadway detailed planning alternatives:

- Improve existing Highway 7&8
  - specific location and type of geometrical improvements to existing highway
  - specific location, extent and direction of widening to existing highway

- New corridor
  - new provincial highway route location

The following objectives and rationale were used to generate widening / route alternatives to ensure not only that alternatives are efficient/direct and meet technical objectives/design requirements, but also minimize/avoid impacts to significant environmental and study area features to the extent possible.

**Principle 1: Minimize impacts to significant natural features, functions, systems and communities**

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;
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;
5. Avoid where possible, or minimize encroachment on or loss of encroachment into ecologically functional areas;
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;
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;
9. Avoid where possible, or minimize encroachment on or loss of designated significant woodlands;
10. Avoid where possible, or minimize encroachment on or loss of other important woodlands;
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;
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; and
13. Avoid where possible, or minimize encroachment on loss of, or impairment of ecological function to special spaces (including recreational activity zones).

**Principle 2: Minimize impacts to existing and planned (approved under the Planning Act) population and employment areas**

1. Maximize separation distance from sensitive receptor locations;
2. Avoid where possible or minimize encroachment on, or loss of developed properties;
3. Minimize access impacts;
4. Maximize the access provided to major generators of economic activity;
5. Avoid where possible, or minimize encroachment on, or loss of prime agricultural areas and agricultural infrastructure;
6. Avoid where possible, or minimize encroachment on, or loss of mineral, petroleum and mineral aggregate resources;
7. Avoid operating and "non-operating" waste disposal sites; and
8. Avoid where possible, minimize encroachment on, or loss of known archaeological sites/built heritage features/cultural heritage landscape areas of extreme significance.

**Principle 3: Transportation service criteria**

1. Generate alternatives that are efficient and direct, while meeting standards for design; and
2. Select alternatives that address the transportation problems and transportation opportunities.

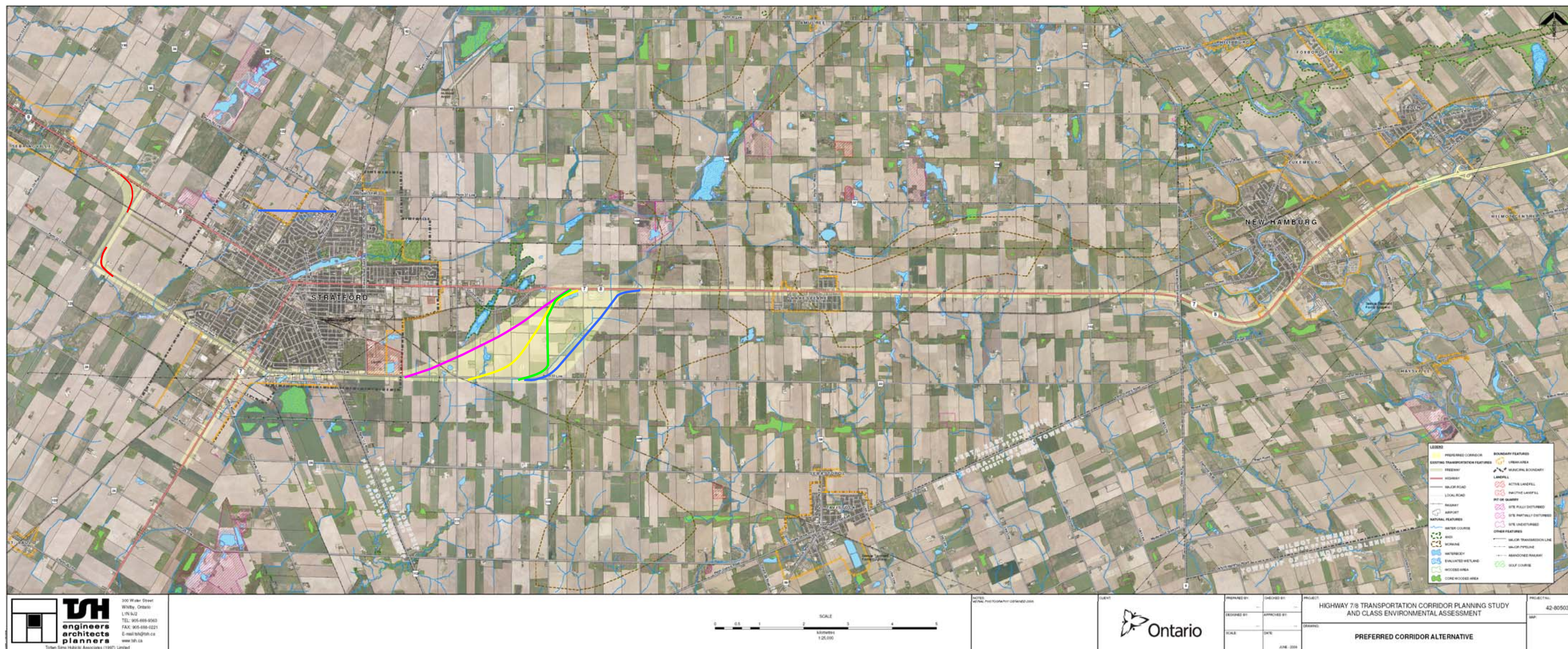
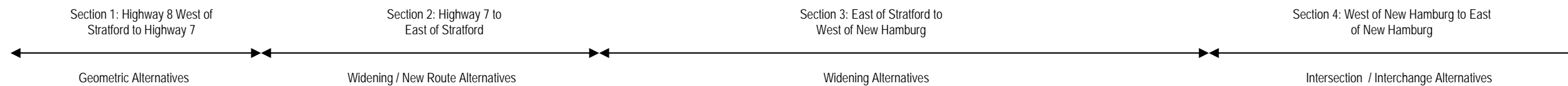
The provincial roadway detailed planning alternatives which were generated for the various segments of the preferred corridor and the associated rationale for their generation is described below. The detailed planning alternatives are summarized on **Exhibit 3.1** and illustrated on the plans provided in **Appendix A**.

**3.2.1 West of Highway 7 / Erie Street**

West of Highway 7 / Erie Street, the following geometric improvement alternatives were developed for the connections between Perth Line 32 and Road 125 and Road 125 and Highway 8, recognizing that these connections could be accommodated through a series of right and left turns or through the introduction of curves to provide a free flow condition (see Plate 1 in **Appendix A**):

- Alternative 1: Retain existing condition (i.e. intersections at Perth Line 32 and Road 125 and Road 125 and Highway 8)
- Alternative 2: Provide R-420 m radii at Perth Line 32/Road 125 and Road 125/Highway 8 intersections and associated road connections
- Alternative 3: Provide R-650 m radii at Perth Line 32/Road 125 and Road 125/Highway 8 intersections and associated road connections
- Alternative 4: Provide R-1200 m radii at Perth Line 32/Road 125 and Road 125/Highway 8 intersections and associated road connections

**Exhibit 3.1: Map of Widening / New Route Alternatives**  
**(Detailed Planning Alternative Plans provided in Appendix A)**



### **3.2.2 Highway 7 / Erie Street to East Limit of Stratford**

The existing Lorne Avenue corridor width from Highway 7 / Erie Street to the east limit of Stratford is currently 30 m in width which can accommodate the proposed 4/5 lane cross section. Therefore, a single alternative was identified for this corridor segment, specifically a symmetrical widening alternative (see Plate 2 in **Appendix A**).

### **3.2.3 East Limit of Stratford to East of Little Lakes**

From the east limit of Stratford to east of Little Lakes, four new route alternatives were generated to connect the Lorne Avenue corridor to the existing Highway 7&8 corridor (see Plate 3 in **Appendix A**) as follows:

- Alternative 1: Situated along the west side of the preferred corridor
- Alternative 2: Situated west of Road 110
- Alternative 3: Uses a segment of Road 110
- Alternative 4: Situated along the east side of the municipal drain east of Road 110

### **3.2.4 East of Little Lakes to West of New Hamburg**

From east of Little Lakes to west of New Hamburg, widening alternatives were generated for the proposed widening from 2 to 4/5 lanes. Three distinct sets of alternatives were generated as described below.

From east of Little Lakes to west of Shakespeare, the following two widening alternatives were developed, recognizing the wider right-of-way width currently owned by the Ministry through this section (see Plate 4 in **Appendix A**):

- Alternative 1: Symmetrical widening
- Alternative 2: North side widening (i.e. hold south edge of pavement and widen to the north)

Through Shakespeare, two widening alternatives were developed for the proposed widening from 2 to 5 lanes (see Plate 4 in **Appendix A**). There is only a slight variation between the alternatives with respect to the alignment of Highway 7&8 west of Road 107.

From east of Shakespeare to west of New Hamburg, three widening alternatives were generated as follows (see Plates 4 and 5 in **Appendix A**):

- Alternative 1: Symmetrical widening
- Alternative 2: North side widening (i.e. hold south edge of pavement and widen to the north)
- Alternative 3: South side widening (i.e. hold north edge of pavement and widen to the south)

### **3.2.5 West of New Hamburg to East of New Hamburg**

The existing 4-lane cross section through the New Hamburg area can accommodate the projected 2031 traffic demands. However, there will be capacity deficiencies at the at-grade intersections. Furthermore, median barrier is required to separate the opposing lanes of traffic (i.e. the eastbound and the westbound traffic) for safety reasons.

During subsequent design phases, intersection and interchange alternatives will be developed for the New Hamburg area and presented for public review and comment (see Plates 5 and 6 in **Appendix A**).

### **3.3 Process for Assessment of Detailed Planning Alternatives for Provincial Roadways**

**Exhibit 3.2** provides a preliminary listing of the proposed environmental and transportation factors and sub-factors to be considered for the assessment and evaluation of alternatives. **Exhibit 3.2** also provides preliminary evaluation criteria to be applied to these factors and sub-factors during the detailed planning phase. This preliminary listing will be refined and modified during consultation on the “proposed approach to upcoming work”.

The assessment of the detailed planning alternatives for provincial roadways identified will:

- be undertaken using a reasoned argument methodology and augmented by arithmetic methods as appropriate;
- consider the environmental and transportation factors, sub-factors and evaluation criteria identified in **Exhibit 3.2**; and
- consider potential impacts on the environment.

The alternatives will then be reviewed with agencies and the public through the outreach and consultation process. This outreach and consultation is critical to developing a reasonable set of detailed planning alternatives. Local residents can add valuable information to the database gathered by the Project Team. Refinements to the alternatives will be integrated where warranted and a final set of detailed planning alternatives will be brought forward to the evaluation process.

### **3.4 Process for Evaluation and Selection of the Preferred Detailed Planning Alternatives for Provincial Roadways**

After the various detailed planning alternatives are generated and refined based on consultation, the evaluation of the alternatives will commence.

The evaluation and selection of detailed planning alternatives for provincial roadways will use a similar process as applied to the preliminary planning alternatives. The advantages and disadvantages of the various detailed planning alternatives will be compared using a reasoned argument methodology to select a recommended alternative(s).

The trade-offs used to select a preferred detailed planning alternative(s) will reflect:

- Government legislation, policies and guidelines;



- Municipal policy (i.e. Official Plans);
- Public, Agencies, First Nations, Consultation Groups, and other stakeholder issues and concerns; and
- Project Team (staff from MTO and their Consultants) expertise.

During the study, the decision making process will be clearly documented to support a traceable process and to ensure that it is understandable to those who may be affected by the decisions. Details on the Reasoned Argument (trade-off) evaluation method are provided in Section 7.2 of Report A: Study Plan.

#### *Factor-Specific Environmental Inputs to the Evaluation of Detailed Planning Alternatives*

The data collected on the study area will assist in identifying the types of impacts each detailed planning alternative will have on each component of the environment, as indicated in **Exhibit 3.2**.

In addition, technical requirements and costs will be considered in the evaluation of detailed planning alternatives. Data collection for each of the environmental disciplines will be conducted consistent with the most up-to-date provincial policies and procedures. Each of these components will be defined by a set of evaluation criteria. Impacts will be quantified according to the list of criteria shown in **Exhibit 3.2**.

These criteria are intended to assist the factor specific environmental specialists in determining the overall impact of the various alternatives on the natural, socio-economic and cultural environment. In determining the overall impact, the specialists will consider how the various factors and criteria interact and function together. The evaluation criteria listed represent the minimum requirements in the process of evaluating alternative methods.

A description of the rationale associated with the evaluation criteria/indicators is outlined in Supporting Document #5 of Report A: Study Plan. The evaluation factors/sub-factors/criteria are subject to refinement and modification during the EA based on study findings, provincial policy and input received from stakeholders. Factor specific work plans for assessing potential environmental effects will be completed during the Class EA Study.

**Exhibit 3.2: Evaluation Factors, Sub-factors, Criteria and Indicators for Assessment and Evaluation of Detailed Planning Alternatives**

FACTOR / SUB-FACTOR	CRITERIA	INDICATORS FOR DETAILED PLANNING FOR PROVINCIAL ROADWAYS	RATIONALE FOR FACTOR AND SUB-FACTOR EVALUATION
<b>1. Natural Environmental Factors</b>			
<b>1.1 Fisheries and Aquatic Ecosystems</b>	1.1.1 Fish Habitat	Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement;</li> <li>• long-term alteration/disruption</li> </ul> as applicable to the following: <ul style="list-style-type: none"> <li>• critical fish habitat features</li> <li>• riparian areas</li> <li>• habitat rehabilitation goals</li> </ul>	<ul style="list-style-type: none"> <li>• The crossing of water bodies by transportation facilities has the potential to affect fish and aquatic habitat features through impediments to fish passage, loss of vegetation, changes to channel geomorphology (channel form and function), substrate and cover, changes to the water quality due to erosion and sedimentation, stormwater discharge and temperature changes.</li> <li>• PPS Policy 1.6.6.4 stipulates that when planning for corridors and rights-of-way for significant transportation facilities, consideration will be given to significant natural heritage, water, agricultural, mineral, cultural heritage and archaeological resources. The context is provided in other PPS policy statements_ identified below.</li> <li>• PPS Policy 2.1.5 requires that development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements. In addition, policy 2.1.6 restricts development and site alteration on adjacent lands to natural heritage features (e.g. significant – wetlands, woodlands, valleylands etc.) unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.</li> <li>• It is an objective of the PPS to protect, improve or restore the quality and quantity of surface water, including headwaters. Surface water features are an important part of the natural, economic and cultural landscape. PPS Policy 2.2.2 restricts development and site alteration in or near sensitive surface water features and groundwater features such that these features and their related hydrologic functions will be protected, improved or restored.</li> <li>• 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 cannot be mitigated, a Fisheries Compensation Plan is prepared in consultation with the CA/DFO to address agency concerns/requirements.</li> <li>• Subsection 36(3) of the Fisheries Act prohibits the deposit of a deleterious substance, directly or indirectly, into waters frequented by fish.</li> </ul>
	1.1.2 Fish Community	Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement;</li> <li>• long-term alteration/ disruption</li> </ul> as applicable to the following: <ul style="list-style-type: none"> <li>• fish species at risk (vulnerable, threatened or endangered fish species)</li> <li>• fish movement/migration</li> <li>• critical fish life stage processes (spawning, rearing, nursery, feeding)</li> <li>• long-term fish community management goals</li> </ul>	
<b>1.2 Terrestrial Ecosystems</b>	1.2.1 Wildlife	Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement;</li> <li>• long-term alteration/ disruption</li> </ul> as applicable to the following: <ul style="list-style-type: none"> <li>• wildlife species at risk (vulnerable, threatened or endangered wildlife species)</li> <li>• wildlife of local and regional importance</li> <li>• migratory birds</li> <li>• critical wildlife habitat features</li> <li>• ecologically functional areas such as connective corridors or travel ways for movement/migration</li> <li>• important wildlife areas such as deeryards, heronries, waterfowl areas, important bird areas</li> <li>• wildlife management, rehabilitation/research program sites</li> <li>• interference with critical wildlife life stage processes (eg mating/rearing) etc</li> </ul>	<ul style="list-style-type: none"> <li>• PPS Policy 1.6.6.4 stipulates that when planning for corridors and rights-of-way for significant transportation facilities, consideration will be given to significant natural heritage, water, agricultural, mineral, cultural heritage and archaeological resources. The context is provided in other PPS policy statements identified below.</li> <li>• The presence of species identified by COSEWIC and COSSARO as vulnerable, threatened or endangered (VTE) requires consideration in the generation of route alternatives. Species or populations may be under pressure or susceptible to stress as a result of development. Since habitat for these species is often limited, impacts to areas where the presence of species at risk is suspected or confirmed should be avoided or minimized. The assessment should 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) and TRCA species of concern will also be considered.</li> <li>• The general prohibitions under the Species at Risk Act, which apply to federally protect migratory bird and aquatic species at risk as well as to all endangered and threatened species on federal lands.</li> <li>• Section 6 of the Migratory Bird Regulations under the Migratory Birds Convention Act, 1994, which prohibits the incidental take of migratory birds and the disturbance and destruction of taking of the nest of a migratory bird.</li> <li>• PPS Policy 2.1.4 prohibits development and site alteration in significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E. The assessment should have regard for this objective. Wetlands serve ecological functions to varying degrees including groundwater recharge/discharge, flood attenuation, wildlife movement corridors, habitat for flora and fauna, and water filtration.</li> <li>• The Canadian Federal Policy on Wetland Conservation promotes the goal of no net loss of wetland function in areas where wetland loss has reached critical levels.</li> </ul>
	1.2.2 Wetlands	Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement;</li> <li>• long-term alteration/ disruption</li> </ul> as applicable to the following: <ul style="list-style-type: none"> <li>• provincially significant wetlands, their buffer areas, and their wetland function</li> <li>• evaluated and un-evaluated wetlands, their wetland buffer areas, and their wetland function</li> <li>• wetland management, research and/or wetland conservation programs/areas</li> </ul>	
	1.2.3 Forests  (e.g. woodlands [forest stands, woodlots and interior forest habitat] and significant valley lands [valley and stream corridors])	Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement;</li> <li>• long-term alteration/ disruption</li> </ul> as applicable to the following: <ul style="list-style-type: none"> <li>• significant woodlands/valley lands</li> <li>• forest management/research program areas</li> </ul>	

**Exhibit 3.2: Evaluation Factors, Sub-factors, Criteria and Indicators for Assessment and Evaluation of Detailed Planning Alternatives**

FACTOR / SUB-FACTOR	CRITERIA	INDICATORS FOR DETAILED PLANNING FOR PROVINCIAL ROADWAYS	RATIONALE FOR FACTOR AND SUB-FACTOR EVALUATION
	1.2.4 Vegetation	Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement;</li> <li>• long-term alteration/ disruption</li> </ul> as applicable to the following: <ul style="list-style-type: none"> <li>• populations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant regional/local flora/communities</li> <li>• areas/corridors supporting known populations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant flora/communities</li> <li>• vegetation management, rehabilitation/research program sites</li> </ul>	<ul style="list-style-type: none"> <li>• Small degraded, isolated remnant woodlots and wetlands can have ecological value. Large natural and relatively undisturbed features have high ecological sensitivity and value.</li> </ul>
	1.2.5 Designated/Special Areas (such as world biosphere reserves, heritage rivers, ESAs, ESPAs, ANSIs, environmental plan areas, conservation reserves; and the designated special areas of national parks, provincial parks, conservation areas, etc)	Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement;</li> <li>• long-term alteration/ disruption;</li> <li>• change in area character/ aesthetics;</li> <li>• nuisance impacts;</li> <li>• change to access / travel time;</li> <li>• change to facilities / utilities / services.</li> </ul> To designated/special areas.	<ul style="list-style-type: none"> <li>• PPS Policy 1.6.6.4 stipulates that when planning for corridors and rights-of-way for significant transportation facilities, consideration will be given to significant natural heritage, water, agricultural, mineral, cultural heritage and archaeological resources. The context is provided in other PPS policy statements identified below.</li> <li>• Important habitat areas, that may not be associated with other features protected by other means (ANSIs, ESAs, PSWs), require consideration during the generation and evaluation of alternatives. These areas 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 or with specialized habitat requirements. The assessment should have regard for PPS Policy 2.1.4 which states that development and site alteration shall not be permitted in certain listed significant wetlands, woodlands, valleylands, wildlife habitat and areas of natural and scientific interest. 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.</li> <li>• Areas that have been designated as Environmentally Significant Areas, Areas of Natural and Scientific Interest or Significant Valleylands may have landforms or plant communities associated with the area that are designated locally, regionally or provincially significant, or provide important corridors.</li> <li>• ESAs are not explicitly included in the Provincial Policy Statement, but are often associated with other features subject to the policy statement (e.g. ANSIs, significant woodlands, significant habitat of endangered species or threatened species, significant wetlands, valleylands and wildlife habitat). They are also reflected in the MNR Land Use Guidelines, Conservation Authority Plans and municipal land use plans.</li> <li>• PPS Policy 2.1.6 provides for development and site alteration on adjacent lands to listed natural heritage features and areas, only where the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological function.</li> <li>• Policy 4.2.1.2 of the Greenbelt Plan 2005 states that the location and construction of infrastructure and expansions, extensions, operations and maintenance of infrastructure in the Protected Countryside are subject to specified criteria.</li> </ul>
<b>1.3 Groundwater</b>	1.3.1 Areas of Ground water Recharge and Discharge	Potential and significance of alteration to areas of groundwater recharge and discharge due to physical intrusion or groundwater interception, draw-down, impoundment, obstruction, or soil compaction impacting groundwater base-flow and quality	<ul style="list-style-type: none"> <li>• PPS Policy 1.6.6.4 stipulates that when planning for corridors and rights-of-way for significant transportation facilities, consideration will be given to significant natural heritage, water, agricultural, mineral, cultural heritage and archaeological resources. The context is provided in other PPS policy statements identified below.</li> <li>• Section 2.2 of the PPS identifies that the quality and quantity of water (including groundwater) should be protected improved or restored. The assessment should 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, impacts to areas identified as being susceptible to groundwater contamination and/or interference should be avoided/minimized to the extent possible.</li> </ul>
1.3.2 Groundwater Source Areas and Wellhead Protection Areas	Potential and significance of alteration to groundwater source areas and wellhead protection areas due to physical intrusion, or groundwater interception, draw-down, impoundment, obstruction and by soil compaction		
1.3.3 Large Volume Wells	Potential and significance of alteration to large volume wells due to physical intrusion or groundwater interception, draw-down, impoundment, obstruction and by soil compaction		
1.3.4 Private Wells	Potential and significance of alteration to private well use due to physical intrusion, or groundwater interception, draw-down, impoundment, obstruction and by soil compaction		
1.3.5 Groundwater-Sensitive Ecosystems  (e.g. groundwater fed wetlands, coldwater streams)	Potential and significance of alteration to groundwater-sensitive ecosystems due to physical intrusion, or groundwater interception, draw-down, impoundment, obstruction and by soil compaction		
<b>1.4 Surface Water</b>	1.4.1 Watershed / Sub-Watershed Drainage Features/Patterns	Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement;</li> <li>• long-term alteration/ disruption.</li> </ul> As applicable to the following: <ul style="list-style-type: none"> <li>• watercourse crossings (permanent, intermittent and ephemeral)</li> <li>• floodplain or meander belts</li> <li>• riparian areas</li> <li>• sensitive headwater areas</li> <li>• watershed and subwatershed management plans</li> </ul>	<ul style="list-style-type: none"> <li>• Surface water features are an important part of the natural landscape in the Analysis Area. There are a number of permanent and intermittent watercourses flowing through the Analysis Area as well as a number of provincially and locally significant wetlands and various unnamed tributaries and agricultural swales present in the analysis area. Consequently, surface water quantity and quality could be negatively affected by the undertaking (e.g., reduction in surface water quantity, degradation of surface water quality, etc.) and therefore the ability to protect surface water quality, including the function of headwaters, need to be considered in the evaluation.</li> </ul>
1.4.2 Surface Water Quality and Quantity	Potential and significance of impacts on quality through direct and indirect discharges of contaminated and sediment-laden run-off		

**Exhibit 3.2: Evaluation Factors, Sub-factors, Criteria and Indicators for Assessment and Evaluation of Detailed Planning Alternatives**

FACTOR / SUB-FACTOR	CRITERIA	INDICATORS FOR DETAILED PLANNING FOR PROVINCIAL ROADWAYS	RATIONALE FOR FACTOR AND SUB-FACTOR EVALUATION
		Potential and significance of impacts on hydrology due to changes in ground permeability, modifications to surface drainage patterns and alterations of water bodies	
			•
<b>2. Land Use / Socio-Economic Environmental Factors</b>			
<b>2.1 Land Use Planning Policies, Goals, Objectives</b>	2.1.1 First Nations Land Claims	Potential and significance of encroachment, severance, displacement to areas for which there are First Nations outstanding land claims	<ul style="list-style-type: none"> <li>• It is important that First Nations People's land claims within the Analysis Area are documented</li> <li>• The Ontario Provincial Policy Statement notes that long-term prosperity and social well-being of Ontarians depends on maintaining strong communities, a clean and healthy environment and a strong economy. Transportation facilities play a key role in achieving these objectives.</li> <li>• There is a need to co-ordinate transportation planning with municipal land planning as established through Official Plans, Secondary Plans and Zoning by-laws as these specify land uses supported by residents, municipalities and the province.</li> <li>• The Greenbelt Plan notes that infrastructure is important to economic well-being, human health and quality of life in southern Ontario and the Greenbelt.</li> <li>• Policy 4.2.1 of the Greenbelt Plan states that, for lands within the protected countryside, as defined by the Greenbelt Plan, 2005, infrastructure must meet one of the following policies; it supports agriculture, recreation and tourism, rural settlement areas, resource use or the rural economic activity that exists and is permitted within the Greenbelt; or it serves the significant growth and economic development expected in southern Ontario beyond the Greenbelt by providing for the appropriate infrastructure connections among urban growth centers and between these centers and Ontario's borders.</li> </ul>
	2.1.2 Provincial/Federal land use planning policies/goals/objectives	Degree of compatibility with federal/provincial land use policies/goals/objectives	
	2.1.3 Municipal (regional and local) land use planning policies/goals/objectives (Official Plans)	Degree of compatibility with municipal Official Plans	
	2.1.4 Development Objectives of Private Property Owners	Potential to isolate property from current/future urban envelope Impact on future land use	
<b>2.2 Land Use / Community</b>	2.2.1 Indian Reserves	Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement;</li> <li>• long-term alteration/ disruption;</li> <li>• change in area character / aesthetics;</li> <li>• nuisance impacts;</li> <li>• change to access / travel time.</li> </ul> to Indian Reserves	<ul style="list-style-type: none"> <li>• It is important that potential and significance of impacts to Indian Reservations and sacred grounds be recognized and addressed in accordance with Ontario's New Approach to Aboriginal Affairs (Spring 2005) and the Grand River Notification Agreement</li> <li>• Property takings / displacements and changes / effects on local access have a significant impact on owners and tenants as well as the broader community.</li> <li>• Property takings / displacements and changes / effects on local access have a significant impact on owners and tenants as well as the broader community and customer/client base.</li> <li>• Disruption or displacement of institutional features may adversely affect the users of these features / facilities and the broader community.</li> </ul>
	2.2.2 First Nations' Sacred Grounds	Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement;</li> <li>• long-term alteration/ disruption;</li> <li>• change in area character / aesthetics;</li> <li>• nuisance impacts;</li> <li>• change to access / travel time.</li> </ul> To First Nations' sacred grounds	
	2.2.3 Urban and Rural Residential	Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement, property acquisition;</li> <li>• long-term alteration/ disruption;</li> <li>• change in area character/ aesthetics;</li> <li>• nuisance impacts;</li> <li>• change to access / travel time;</li> <li>• change to facilities / utilities / services.</li> </ul> To urban and rural residential areas (residents [owners/tenants] and community groups).	
	2.2.4 Commercial/Industrial	Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement, property acquisition;</li> <li>• long-term alteration/ disruption;</li> <li>• change in area character/ aesthetics;</li> <li>• nuisance impacts;</li> <li>• change to access / travel time;</li> <li>• change to facilities / utilities / services.</li> </ul> To commercial and industrial areas (business owners/tenants and customers).	
	2.2.5 Tourist Areas and Attractions (e.g. museums, theatres, etc.)	Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement, property acquisition;</li> <li>• long-term alteration/ disruption;</li> <li>• change in area character/ aesthetics;</li> <li>• nuisance impacts;</li> <li>• change to access / travel time;</li> </ul>	

**Exhibit 3.2: Evaluation Factors, Sub-factors, Criteria and Indicators for Assessment and Evaluation of Detailed Planning Alternatives**

FACTOR / SUB-FACTOR	CRITERIA	INDICATORS FOR DETAILED PLANNING FOR PROVINCIAL ROADWAYS	RATIONALE FOR FACTOR AND SUB-FACTOR EVALUATION
		<ul style="list-style-type: none"> <li>change to facilities / utilities / services.</li> </ul> To tourist areas and attractions.	
<b>2.2 Land Use / Community</b>	2.2.6 Community Facilities / Institutions (e.g. hospitals, schools, places of worship, unique community features)	Potential and significance of: <ul style="list-style-type: none"> <li>encroachment, severance, displacement, property acquisition;</li> <li>long-term alteration/ disruption;</li> <li>change in area character/ aesthetics;</li> <li>nuisance impacts;</li> <li>change to access / travel time;</li> <li>change to facilities / utilities / services.</li> </ul> To community facilities and institutions.	
2.2.7 Municipal Infrastructure and Public Service Facilities (e.g. sewage and water services, police/emergency services, local utilities)	Potential and significance of: <ul style="list-style-type: none"> <li>encroachment, severance, displacement;</li> <li>long-term alteration/ disruption;</li> <li>change to access / travel time;</li> <li>change to facilities / utilities / services.</li> </ul> To municipal infrastructure and public service facilities.		
<b>2.3 Noise Sensitive Areas (NSAs)</b> (residential areas and sensitive institutional uses)	2.3.1 Highway Noise	Potential for significant traffic noise increases in NSAs	<ul style="list-style-type: none"> <li>The Ontario Ministry of the Environment (MOE) has published Noise Pollution Control (NPC) and Land Use (LU) planning guidelines. These MOE documents establish ambient noise criteria, based on one-hour average sound pressure levels (Leq), and evaluate ambient vibration levels based on either Peak or RMS velocity, as applicable. Noise levels generally rise with increased traffic volumes.</li> <li>MOE/MTO Noise Protocol requires that highway noise be considered in all Provincial (MTO) Transportation projects</li> </ul>
	2.3.2 Construction Noise	Not considered until the Preliminary Design phase	<ul style="list-style-type: none"> <li>The MOE/MTO Noise Protocol requires that construction noise be addressed on MTO construction projects</li> <li>Construction noise may be subject to municipal (i.e., local) noise by-law</li> </ul>
<b>2.4 Agriculture</b>	2.4.1 Agriculture - Canada Land Inventory Class 1,2,3 Land	Potential and significance of: <ul style="list-style-type: none"> <li>encroachment, severance, displacement;</li> <li>long-term alteration/ disruption;</li> </ul> to Canada Land Inventory Class 1,2,3 Land	<ul style="list-style-type: none"> <li>PPS Policy 1.6.6.4 stipulates that when planning for corridors and rights-of-way for significant transportation facilities, consideration will be given to significant natural heritage, water, agricultural, mineral, cultural heritage and archaeological resources. The context is provided in other PPS policy statements identified below.</li> <li>Section 2.3 of the Provincial Policy Statement requires prime agricultural areas be protected for long-term use for agriculture. Prime agricultural areas include specialty crop areas and Classes 1, 2 and 3 soils in this order of priority.</li> <li>Ontario Ministry of Agriculture and Food (OMAF) has provincial guidelines for protection of prime agricultural lands as well as agricultural structures or infrastructure</li> </ul>
2.4.2 Agricultural -Farm Infrastructure	Potential and significance of: <ul style="list-style-type: none"> <li>encroachment, severance, displacement;</li> <li>long-term alteration/ disruption;</li> <li>nuisance impacts;</li> </ul> to farm infrastructure (field tile drainage systems/outlets, irrigation systems, barns / silos/ structures, etc.		
2.4.3 Agriculture – Operations on Individual Farms	Potential and significance of: <ul style="list-style-type: none"> <li>encroachment, severance, displacement;</li> <li>long-term alteration/ disruption;</li> <li>nuisance impacts;</li> </ul> to in-farm field operations (planting, harvesting, grazing, nutrient management, etc.)		
2.4.4 Agriculture – Transportation Linkages between Multiple-Farm Operations	Potential to sever/disrupt transportation linkages between multiple-farm operations (movement between linked multiple-farm operations of equipment, materials, workers, etc.)		
<b>2.5 Land Use / Resources</b>	2.5.1 First Nations People’s Treaty Rights or Use of Land and Resources for Traditional Purposes (e.g. hunting, fishing, harvesting of country foods, harvesting of medicinal plants)	Potential and significance of: <ul style="list-style-type: none"> <li>encroachment, severance, displacement;</li> <li>long-term alteration/ disruption;</li> <li>nuisance impacts;</li> <li>change to access / travel time.</li> </ul> to First Nations’ treaty rights or use of land and resources for traditional purposes	<ul style="list-style-type: none"> <li>It is important that potential and significance of impacts to Indian Reservations and sacred grounds be recognized and addressed in accordance with Ontario’s New Approach to Aboriginal Affairs (Spring 2005) and the Grand River Notification Agreement</li> <li>Planning of transportation facilities must address First Nations People’s treaty rights, and be conducted in accordance with Ontario’s New Approach to Aboriginal Affairs (Spring 2005) and the Grand River Notification Agreement</li> </ul>
2.5.2 Parks and Recreational Areas (e.g. national/provincial parks, conservation areas, municipal parks,	Potential and significance of: <ul style="list-style-type: none"> <li>encroachment, severance, displacement, property acquisition;</li> <li>long-term alteration/ disruption;</li> <li>change in area character/ aesthetics;</li> </ul>	<ul style="list-style-type: none"> <li>Disruption or displacement of recreational / community features may adversely affect the users of the facility/feature. Parks are generally lands in public ownership aimed at preserving significant and sometimes unique components of the environment, and providing recreational opportunities. These areas should be avoided to the extent possible however, in some cases, transportation facilities can be situated along park boundaries without adversely affecting the park. Frequently, parts are isolated islands surrounded by development and as such they can function as wildlife refuge areas or may facilitate wildlife movement opportunities. PPS, 2005,</li> </ul>	

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FACTOR / SUB-FACTOR	CRITERIA	INDICATORS FOR DETAILED PLANNING FOR PROVINCIAL ROADWAYS	RATIONALE FOR FACTOR AND SUB-FACTOR EVALUATION
	public spaces, golf courses, trails, greenways and open space linkages)	<ul style="list-style-type: none"> <li>• nuisance impacts;</li> <li>• change to access / travel time;</li> <li>• change to facilities / utilities / services.</li> </ul> To parks and recreational areas.	Policy 1.5.1 states that healthy active communities shall be promoted by (d) considering the impacts of planning decisions on provincial parks, conservation reserves and conservation areas.
	2.5.3 Aggregates, Mineral-Resources	Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement, property acquisition;</li> <li>• long-term alteration/ disruption;</li> <li>• change to access / travel time;</li> <li>• change to facilities / utilities / services.</li> </ul> To current/future extraction of aggregate and mineral resources.	<ul style="list-style-type: none"> <li>• PPS Policy 1.6.6.4 stipulates that when planning for corridors and rights-of-way for significant transportation facilities, consideration will be given to significant natural heritage, water, agricultural, mineral, cultural heritage and archaeological resources. The context is provided in other PPS policy statements identified below.</li> <li>• Sections 2.4 and 2.5 of the Provincial Policy Statement have the objective of protecting mineral and aggregate resources for the long term. The policy statement makes provisions for the protection of both known deposits and areas of potential.</li> <li>• MTO adheres to requirements of the Aggregates Act to protect aggregate resources while minimizing sterilization of mineral aggregate resources as much as possible.</li> </ul>
<b>2.6 Major Utility Transmission Corridors</b>  (e.g. railroads, hydro, gas, oil)		Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement;</li> <li>• long-term alteration/ disruption;</li> <li>• change to access / travel time;</li> <li>• change to facilities / utilities / services.</li> </ul> To major utility transmission corridors.	<ul style="list-style-type: none"> <li>• Utility corridors are subject to regulations from owners and governing authorities for operation of utilities including National Energy Board, Ontario Energy Board, Transport Canada, Railway Safety Act, etc.</li> </ul>
<b>2.7 Contaminated Property and Waste Management</b>  (e.g. Landfills, Hazardous Waste Sites, "Brownfield" Areas, other known contaminated sites, and high-risk contamination areas)		Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement;</li> <li>• long-term alteration/disruption;</li> <li>• change to access / travel time;</li> <li>• change to facilities / utilities / services.</li> </ul> To contaminated property and waste management.	<ul style="list-style-type: none"> <li>• Localized significant sources of property contamination can be associated with operating and closed waste disposal sites, the latter being of more significance due to their difficulty in accurately locating them. Consideration should be given to avoiding/ minimizing effects in the "area of influence" of waste disposal sites.</li> <li>• There is the potential that some of the lands in the project area may be contaminated due to the nature of existing and historical land use especially in older commercial/industrial areas and in areas with heavy industrial activity. Sources of potential property contamination in rural areas are most commonly associated with service stations; isolated pockets of commercial/industrial areas; unknown fill areas; scrap yards and other high-risk land uses. Impacts to these areas should be avoided / minimized to the extent possible..</li> <li>• Appropriate assessments will be carried on these sites and the project will comply with the appropriate.</li> </ul>
<b>2.8 Landscape Composition</b>	2.8.1 Scenic Composition (total aesthetic value of landscape components)	Potential and significance of change to scenic composition (total aesthetic value of landscape components).	<ul style="list-style-type: none"> <li>• Visual impacts on adjacent land use and effects on the visual experiences for users of the facility will be considered.</li> </ul>
	2.8.2 Sensitive Viewer Groups	Potential and significance of change vistas/outlooks for sensitive viewer groups.	
	2.8.3 Scenic value of views/vistas from the transportation facility	Potential and significance of views/vistas from the transportation facility.	
	2.8.4 Specimen Trees	Not considered until the Preliminary Design phase	
<b>2.9 Air Quality</b>	2.9.1 Regional Air Quality and Total Contaminant and Greenhouse Gas Emissions	Not considered after the Preliminary Planning Phase	<ul style="list-style-type: none"> <li>• Air Quality impacts have the potential to affect human health.</li> <li>• Alternatives through or near urban areas create the potential for increased contaminant levels.</li> <li>• Dust emissions associated with construction related activities could cause temporary air quality issues.</li> <li>• Greenhouse gases contribute to global warming.</li> </ul>
	2.9.2 Local Air Quality and Sensitive Receptors to Air Pollutants	Potential to affect sensitive receptors to air pollutants	
<b>3. Cultural Environmental Factors</b>			
<b>3.1 Cultural Heritage – Built Heritage and Cultural Landscapes</b>	3.1.1 Buildings or "Standing" Sites of Architectural or Heritage Significance or Ontario Heritage Foundation Easement Properties	Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement, property acquisition;</li> <li>• long-term alteration/ disruption;</li> <li>• change in area character/ aesthetics;</li> <li>• nuisance impacts;</li> <li>• change to access / travel time;</li> <li>• change to facilities / utilities / services.</li> </ul> To buildings or "standing" sites of extreme local, provincial or national interest or Ontario Heritage Foundation easements properties.	<ul style="list-style-type: none"> <li>• A new transportation facility may result in the loss of built heritage features resulting in a depletion of the cultural heritage resources / heritage character in the area.</li> <li>• Impacts to built heritage features should be avoided to the extent possible, or as a secondary alternative relocation rather than demolition could be considered.</li> <li>• MTO is required to operate in accordance with Cemeteries Act</li> <li>• MTO is required to operate in accordance with Ontario Heritage Act</li> </ul>
	3.1.2 Heritage Bridges	Potential for destruction or significant alteration of heritage bridges	

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FACTOR / SUB-FACTOR	CRITERIA	INDICATORS FOR DETAILED PLANNING FOR PROVINCIAL ROADWAYS	RATIONALE FOR FACTOR AND SUB-FACTOR EVALUATION
	3.1.3 Areas of Historic 19 <sup>th</sup> Century Settlement	Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement;</li> <li>• long-term alteration/ disruption;</li> <li>• change in area character/ aesthetics;</li> <li>• nuisance impacts;</li> <li>• change to access / travel time;</li> <li>• change to facilities / utilities / services.</li> </ul> To areas of historic 19 <sup>th</sup> century settlement.	
	3.1.4 Cultural Heritage Landscapes (collection of individual man-made features modifying pristine landscape)	Potential and significance of change to composition of cultural landscapes.	
	3.1.5 First Nations' Burial Sites	Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement;</li> <li>• long-term alteration/ disruption;</li> <li>• change in area character / aesthetics;</li> <li>• nuisance impacts;</li> <li>• change to access / travel time.</li> </ul> to First Nations' burial sites.	
	3.1.6 Cemeteries	Potential and significance of: <ul style="list-style-type: none"> <li>• encroachment, severance, displacement;</li> <li>• long-term alteration/ disruption;</li> <li>• change in area character/ aesthetics;</li> <li>• nuisance impacts;</li> <li>• change to access / travel time;</li> <li>• change to facilities / utilities / services.</li> </ul> To cemeteries.	
3.2 Cultural Heritage – Archaeology	3.2.1 Pre-Historic and Historic First Nations Sites	Potential for destruction or disturbance of pre-historic and historic First Nations archaeological sites of extreme local, provincial or national interest	<ul style="list-style-type: none"> <li>• Disturbance or destruction of certain archaeological sites of extreme local, provincial or national interest represents a significant cultural loss.</li> <li>• Impacts to archaeological resources/sites should be avoided or minimized to the extent possible.</li> <li>• Significant archaeological sites shall be preserved and avoided in accordance with Ontario Ministry of Culture (OMC), and Aboriginal People's policies and procedures, and all others shall be excavated to OMC standards</li> </ul>
	3.2.2 Historic Euro-Canadian Archaeological Sites	Potential for destruction or disturbance of historic Euro-Canadian archaeological sites of extreme local, provincial or national interest	
<b>4. Transportation Factors</b>			
4.1 Area Transportation System Capacity and Efficiency	4.1 Federal/Provincial/Municipal transportation planning policies/goals/objectives	Not considered after the Preliminary Planning phase	<ul style="list-style-type: none"> <li>• The Official Plans of municipalities within the Analysis Area, and the strategic growth policies and targets embodied in the Provincial Growth Plan, suggest that population and employment growth will continue over time and will be important to future economic prosperity. In order for this economic growth to be realized, an efficient transportation system to move both people and goods within and through the Analysis Area is considered fundamental.</li> <li>• The effectiveness of each alternative needs to be determined.</li> <li>• There is a need to determine how transportation solutions address future needs in relation to existing and proposed future transportation infrastructure.</li> <li>• There is a need to determine how well transportation solutions operate during peak periods.</li> <li>• Transportation agencies have developed design standards to ensure that safety objectives are reflected in all new/expanded infrastructure. These standards are not subject to modification or compromise to avoid/reduce impacts, costs, etc.</li> <li>• Goods movement between economic centres and growth areas incurs out-of-way travel and delay due to congestion through the Analysis Area. Reducing travel times, out-of-way travel and improving travel time reliability would lead to lower transportation costs and benefit the local, provincial and national economy.</li> <li>• There is a need to determine how well transportation solutions operate during peak periods.</li> <li>• There is a need to determine emergency access and safety issues related to transportation solutions.</li> <li>• There is a need to determine the flexibility of transportation solutions to address future needs beyond the forecasted planning horizon.</li> <li>• Physical conditions and staging issues can affect the feasibility of implementing transportation solutions.</li> <li>• There is the need identify the costs associated with possible transportation solutions. Construction costs can influence the feasibility of a given alternative</li> </ul>
	4.2 Efficient movement of people	Potential to support the efficient movement of people between communities and regions based on Level of Service (LOS) and volume to capacity (v/c) on a network, screenline and critical link basis	
	4.3 Efficient movement of goods	Potential to support efficient movement of goods between urban growth centres and regional intermodal facilities based on road network and Highway 7&8 corridor performance measures (LOS and travel speed)	
4.2 System reliability / redundancy	Potential to support system reliability and redundancy for travel (people and goods) between regions and communities during adverse conditions		
4.3 Safety	4.3.1 Traffic Safety	Potential to improve traffic safety based on opportunity to reduce congestion on area road network (LOS and v/c) and reduce the frequency of intersections and entrances in the Highway 7&8 corridor	
	4.3.2 Emergency Access	Potential to support emergency access to/from existing and/or new provincial facilities.	
4.4 Mobility and Access	4.4.1 Modal integration, balance and efficiency	Potential to improve modal choice and increase mode split between communities, regions and intermodal facilities based on travel performance indicators (LOS, v/c, travel speed) at critical screenlines and for Highway 7&8 corridor.	
	4.4.2 Linkages to Population and Employment Centres	Potential to improve accessibility to urban growth centres for people and goods movement based on higher order network continuity and connectivity	

**Exhibit 3.2: Evaluation Factors, Sub-factors, Criteria and Indicators for Assessment and Evaluation of Detailed Planning Alternatives**

FACTOR / SUB-FACTOR	CRITERIA	INDICATORS FOR DETAILED PLANNING FOR PROVINCIAL ROADWAYS	RATIONALE FOR FACTOR AND SUB-FACTOR EVALUATION
	4.4.3 Recreation and Tourism Travel	Potential to support recreation and tourism travel within and to/from the Analysis Area by provision of higher order network (roads and transit) continuity and connectivity and through network performance indicators (LOS, v/c, travel speed)	
	4.4.4 Accommodation for pedestrians, cyclists and snowmobiles	Potential to accommodate pedestrians, cyclists within critical travel corridors in urbanized areas and snowmobiles in recognized rural trails	
<b>4.5 Network Compatibility</b>	4.5.1 Network Connectivity	Potential to improve transportation system connectivity within and to/from the analysis area	
	4.5.2 Flexibility for Future Expansion	Potential to address future transportation needs beyond the forecasted planning horizon	
<b>4.6 Engineering</b>	4.6.1 Constructability	Potential ease of implementation considering feasibility/difficulty of physical, property or environmental constraints	
	4.6.2 Compliance with Design Criteria	Conformity to applicable provincial safety and design standards	
<b>4.7 Traffic Operations</b>	Potential impact on traffic operations due to factors such as design features, private access, and transportation network connections		
<b>4.8 Construction Cost</b> (excludes property costs and engineering costs)	Relative road construction cost, excluding property and engineering costs		
<b>NOTES:</b> Information to support the evaluation are enhanced by field investigation work as appropriate (the environmental information is documented in Report "F" – 2 <sup>nd</sup> Part)			



#### **4.0 SUMMARY OF INPUT RECEIVED ON DETAILED PLANNING ALTERNATIVES AND MTO RESPONSES AND CHANGES**

In the final copy of this document, this section will provide a summary of comments and input received on the draft *Report G: Generation of Detailed Planning Alternatives for Provincial Roadways* during the public review period, as well as an explanation of how this feedback was addressed in this version of the report by MTO.

**APPENDIX A**  
**DETAILED PLANNING ALTERNATIVE PLATES**