Ontario

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

Report H: Milestone Report – Selection of Detailed Planning (Route) Alternatives for Provincial Roadways

DRAFT

January, 2011

www.7and8corridorstudy.ca

This report is presented in draft format in order to obtain information and comments from stakeholders. Your input is requested by March 25, 2011 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 includes:

- development of 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.
- preparation of a preliminary design for the provincial roadway components of that plan; and
- documentation of the work in a Transportation Environmental Study Report for public review at study completion.

This study also:

- involved reviewing and building on the findings of the MTO Highway 7&8 Study Design – Greater Stratford to New Hamburg Area, December 2005;
- addresses 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); and
- recognizes other relevant transportation corridor studies being undertaken by MTO.

The study is being 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.7and8 corridorstudy.ca.

A major component of the study is an outreach and consultation program structured around six key points of decision-making, each of which is 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.

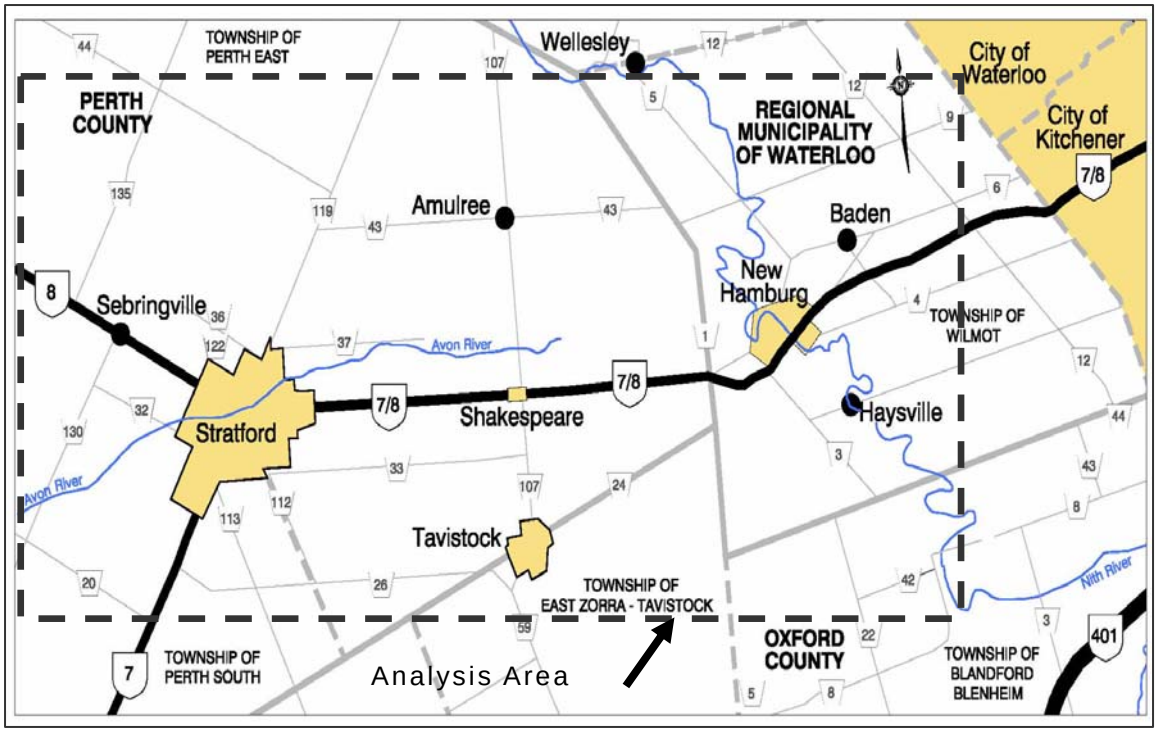
At the completion of the study, the filing of a Transportation Environmental Study Report (TESR) will be announced through newspaper notices. Decisions on funding and timing of detail design and construction are based upon environmental clearance of the TESR, since it determines the type of transportation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

The purpose of Report H is to document the selection of detailed planned alternatives (route alternatives) within the preferred corridor, including:

- Refined Study Area;
- Refined detailed planning (route) alternatives;
- Assessment and evaluation of route alternatives;
- Preferred detailed planning (route) alternative for entire study corridor; and
- Process for the generation of preliminary design alternatives.

As can be seen in **Exhibit 1.2** below, Report H is the ninth of 12 reports to be prepared for this study and the third report of Phase 4, Detailed Planning.

Exhibit 1.2: Summary of Reports **Highway 7&8 Transportation Corridor Planning and Class EA Study**
STUDY PHASE 1: STUDY PLAN
• Report "A" Study Plan For Technical Work, Outreach And Consultation
STUDY PHASE 2: AREA TRANSPORTATION SYSTEM PLANNING
• Report "B": Working Paper – Overview of Transportation, Land Use and Economic Conditions Within the Analysis Area
• Report "F" -1st Part: Working Paper - Environmental Conditions And Constraints
• Report "C": Working Paper – 'Area Transportation System' Problems and Opportunities
• Report "D": Working Paper – Area Transportation System Alternatives
STUDY PHASE 3: PRELIMINARY PLANNING
• Report "E": Milestone Report – Highway 7&8 Transportation Corridor Needs Assessment
STUDY PHASE 4: DETAILED PLANNING FOR PROVINCIAL ROADWAYS
• Report "F" 2nd Part: Working Paper - Environmental Conditions And Constraints
• Report "G": Working Paper – Generation of Detailed Planning Alternatives for Provincial Roadways
• ***Report "H": Milestone Report - Selection of Detailed Planning Alternatives for Provincial Roadways***
STUDY PHASE 5: PRELIMINARY DESIGN FOR PROVINCIAL ROADWAYS
• Report "I": Working Paper - Generation of Provincial Roadway Preliminary Design Alternatives
• Report "J": Milestone Report - Selection of Preliminary Design Alternatives for Provincial Roadways
STUDY PHASE 6: TRANSPORTATION ENVIRONMENTAL STUDY REPORT
• Report "K": Transportation Environmental Study Report (documents overall study)

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), or combinations of the foregoing, plus inter-regional transit and transportation demand management (e.g. ridesharing and telecommuting) 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. In response to stakeholder input, some sections of highway corridor improvements have been revised since the original publication of Report E.

Exhibit 2.2 illustrates the preferred highway corridor and the associated Study Area for the generation of detailed planning alternatives, including the area for further review of Shakespeare route alternatives which was defined in response to comments received through the PIC #3 consultation process to allow the study team to conduct a more detailed review of route alternatives in the Shakespeare area.

During the study, the Study Area limits may be refined or modified as required to accommodate any reasonable alternatives that may be developed.

Exhibit 2.1: Area Transportation System Strategy

Strategy Component	Description

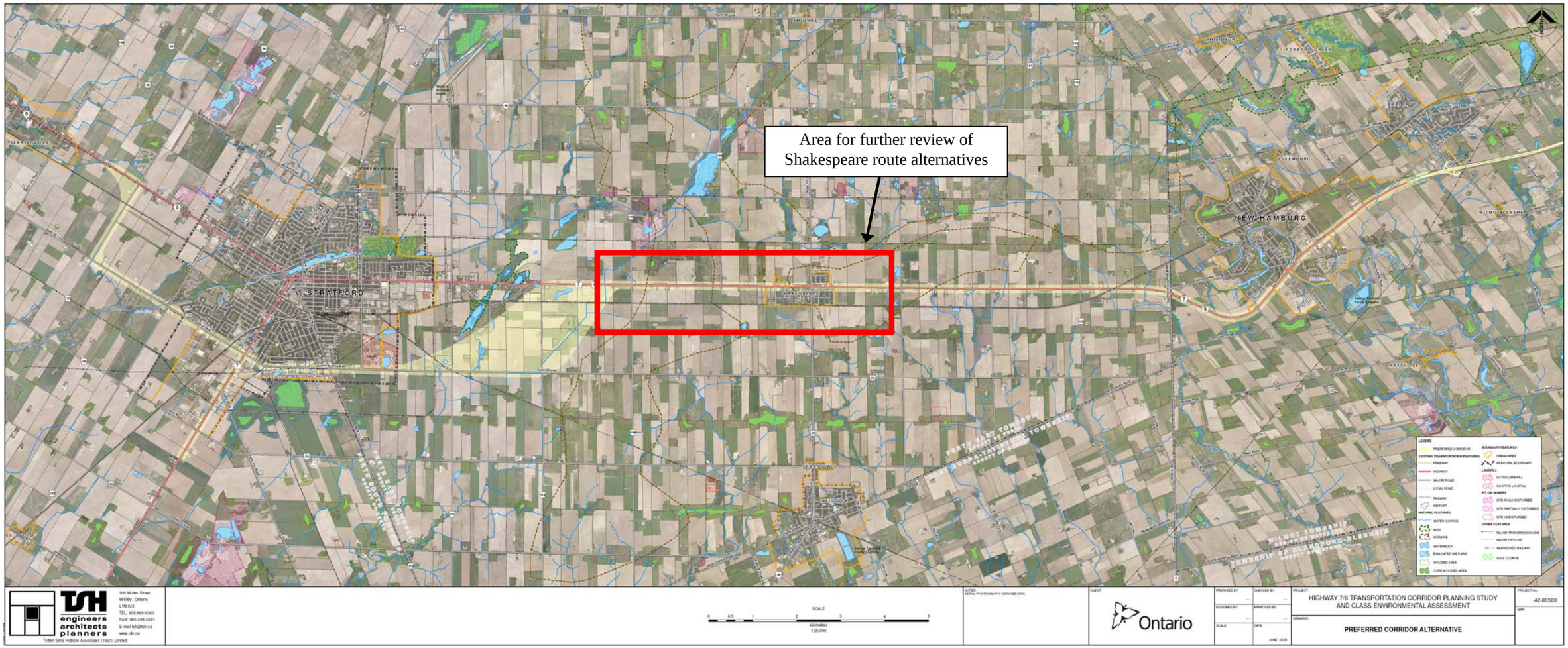
Highway Corridor	<u>From west of Stratford to Highway 7</u>
	• 2-lane Highway 8 with geometric improvements from mid-way between Perth Roads 130 and 125 to Perth Road 125;
	• Modification of intersection at Highway 8 and Perth Road 125;
	• 2-lane Perth Road 125 with geometric improvements from Highway 8 to Perth Line 32/Lorne Avenue;
	• Modification of intersection at Perth Road 125 and Perth Line 32/Lorne Avenue;
	• 2/3-lane Perth Line 32/Lorne Avenue with geometric improvements from Perth Road 125 to Highway 7.
	
	<u>From Highway 7 to East of Stratford</u>
	• Widen Highway 7 from 2 to 4 lanes from south of Perth Line 29 to Lorne Avenue; and
	• Widen Lorne Avenue from 2 to 4/5 lanes from Highway 7 to Perth Road 111.
	
	<u>From East of Stratford to West of Shakespeare</u>
	• New 4-lane highway from Lorne Avenue at Perth Road 111 to one of:
	  o Highway 7&8 east of Perth Road 110; or
	  o A southerly bypass of Shakespeare.

Exhibit 2.1: Area Transportation System Strategy	
Strategy Component	**Description**

	From West of Shakespeare to East of Shakespeare
	• One of:
	  o A new 4-lane northerly bypass of Shakespeare; or
	  o Widening Highway 7&8 from 2 to 4/5 lanes through Shakespeare; or
	  o A new 4-lane southerly bypass of Shakespeare.
	
	From East of Shakespeare to West of New Hamburg
	• Widen Highway 7&8 from 2 to 4/5 lanes from east of Shakespeare to mid-way between Perth Road 102 and Wilmot–Easthope Road (railway structure).
	
	From West of New Hamburg to East of New Hamburg
	• Widen Highway 7&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;
	• Modification of intersection at Wilmot-Easthope Road;
	• Modification of Highway 7&8 through New Hamburg with median barrier, modification or closure of intersections, plus possible service road.

Inter-Regional Transit	Referred to appropriate agency for further review and action
Transportation Demand Management	Referred to appropriate agency for further review and action

Exhibit 2.2: Map of Preferred Corridor Alternative and Associated Study Area, including Area for Further Review of Shakespeare Route Alternatives



3.0 PROCESS AND CRITERIA TO GENERATE AND EVALUATE DETAILED PLANNING (ROUTE) 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 (route) alternatives for provincial roadways is the following:

1 Identify Detailed Planning Alternatives for Existing Provincial Highway and/or New Provincial Roadway Routes
- Description and rationale for detailed planning alternatives (presented in Report G and in **Section 3.2** and **Exhibit 3.1** below, including revisions made subsequent to the preparation of 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 were evaluated against the environmental and transportation factors and sub-factors identified in **Exhibit 3.2** at the end of this section which were refined / modified in part based on local information provided by stakeholders through the consultation process.

4 Comparative Evaluation of Detailed Planning Alternatives by Reasoned Argument and Augmented by Arithmetic Methods
- Each alternative was evaluated using the reasoned argument and arithmetic methods and the identified factors, sub-factors, criteria and indicators (see **Exhibit 3.2** at the end of this section).

5 Identify Recommended Detailed Planning Alternative for Existing Provincial Highway and/or New Provincial Routes
- Selection of recommended detailed planning alternative based on results of comparative evaluation and taking into consideration stakeholder input received through consultation and outreach program (presented in Report H).

3.2 Summary of Detailed Planning Alternatives for Provincial Roadways

Based on the selected Preliminary Planning (Corridor) 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
- A combination of improvements to sections of existing Highway 7&8 and new sections of provincial highway

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.

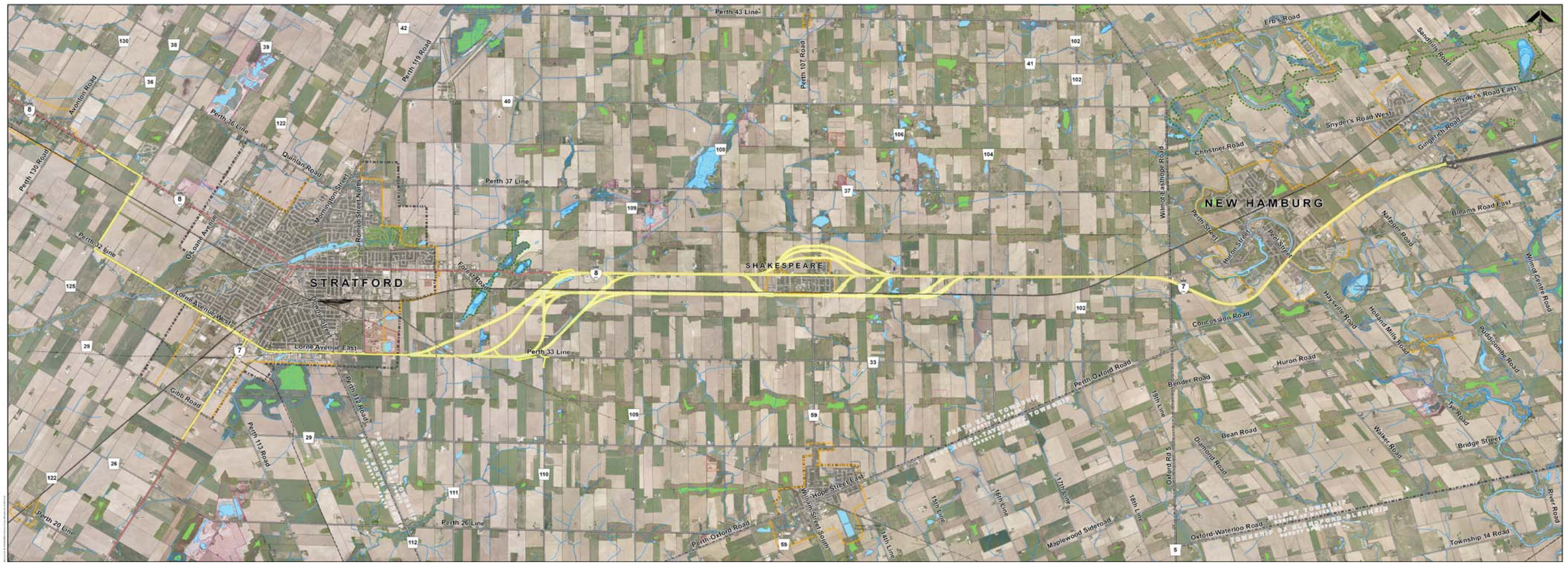
Principle 3: Transportation service criteria

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 Study Area was divided into six sections for the generation of provincial roadway detailed planning (route) alternatives. The alternatives which were generated for the various segments of the preferred corridor and the associated rationale for their generation are described below. The detailed planning alternatives are illustrated on **Exhibit 3.1**. These alternatives were reviewed with stakeholders, agencies and the public through the outreach and consultation process, with modifications / refinements made to the alternatives where warranted to generate a final set of detailed planning alternatives to be evaluated.

Exhibit 3.1: Map of Route Alternatives

Section 1: West of Highway 7 / Erie Street	Section 2: Lorne Avenue to East of Stratford	Section 3: East of Stratford to East of Perth Line 109	Section 4: Shakespeare Area, East of Perth Line 109 to East of Road 106	Section 5: East of Road 106 to East of Regional Road 1	Section 6: East of Regional Road 1 to East of Nafziger Road
Single Route Alternative carried forward from PIC #3	Single Route Alternative carried forward from PIC #3	Route Alternatives carried forward from PIC #3	Route Alternatives carried forward from PIC #3B	Single Route Alternative carried forward from PIC #3	Single Route Alternative carried forward from PIC #3



3.2.1 West of Highway 7 / Erie Street

West of Highway 7 / Erie Street, a single route alternative was identified for this corridor segment, with the following geometric improvement alternatives 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:

- 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

In response to comments received through the PIC #3 and #3B consultation processes, the connections between Perth Line 32 and Road 125 and Road 125 and Highway 8 will be reviewed, modified as appropriate subject to further discussions with stakeholders, and evaluated during the Preliminary Design phase as evaluation indicators for Preliminary Design alternatives are at a higher level of detail that better addresses concerns expressed by stakeholders.

3.2.2 Highway 7 / Erie Street to East of Stratford (Lorne Avenue)

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 route alternative was identified for this corridor segment. Widening alternatives for this section will be developed and evaluated during the Preliminary Design phase as evaluation indicators for Preliminary Design alternatives are at a higher level of detail.

3.2.3 East of Stratford to East of Perth Line 109

From the east limit of Stratford to east of Perth Line 109, four new route alternatives (as illustrated in **Exhibit 3.1** and the plan in **Appendix A**) were generated to connect the Lorne Avenue corridor to the existing Highway 7&8 corridor or a new route south of the existing railway corridor 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 Limit of Perth Line 109 to East of Road 106

From east of Perth Line 109 to east of Road 106, in response to comments received through the PIC #3 consultation process and input received through the Shakespeare Community Workshops, a broader range of route alternatives (as illustrated in **Exhibit 3.1** and the plan in **Appendix B**) was generated for the Shakespeare area as follows:

- Four highway bypass route alternatives north of the existing Highway 7&8 corridor that connect back to Highway 7&8 west and east of the hamlet;
- Four highway bypass route alternatives south of the existing Highway 7&8 corridor that connect back to Highway 7&8 or a new route south of the existing railway corridor west of the hamlet and to Highway 7&8 east of the hamlet; and
- Highway route alternative that involve highway widening within the existing and/or expanded Highway 7&8 corridor (that is, making use of the existing corridor).

3.2.5 East of Road 106 to East of Regional Road 1

From east of Road 106 to east of Regional Road 1, a single route alternative and several widening alternatives were identified for this segment of the corridor. Widening alternatives for this section will be further developed and evaluated during the Preliminary Design phase as evaluation indicators for Preliminary Design alternatives are at a higher level of detail.

3.2.6 East of Regional Road 1 to East of Nafziger Road

From east of Regional Road 1 to east of Nafziger Road, a single route alternative was identified for this segment of the corridor. 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.

Widening and crossing road connection alternatives for this section will be further developed and evaluated during the Preliminary Design phase as evaluation indicators for Preliminary Design alternatives are at a higher level of detail.

3.3 Process for Assessment and Evaluation of Detailed Planning Alternatives and Selection of the Preferred Detailed Planning Alternatives

The Study Area was divided into six sections for the generation, assessment and evaluation of route alternatives. For the following four sections, a single route alternative was identified and hence was not subject to the reasoned argument and arithmetic evaluation methods:

- Section 1: West of Highway 7 / Erie Street
- Section 2: Highway 7 / Erie Street to East of Stratford (Lorne Avenue)
- Section 5: East of Road 106 to East of Regional Road 1
- Section 6: East of Regional Road 1 to East of Nafziger Road

For the remaining two sections where multiple route alternatives were identified, specifically Sections 3 and 4 encompassing the area east of Stratford and in the vicinity of Shakespeare, the assessment and evaluation of route alternatives was undertaken using the reasoned argument and arithmetic evaluation methods. The assessment and evaluation was undertaken in steps as follows:

- For Section 3 (east of Stratford):
    - Route alternatives connecting to new route alternative south of railway corridor evaluated to identify preferred alternative
    - Route alternatives connecting to existing Highway 7&8 evaluated to identify preferred alternative
- For Section 4 (Shakespeare area):
    - North by-pass route alternatives evaluated to identify preferred alternative
    - South by-pass route alternatives east of Shakespeare evaluated to identify preferred alternative
    - Preferred north and south by-pass alternatives and the existing Highway 7&8 alternative evaluated to identify preferred route alternative for Shakespeare Area

Exhibit 3.2 provides the environmental and transportation factors, sub-factors, criteria and indicators which were considered for the assessment and evaluation of route alternatives. The sub-factors, criteria and indicators were refined / modified in part based on local information provided by stakeholders through the consultation process.

The evaluation of alternative methods was a two-stage process.

The first stage (assessment) entailed the identification of advantages and disadvantages of the various alternatives under consideration. At this stage, environmental features were examined to determine the extent of impact. Net impacts were identified; these refer to the effects on the environment that remain after standard mitigation measures have been applied to reduce the extent of the impact.

The second stage was the evaluation itself. This stage built upon the information obtained from the impact assessment stage and involved 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 and significance of the impacts are determined.

Two evaluation approaches were used to assist in the selection of route alternatives. The Reasoned Argument (or Trade-off) method was the primary tool used to identify a preferred alternative while the Arithmetic (weighting-scoring) method was the secondary tool, used to validate the results of the reasoned argument method.

The Reasoned Argument (trade-off) evaluation component provides 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. It highlights the differences in net effects associated

with the various alternatives. Based on these differences, the advantages and disadvantages of each alternative are identified. The relative significance of the impacts is 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 was derived from the following sources:

- government legislation, policies and guidelines;
- municipal policy (i.e. Official Plans);
- issues and concerns identified by ministries, agencies and the municipalities during the course of this study as well as issues and concerns identified by interest groups and the general public during the study; and
- study team expertise.

The Arithmetic evaluation provides a means to compare the alternative methods based on a numerical scaling with initial weights assigned the study team. A numerical approach is a good sensitivity analysis tool to determine if the conclusions of the reasoned argument approach are valid and appropriate.

The arithmetic evaluation method incorporates 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 were derived for both the level of importance (weight), and the magnitude of the impact (score) associated with each alternative. The weight is multiplied by the score to obtain a total for each factor. The totals for each alternative were compared to determine the preferred alternative.

- ***Scoring*** *(degree of impact):* The score assigned to each environmental attribute is relative to the impact generated. Relative impacts can range from those that are positive (benefit the environment) to negative (detrimental to the environment). The assessment of impacts will be derived from field measurements, results of prediction models, secondary data sources (as appropriate) and other means as necessary.
- ***Weighting*** *(level of importance):* Generally, more weight is assigned to those features which are felt to be more important in assessing impacts generated by alternatives, and less weight is given to those features which are considered to be less important.

The Arithmetic evaluation results were reviewed and compared to the results of the Reasoned Argument method to ensure the rationale supporting the trade-off decisions were valid and appropriate.

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. Natural Environmental Factors			
1.1 Fisheries and Aquatic Ecosystems	1.1.1 Fish Habitat	Potential and significance of: • encroachment, severance, displacement; • long-term alteration/disruption as applicable to the following: • critical fish habitat features • riparian areas • habitat rehabilitation goals	• 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. • 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. • 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. • 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. • 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. • Subsection 36(3) of the Fisheries Act prohibits the deposit of a deleterious substance, directly or indirectly, into waters frequented by fish.
	1.1.2 Fish Community	Potential and significance of: • encroachment, severance, displacement; • long-term alteration/disruption as applicable to the following: • fish species at risk (vulnerable, threatened or endangered fish species) • fish movement/migration • critical fish life stage processes (spawning, rearing, nursery, feeding) • long-term fish community management goals	
1.2 Terrestrial Ecosystems	1.2.1 Wildlife	Potential and significance of: • encroachment, severance, displacement; • long-term alteration/disruption as applicable to the following: • wildlife species at risk (vulnerable, threatened or endangered wildlife species) • wildlife of local and regional importance • migratory birds • critical wildlife habitat features • ecologically functional areas such as connective corridors or travel ways for movement/migration • important wildlife areas such as deeryards, heronries, waterfowl areas, important bird areas • wildlife management, rehabilitation/research program sites • interference with critical wildlife life stage processes (eg mating/rearing) etc	• 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. • 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. • 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. • 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. • 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. • 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.
	1.2.2 Wetlands	Potential and significance of: • encroachment, severance, displacement; • long-term alteration/disruption as applicable to the following: • provincially significant wetlands, their buffer areas, and their wetland function • evaluated and un-evaluated wetlands, their wetland buffer areas, and their wetland function • wetland management, research and/or wetland conservation programs/areas	• 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. • It is important to recognize identified ecologically functional linkages between factors and sub-factors (within a natural heritage system) that contribute to landscape connectivity. The assessment should have regard for PPS Policy 2.1.2 which states that the diversity and connectivity of natural features in an area, and the long term ecological function and biodiversity of natural heritage systems, should be maintained, restored, or where possible improved, recognizing linkages between and among natural heritage features and areas, surface water features and groundwater features. The avoidance of wildlife corridors minimizes risks of wildlife mortality during operation of the facility. Secondary information on ecosystem linkages (aquatic and terrestrial) will be reviewed and supplemented by other available sources (including contacts with specialists, field findings).
	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: • encroachment, severance, displacement; • long-term alteration/disruption as applicable to the following: • significant woodlands/valley lands • forest management/research program areas	• 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. • The PPS Policy 2.1.4 only permits development and site alteration in significant woodlands south and east of the Canadian Shield where it can be demonstrated that there will be no negative impacts on the natural features or their ecological function. The assessment should have regard for the PPS protection objectives. • The study area is located within the Carolinian Zone and may have important representations of Carolinian species assemblages. These natural heritage areas require protection.

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: • encroachment, severance, displacement; • long-term alteration/disruption as applicable to the following: • populations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant regional/local flora/communities • areas/corridors supporting known populations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant flora/communities • vegetation management, rehabilitation/research program sites	• Small degraded, isolated remnant woodlots and wetlands can have ecological value. Large natural and relatively undisturbed features have high ecological sensitivity and value.
	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: • encroachment, severance, displacement; • long-term alteration/ disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to designated/special areas.	• 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. • 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. • 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. • 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. • 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. • 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.
1.3 Groundwater	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	• 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. • 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.
	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	
1.4 Surface Water	1.4.1 Watershed / Sub-Watershed Drainage Features/Patterns	Potential and significance of: • encroachment, severance, displacement; • long-term alteration/ disruption. as applicable to the following: • watercourse crossings (permanent, intermittent and ephemeral) • floodplain or meander belts • riparian areas • sensitive headwater areas • watershed and subwatershed management plans	• 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. • MTO is required to comply with the requirements of the Drainage Act.
	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 Potential and significance of impacts on hydrology due to changes in ground permeability, modifications to surface drainage patterns and alterations of water bodies	

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
2. Land Use / Socio-Economic Environmental Factors			
2.1 Land Use Planning Policies, Goals, Objectives	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	• It is important that First Nations People's land claims within the Analysis Area are documented • 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. • 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. • The Greenbelt Plan notes that infrastructure is important to economic well-being, human health and quality of life in southern Ontario and the Greenbelt. • 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.
	2.1.2 Provincial/Federal land use planning policies/goals/objectives NOTES: PPS Policy 1.6.6.4 stipulates that when planning for corridors for significant transportation facilities, consideration will be given to significant natural heritage, water, agricultural, mineral, cultural heritage and archaeological resources. PPS Policy 2.3 requires prime agricultural areas be protected for long-term use. Prime agricultural areas include specialty crop areas and Classes 1, 2, and 3 soils in this order of priority.	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	
2.2 Land Use / Community	2.2.1 First Nation Reserves	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time. to First Nation Reserves	• 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 • Property takings / displacements and changes / effects on local access have a significant impact on owners and tenants as well as the broader community. • 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. • Disruption or displacement of institutional features may adversely affect the users of these features / facilities and the broader community.
	2.2.2 First Nations' Sacred Grounds	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time. to First Nations' sacred grounds	
	2.2.3 Urban and Rural Residential	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption (e.g. loss of parking area); • change in area character / aesthetics (e.g. loss of trees / garden area); • nuisance impacts (e.g. intrusion of highway into current residential envelope); • change to access / travel time; • change to facilities / utilities / services; • interference with residential community cohesion; • change to highway operational impacts (e.g. snow storage and highway access visibility). to urban and rural residential areas (residents [owners/tenants] and community groups).	

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
	2.2.4 Commercial/Industrial	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services; • interference with residential community cohesion; • change to highway operational impacts (e.g. customer parking, cargo loading/off-loading) 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: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services; • loss of “critical mass” in number of signature business attractions (e.g. number of antique shops). to tourist areas and attractions.	
2.2 Land Use / Community	2.2.6 Community Facilities / Institutions (e.g. hospitals, schools, places of worship, unique community features)	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services; • change to ease and safety of pedestrian movements across the highway and within the highway right-of-way; • change to highway operation impacts to current use (e.g. highway noise and vibration interfering with church services). 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: • encroachment, severance, displacement; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. to municipal infrastructure and public service facilities.	
	2.2.8 Downtown Historic Crossroads Function	Potential and significance of interference by long-distance through traffic on: • “main street” function and structure; • Character / aesthetics; • change to ease and safety of pedestrian movements across the highway and within the highway right-of-way; • change to on-street parking. in the historic downtown area.	
2.3 Noise Sensitive Areas (NSAs) (residential areas and sensitive institutional uses)	2.3.1 Highway Noise	Potential for significant traffic noise increases in NSAs and for noise-sensitive receivers immediately adjacent to the highway.	• 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. • MOE/MTO Noise Protocol requires that highway noise be considered in all Provincial (MTO) Transportation projects
	2.3.2 Construction Noise	Not considered until the Preliminary Design phase	• The MOE/MTO Noise Protocol requires that construction noise be addressed on MTO construction projects • Construction noise may be subject to municipal (I.e., local) noise by-law

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
2.4 Agriculture	2.4.1 Agriculture - Canada Land Inventory Class 1,2,3 Land	Potential and significance of encroachment, severance of Canada Land Inventory Class 1, 2 and 3 soils	• 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. • 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. • Ontario Ministry of Agriculture and Food (OMAF) has provincial guidelines for protection of prime agricultural lands as well as agricultural structures or infrastructure, including the Nutrient Management Act.
	2.4.2 Agricultural - Farm Infrastructure	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • nuisance impacts; 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: • encroachment, severance, displacement; • long-term alteration/ disruption; • nuisance impacts; to in-farm field operations (planting, harvesting, grazing, nutrient management, etc.) as applicable to the following: • Specialty crops/cropland • Dairy/livestock operations • Field crop operations • High investment agricultural operations • Established agricultural farm communities	
	2.4.4 Agriculture – Transportation Linkages between Integrated Agricultural Business Units	Potential to sever/disrupt transportation linkages between integrated agricultural business units (movement between integrated agricultural business units of equipment, materials, workers, etc.)	
2.5 Land Use / Resources	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: • encroachment, severance, displacement; • long-term alteration / disruption; • nuisance impacts; • change to access / travel time. to First Nations' treaty rights or use of land and resources for traditional purposes	• 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 • 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
	2.5.2 Parks and Recreational Areas (e.g. national/provincial parks, conservation areas, municipal parks, public spaces, golf courses, trails, greenways and open space linkages)	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to parks and recreational areas.	• 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, 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: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. to current/future extraction of aggregate and mineral resources.	• 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. • 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. • MTO adheres to requirements of the Aggregates Act to protect aggregate resources while minimizing sterilization of mineral aggregate resources as much as possible.
2.6 Major Utility Transmission Corridors (e.g. railroads, hydro, gas, oil)		Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. to major utility transmission corridors.	• 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.

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
2.7 Contaminated Property and Waste Management (e.g. Landfills, Hazardous Waste Sites, "Brownfield" Areas, other known contaminated sites, and high-risk contamination areas)		Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. to contaminated property and waste management.	• 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. • 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. • Appropriate assessments will be carried on these sites and the project will comply with the appropriate.
2.8 Landscape Composition	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).	• Visual impacts on adjacent land use and effects on the visual experiences for users of the facility will be considered.
	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	
2.9 Air Quality	2.9.1 Regional Air Quality and Total Contaminant and Greenhouse Gas Emissions	Not considered after the Preliminary Planning Phase	• Air Quality impacts have the potential to affect human health. • Alternatives through or near urban areas create the potential for increased contaminant levels. • Dust emissions associated with construction related activities could cause temporary air quality issues. • Greenhouse gases contribute to global warming.
	2.9.2 Local Air Quality and Sensitive Receptors to Air Pollutants	Presence and potential for impacts to sensitive receptors to air pollutants and greenhouse gas emissions, including consideration of number of sensitive receptors immediately adjacent to the highway	
3. Cultural Environmental Factors			
3.1 Cultural Heritage – Built Heritage and Cultural Landscapes	3.1.1 Buildings or "Standing" Sites of Architectural or Heritage Significance or Ontario Heritage Foundation Easement Properties	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to buildings or "standing" sites of extreme local, provincial or national interest or Ontario Heritage Foundation easements properties.	• 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. • Impacts to built heritage features should be avoided to the extent possible, or as a secondary alternative relocation rather than demolition could be considered. • MTO is required to operate in accordance with Cemeteries Act • MTO is required to operate in accordance with Ontario Heritage Act
	3.1.2 Heritage Bridges	Potential for destruction or significant alteration of heritage bridges	
	3.1.3 Areas of Historic 19th Century Settlement	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to areas of historic 19th 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: • encroachment, severance, displacement; • long-term alteration/ disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time. to First Nations' burial sites.	
	3.1.6 Cemeteries	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics;	

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
		• nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. 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	• Disturbance or destruction of certain archaeological sites of extreme local, provincial or national interest represents a significant cultural loss. • Impacts to archaeological resources/sites should be avoided or minimized to the extent possible. • Significant archaeological sites shall be preserved and avoided in accordance with Ontario Ministry of Culture (OMC), and Aborignal People's policies and procedures, and all others shall be excavated to OMC standards
	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	
4. Area Economy – Previously addressed during Needs Assessment Phase			
5. Transportation Factors			
5.1 Area Transportation System Capacity and Efficiency	5.1 Federal/Provincial/Municipal transportation planning policies/goals/objectives	Previously considered during the Preliminary Planning phase	• 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. • The effectiveness of each alternative needs to be determined. • There is a need to determine how transportation solutions address future needs in relation to existing and proposed future transportation infrastructure. • There is a need to determine how well transportation solutions operate during peak periods. • 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. • 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. • There is a need to determine how well transportation solutions operate during peak periods. • There is a need to determine emergency access and safety issues related to transportation solutions. • There is a need to determine the flexibility of transportation solutions to address future needs beyond the forecasted planning horizon. • Physical conditions and staging issues can affect the feasibility of implementing transportation solutions. • There is the need identify the costs associated with possible transportation solutions. Construction costs can influence the feasibility of a given alternative
	5.2 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	
	5.3 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)	
5.2 System reliability / redundancy		Potential to support system reliability and redundancy for travel (people and goods) between regions and communities during adverse conditions	
5.3 Safety	5.3.1 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	
	5.3.2 Emergency Access	Potential to support emergency access to/from existing and/or new provincial facilities.	
	5.3.3 Pedestrian, Cyclist and Snowmobile Safety within the highway right-of-way	Potential and significance of change to ease and safety of movement across the highway and within the right-of-way	
5.4 Mobility and Access	5.4.1 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 on potential to provide higher order transit service.	
	5.4.2 Linkages to Population and Employment Centres	Potential to improve linkages to population and employment centres for people and goods movement	
	5.4.3 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)	
	5.4.4 Accommodate mobility of pedestrians, cyclists and snowmobiles	Potential to accommodate mobility of pedestrians, cyclists within critical travel corridors in urbanized areas and snowmobiles in recognized rural trails	
5.5 Network Compatibility	5.5.1 Network Connectivity	Potential to improve transportation system connectivity within and to/from the analysis area	
	5.5.2 Flexibility for Future Expansion	Potential to address future transportation needs beyond the forecasted planning horizon	
5.6 Engineering	5.6.1 Constructability	Potential ease of implementation considering feasibility/difficulty of physical, property or environmental constraints	
	5.6.2 Compliance with Design Criteria	Conformity to applicable provincial safety and design standards	
5.7 Traffic Operations		Potential for negative impact on traffic operations due to factors such as design features, private access, and transportation network connections	
5.8 Construction Cost (excludes property costs and engineering costs)		Relative road construction cost, excluding property and engineering costs	
NOTES:	Information to support the evaluation are enhanced by field investigation work as appropriate (the environmental information is documented in Report "F" – 2nd Part)		

4.0 ASSESSMENT AND EVALUATION OF DETAILED PLANNING (ROUTE) ALTERNATIVES AND SELECTION OF PREFERRED DETAILED PLANNING (ROUTE) ALTERNATIVE

The assessment and evaluation of the detailed planning (route) alternatives and the selection of the preferred route alternative was undertaken in accordance with the process described in **Section 3.3** using the environmental and transportation factors, sub-factors, criteria and indicators provided in **Exhibit 3.2**.

4.1 Assessment and Evaluation of Detailed Planning (Route) Alternatives

The Study Area was divided into six sections for the generation, assessment and evaluation of route alternatives. As was indicated in **Section 3.3** of this report, a single route alternative was identified for the following four sections, and hence was not subject to the reasoned argument and arithmetic evaluation methods:

- Section 1: West of Highway 7 / Erie Street
- Section 2: Highway 7 / Erie Street to East of Stratford (Lorne Avenue)
- Section 5: East of Road 106 to East of Regional Road 1
- Section 6: East of Regional Road 1 to East of Nafziger Road

For the remaining two sections where multiple route alternatives were identified, specifically Sections 3 and 4 encompassing the area east of Stratford and in the vicinity of Shakespeare, the assessment and evaluation of route alternatives was undertaken using the reasoned argument and arithmetic evaluation methods. The assessment and evaluation was undertaken in steps as follows:

- For Section 3 (east of Stratford):
    - Route alternatives connecting to new route alternative south of railway corridor evaluated to identify preferred alternative
    - Route alternatives connecting to existing Highway 7&8 evaluated to identify preferred alternative
- For Section 4 (Shakespeare area):
    - North by-pass route alternatives evaluated to identify preferred alternative
    - South by-pass route alternatives east of Shakespeare evaluated to identify preferred alternative
    - Preferred north and south by-pass alternatives and the existing Highway 7&8 alternative evaluated to identify preferred route alternative for Shakespeare Area

Each alternative was assessed and evaluated as follows:

- A qualitative assessment (high, medium or low) of potential impact for each of the natural environment, land use/social environment, and cultural environment criteria

identified in **Exhibit 3.2** was made based on the environmental information provided in Report F – Part 1, Report F – Part 2 and input provided from stakeholders through the consultation process.

- A qualitative assessment (high, medium or low) of the potential to support each of the transportation criteria identified in **Exhibit 3.2**.
- A brief rationale for each of these high-medium-low qualitative assessments was provided.
- A summary evaluation of each route alternative was made (most preferred route, or moderately preferred route, or least preferred route) for each factor group (natural environment, land use/social environment, cultural environment, and transportation).

The reasoned argument and arithmetic assessment and evaluation results for the Section 3 and Section 4 route alternatives are documented in the tables in **Appendix A** and **Appendix B**, with the preferred alternative for each step of the evaluation process summarized below:

- Section 3: Route alternatives east of Stratford connecting to new route south of railway corridor
    - Preferred Alternative: Perth Road 33 to west of Road 110, new alignment on east side of Central municipal drain to south side of railway corridor
- Section 3: Route alternatives east of Stratford connecting to existing Highway 7&8
    - Preferred Alternative: Perth Road 33 to west of Road 110, new alignment on east side of Central municipal drain connecting to existing Highway 7&8 corridor east of Road 110
- Section 4: Shakespeare South By-Pass Alternatives
    - Preferred Alternative: New alignment on south side of railway corridor connecting to existing Highway 7&8 west of Road 106
- Section 4: Shakespeare North By-Pass Alternatives
    - Preferred Alternative: Most northerly by-pass alternative
- Section 4: Best of Shakespeare North By-Pass, South By-Pass and Existing Route Alternatives
    - Preferred Alternative: New alignment on south side of railway corridor to east of Shakespeare, connecting to existing Highway 7&8 west of Road 106

The assessment and evaluation results for Sections 3 and 4 were reviewed to ensure connectivity between the two sections. The preferred alternative east of Stratford was dependent in part on the preferred alternative for the Shakespeare area.

4.2 Selection of Preferred Detailed Planning (Route) Alternative

The selection of a preferred route alternative was undertaken as follows:

- A summary assessment and summary evaluation of each route alternative was made for each factor group (natural environment, land use/social environment, cultural environment, and transportation), based upon the information presented in the tables in **Appendix A** and **Appendix B.**
- An overall evaluation and a recommendation of which route alternative to select for each section of the Study Area was made, including the rationale (see below) for selecting one alternative over the others. This is also presented in the tables in **Appendix A** and **Appendix B.**

The rationale for selecting the preferred alternative included, in part, the following:

- government legislation, policies and guidelines;
- municipal policy (i.e. Official Plans);
- issues and concerns identified by ministries, agencies and the municipalities during the course of this study as well as issues and concerns identified by interest groups and the general public during the study; and
- study team expertise.

The Preferred Route alternative is presented in **Exhibit 4.1** and is described briefly below:

- Section 1: Existing Highway 8, Road 125, Lorne Avenue and Erie Street alignments west of Highway 7 / Erie Street
- Section 2: Existing Lorne Avenue alignment from Highway 7 / Erie Street to east of Stratford
- Section 3: Perth Road 33 to west of Road 110, new alignment on east side of Central municipal drain to south side of railway corridor
- Section 4: New alignment on south side of railway corridor to east of Shakespeare, connecting to existing Highway 7&8 west of Road 106
- Section 5: Existing Highway 7&8 alignment from west of Road 106 to east of Regional Road 1
- Section 6: Existing Highway 7&8 alignment from east of Regional Road 1 to east of Nafziger Road

The south bypass alternative which remains south of railway corridor west of Shakespeare is preferred for the following primary reasons:

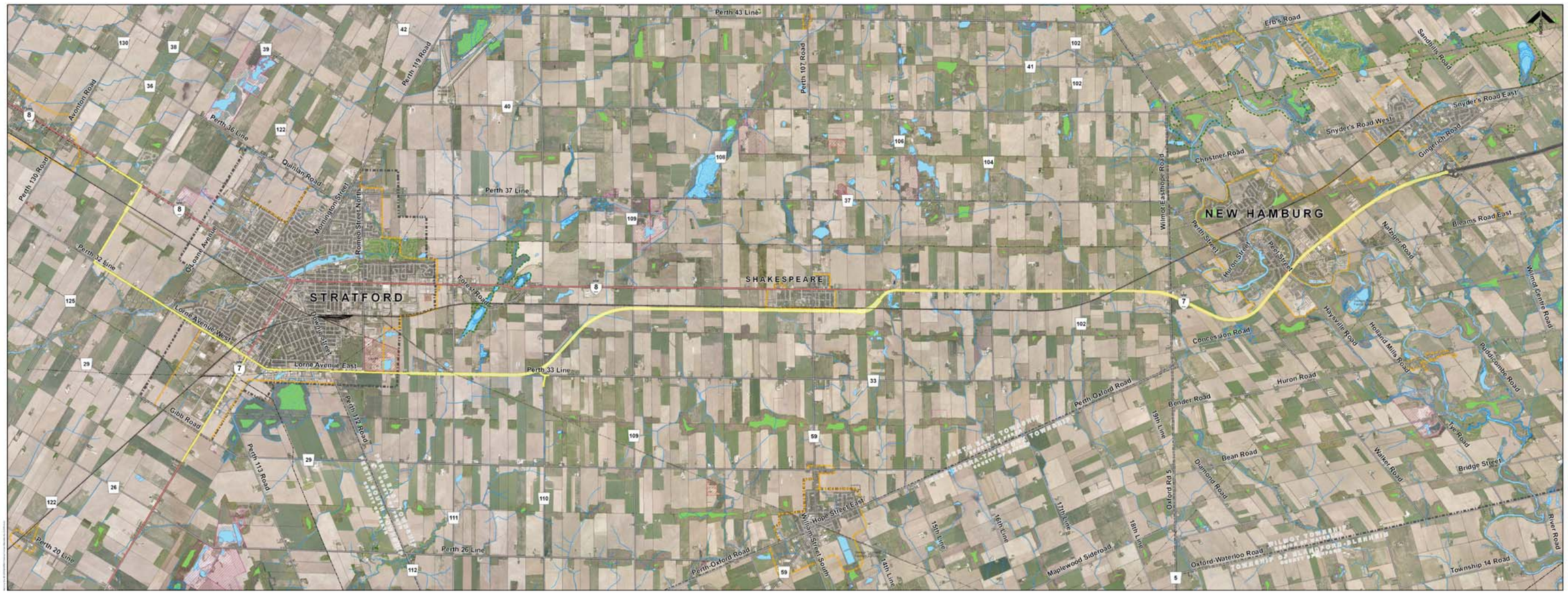
- Moderate potential to affect woodlots; low potential to affect other aspects of natural environment
- Lower potential to affect existing and future development in Shakespeare
- Avoids impacts to the Shakespeare downtown function and character
- Moderate potential to affect agricultural lands / operations
- Lower potential to affect cultural environment

- High potential to support efficient movement of people and goods and improve traffic operations, traffic and pedestrian / cyclist safety, system reliability, mobility and accessibility, and network connectivity

Subject to stakeholder input received, the Project Team will refine the Preferred Route and the Study Area for the generation of Preliminary Design alternatives. As the study progresses, the study area limits may be refined or modified as required to accommodate any reasonable alternatives that may be developed.

Exhibit 4.1: Map of Preferred Route Alternative

Section 1: West of Highway 7 / Erie Street	Section 2: Lorne Avenue to East of Stratford	Section 3: East of Stratford to East of Perth Line 109	Section 4: Shakespeare Area, East of Perth Line 109 to East of Road 106	Section 5: East of Road 106 to East of Regional Road 1	Section 6: East of Regional Road 1 to East of Nafziger Road
Existing Hwy 8, Perth Road 125, Lorne Avenue, Erie Street alignments	Existing Lorne Avenue alignment	Perth Road 33 to west of Road 110, new alignment on east side of Central municipal drain to south side of railway corridor	New alignment on south side of railway corridor to east of Shakespeare connecting to existing Highway 7&8 west of Road 106	Existing Highway 7&8 alignment	Existing Highway 7&8 alignment



5.0 PROCESS AND CRITERIA FOR GENERATION OF PRELIMINARY DESIGN ALTERNATIVES

Preliminary design involves defining the preferred route alternative in greater detail, including:

- Horizontal and vertical alignments of the preferred route alternative
- Roadway cross section
- Right-of-way width / property requirements
- Crossing road connections (interchanges; grade separations; at-grade intersections)
- Shakespeare by-pass connection to Highway 7&8 east of Shakespeare
- Drainage requirements (watercourse crossings, municipal drainage / tile drainage modifications, and a preliminary stormwater management strategy)
- Roadway lighting requirements
- Environmental protection / mitigation measures

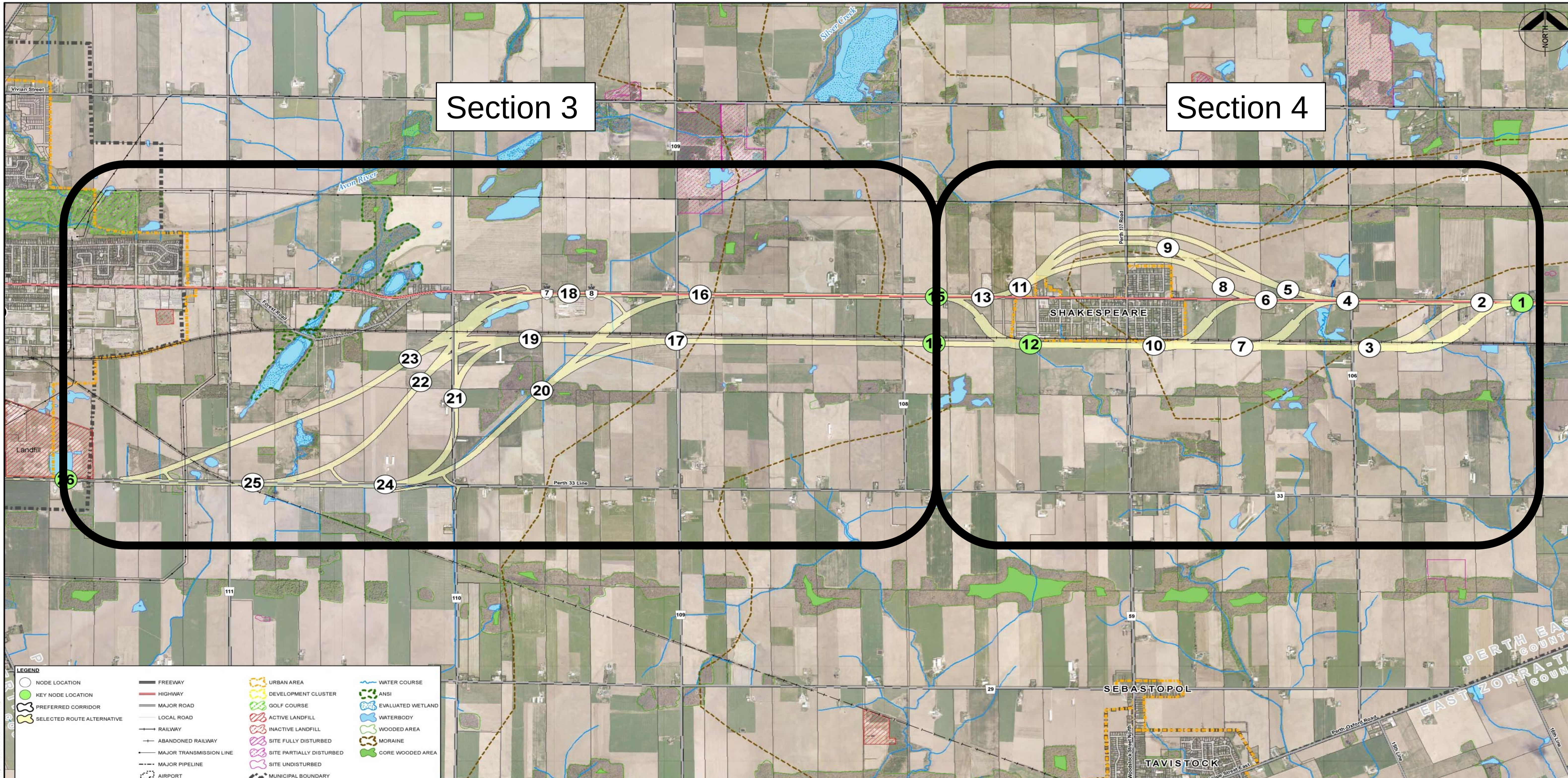
Preliminary Design alternatives will be generated when more than one method of implementing the proposed improvements is available with the objectives of capitalizing on transportation engineering opportunities, avoiding significant environmental features and/or minimizing design-related environmental impacts. Preliminary Design alternatives will be considered at a number of locations along the Preferred Route Alternative.

The following principles and the associated objectives and rationale described in **Section 3.2** will also apply to the generation of preliminary design 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
- Principle 2: Minimize impacts to existing and planned (approved under the Planning Act) population and employment areas
- Principle 3: Transportation service criteria

6.0 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 H: Selection of Detailed Planning (Route) Alternatives for Provincial Roadways* during the public review period, as well as an explanation of how this feedback was addressed in the updated version of the report by MTO.


Section 3
Section 4
SHAKESPEARE
SEBASTOPOL
TAVISTOCK
Landfill
Avon River
Silver Creek
Forest Road
Perth 33 Line
Perth Oxford Road
Hope Street East
Woodstock Street North
Vivian Street
LEGEND
NODE LOCATION
KEY NODE LOCATION
PREFERRED CORRIDOR
SELECTED ROUTE ALTERNATIVE
FREEWAY
HIGHWAY
MAJOR ROAD
LOCAL ROAD
RAILWAY
ABANDONED RAILWAY
MAJOR TRANSMISSION LINE
MAJOR PIPELINE
AIRPORT
URBAN AREA
DEVELOPMENT CLUSTER
GOLF COURSE
ACTIVE LANDFILL
INACTIVE LANDFILL
SITE FULLY DISTURBED
SITE PARTIALLY DISTURBED
SITE UNDISTURBED
MUNICIPAL BOUNDARY
WATER COURSE
ANSI
EVALUATED WETLAND
WATERBODY
WOODED AREA
MORAINE
CORE WOODED AREA

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Totten Sims Hubicki Associates (1997) Limited
300 Water Street
Whitby, Ontario
L1N 9J2
TEL: 905-688-9363
FAX: 905-688-0221
E-mail tsh@tsh.ca
www.tsh.ca

START NODE	END NODE	SECTION NAME
1	12	SECTION A
1	15	SECTION B
14	26	SECTION C
15	26	SECTION D
12	14	SECTION E
12	15	SECTION F

NOTES:
AERIAL PHOTOGRAPHY OBTAINED 2006.

CLIENT: Ontario

PREPARED BY: ---
CHECKED BY: ---
DESIGNED BY: ---
APPROVED BY: ---
SCALE: 1:17,500
DATE: SEPT - 2010

PROJECT: HIGHWAY 7/8 TRANSPORTATION CORRIDOR PLANNING STUDY AND CLASS ENVIRONMENTAL ASSESSMENT

DRAWING: SECTION KEY MAP

PROJECT No.: 42-80503

MAP: 1

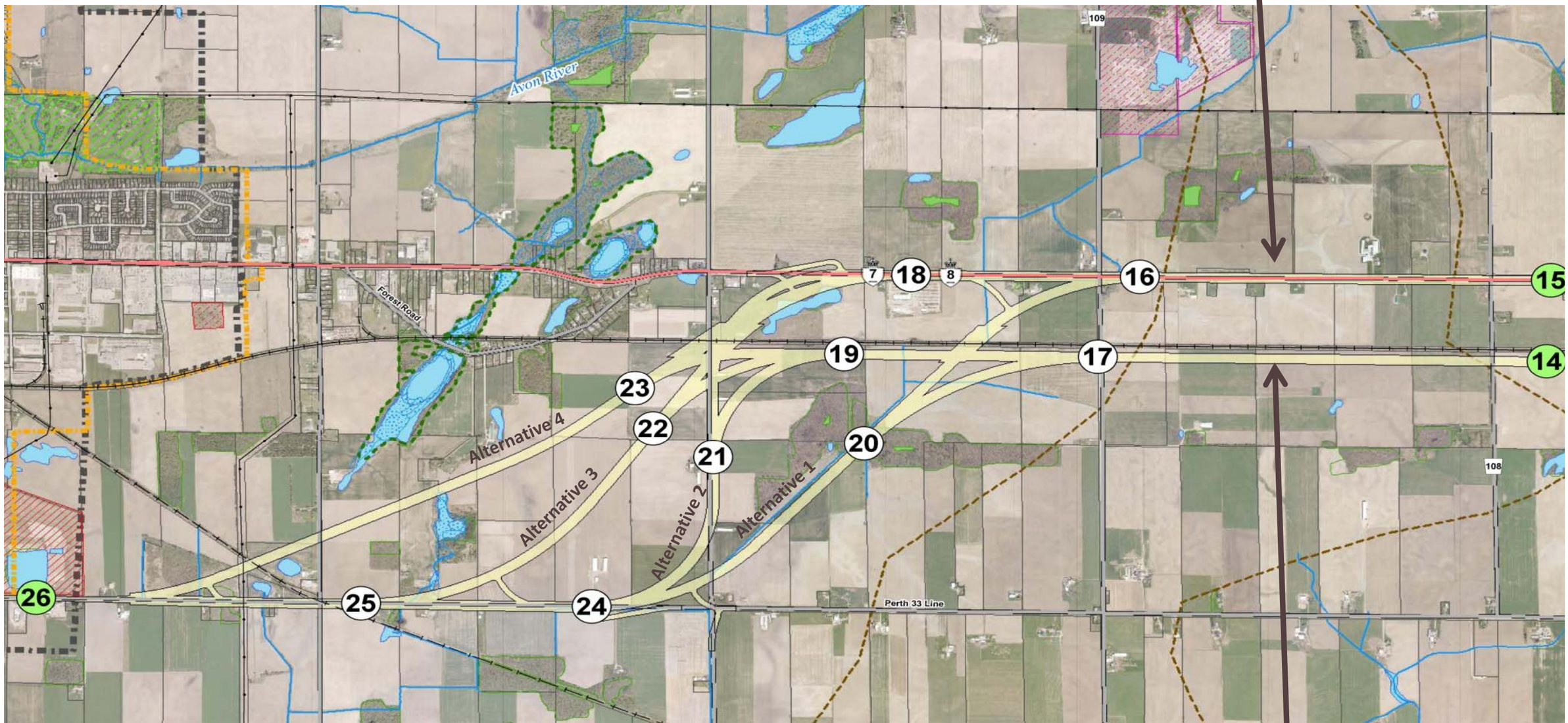
APPENDIX A

ASSESSMENT AND EVALUATION TABLES FOR ROUTE ALTERNATIVES EAST OF STRATFORD

Segment C: East of Stratford, South of Railway Corridor

East of Stratford Route Alternatives

Alternatives connecting to existing Hwy 7&8



Alternatives connecting to new route alternative south of railway corridor

Highway 7&8 Transportation Corridor Planning and Class EA Study

EVALUATION OF ROUTE ALTERNATIVES

Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT C – EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			C1 **14-17-20-24-25-26**	**C2** **14-17-19-21-24-25-26**	**C3** **14-17-19-22-25-26**	**C4** **14-17-19-23-26**
1. NATURAL ENVIRONMENTAL FACTORS						
1.1 Fisheries and Aquatic Ecosystems						
	1.1.1 Fish Habitat	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • critical fish habitat features • riparian areas • habitat rehabilitation goals	**Medium** potential to affect fish and fish habitat • Proposed alignment crosses 4 permanent unassigned tributaries and 1 remnant section of a permanent warmwater tributary of Trout Creek, Thames River Watershed. • Watercourses contain low to moderate quality habitat and directly support fish species • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Fish movements are likely localized between feeding and spawning areas which are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route. • There are no SAR within the route • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated.	**Medium** potential to affect fish and fish habitat • Proposed alignment crosses 3 permanent unassigned tributaries and 1 remnant section of a permanent warmwater tributary of Trout Creek, Thames River Watershed. • Watercourses contain low quality habitat and may directly support warmwater fish species • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Fish movements are already impacted by the existing rail line • Feeding and spawning areas are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route • There are no SAR within the route • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated.	**Medium** potential to affect fish and fish habitat • Proposed alignment crosses 3 permanent unassigned tributaries and 1 remnant section of a permanent warmwater tributary of Trout Creek, Thames River Watershed. • Watercourses contain low quality habitat and may directly support warmwater fish species • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Fish movements are already impacted by the existing rail line • Feeding and spawning areas are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route. • There are no SAR within the route • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated.	**Medium** potential to affect fish and fish habitat • Proposed alignment crosses 3 permanent unassigned tributaries of Trout Creek, Thames River Watershed. • A small section of unassigned wetland may also be impacted • Watercourses contain low quality habitat and may directly support warmwater fish species • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Fish movements are already impacted by the existing rail line • Feeding and spawning areas are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route. • There are no SAR within the route • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated.
	1.1.2 Fish Community	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • fish species at risk (vulnerable, threatened or endangered fish species) • fish movement/migration • critical fish life stage processes (spawning, rearing, nursery, feeding) • long-term fish community management goals					
1.2 Terrestrial Ecosystems						
	1.2.1 Wildlife	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • wildlife species at risk (vulnerable, threatened or endangered wildlife species) • wildlife of local and regional importance • migratory birds	**Medium** potential to affect wildlife and their habitat • No special concern, endangered or threatened wildlife species • No provincially rare species (S1 – S3) • 2 area sensitive bird species recorded in study corridor • 1 MNR area sensitive bird species	**Medium** potential to affect wildlife and their habitat • No special concern, endangered or threatened wildlife species • No provincially rare species (S1 – S3) • 2 area sensitive bird species recorded in study corridor • 1 MNR area sensitive bird species	**Medium** potential to affect wildlife and their habitat • No special concern, endangered or threatened wildlife species • No provincially rare species (S1 – S3) • 3 area sensitive bird species recorded in study corridor • 1 MNR area sensitive bird species	**Low** potential to affect wildlife and their habitat • No special concern, endangered or threatened wildlife species • No provincially rare species (S1 – S3) • 1 frog species were recorded within the route, potential to disrupt habitat for these species

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT C – EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			C1 **14-17-20-24-25-26**	**C2** **14-17-19-21-24-25-26**	**C3** **14-17-19-22-25-26**	**C4** **14-17-19-23-26**
		• critical wildlife habitat features • ecologically functional areas such as connective corridors or travel ways for movement/migration • important wildlife areas such as deeryards, heronries, waterfowl areas, important bird areas • wildlife management, rehabilitation/research program sites • interference with critical wildlife life stage processes (eg mating/rearing) etc	• 2 frog species were recorded within the route, potential to disrupt habitat for these species • Route would bisect large track of forest, potential to impact important wildlife area	• 2 frog species were recorded within the route, potential to disrupt habitat for these species	• 3 frog species were recorded within the route, potential to disrupt habitat for these species	
	1.2.2 Wetlands	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • provincially significant wetlands, their buffer areas, and their wetland function • evaluated and un-evaluated wetlands, their wetland buffer areas, and their wetland function • wetland management, research and/or wetland conservation programs/areas	**Low** potential to affect wetlands • No PSW or LSW are present within the route • 3 unevaluated low-moderate quality wetlands	**Low** potential to affect wetlands • No PSW or LSW are present within the route • 2 unevaluated low-moderate quality wetlands	**Medium** potential to affect wetlands • No PSW or LSW are present within the route • 2 unevaluated low-moderate quality wetlands • 1 unevaluated wetland/standing water body impacted	**Medium** potential to affect wetlands • No PSW or LSW are present within the route • 1 evaluated low-moderate quality wetlands • 1 unevaluated wetland/standing water body impacted low-moderate quality
	1.2.3 Forests	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • significant woodlands/valley lands • forest management / research program areas	**Medium** potential to affect significant or established woodlands of forests • The route will require a significant removal of vegetation from 2 woodlands; the removal of this woodland would impact (reduce and/or remove) core interior forest habitat on both sides of the route • Impact to these woodlands includes severance and edge effects • 4 additional woodland units are impacted, these woodlands are relatively small • Impacts to these woodlands include edge effects	**Low** potential to affect significant or established woodlands of forests • 4 woodland units are impacted; these woodlands are relatively small • Impacts to these woodlands include edge effects	**Low** potential to affect significant or established woodlands of forests • 4 woodland units are impacted; these woodlands are relatively small • Impacts to these woodlands include edge effects	**Low** potential to affect significant or established woodlands of forests • 3 relatively small woodland units are impacted • Impacts to these woodlands include edge effects
	1.2.4 Vegetation	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • populations of vegetation species at risk	**Medium** potential to affect vegetation • Route is predominantly existing roadway and agricultural field • 1 Provincially Significant NHIC record found in database • Impacts include severance and	**Low** potential to affect vegetation • Route is predominantly existing roadway and agricultural field • 1 provincially significant NHIC record found in database	**Low** potential to affect vegetation • Route is predominantly existing roadway and agricultural field • 1 provincially significant NHIC record found in database	**Low** potential to affect vegetation • Route is predominantly existing roadway and agricultural field • 1 provincially significant NHIC record found in database

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT C – EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			C1 14-17-20-24-25-26	**C2 14-17-19-21-24-25-26**	**C3 14-17-19-22-25-26**	**C4 14-17-19-23-26**
		(vulnerable, threatened or endangered species), species of conservation concern and significant regional/local flora/communities • areas/corridors supporting known populations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant flora/communities • vegetation management, rehabilitation/research program sites	displacement of high forest habitat			
	1.2.5 Designated/ Special Areas	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to designated/special areas.	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI
1.3 Groundwater						
	1.3.1 Areas of Groundwater 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	**Low** potential to adversely affect volume of groundwater flow within recharge and discharge areas • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings, higher infiltration can be expected. • No temporary or long-term change to groundwater recharge or discharge is anticipated due to the small surface area affected by highway construction in the proposed corridor.	**Low** potential to adversely affect volume of groundwater flow within recharge and discharge areas • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings, higher infiltration can be expected. • No temporary or long-term change to groundwater recharge or discharge is anticipated due to the small surface area affected by highway construction in the proposed corridor.	**Low** potential to adversely affect volume of groundwater flow within recharge and discharge areas • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings, higher infiltration can be expected. • No temporary or long-term change to groundwater recharge or discharge is anticipated due to the small surface area affected by highway construction in the proposed corridor.	**Low** potential to adversely affect volume of groundwater flow within recharge and discharge areas • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings, higher infiltration can be expected. • No temporary or long-term change to groundwater recharge or discharge is anticipated due to the small surface area affected by highway construction in the proposed corridor.
	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	**Low** potential to adversely affect groundwater wellhead protection area • The route is located downgradient of the designated wellhead protection areas for Stratford.	**Low** potential to adversely affect groundwater wellhead protection area • The route is located downgradient of the designated wellhead protection areas for Stratford	**Low** potential to adversely affect groundwater wellhead protection area • The route is located downgradient of the designated wellhead protection areas for Stratford	**Low** potential to adversely affect groundwater wellhead protection area • The route is located downgradient of the designated wellhead protection areas for Stratford

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
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SEGMENT C – EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			C1 **14-17-20-24-25-26**	**C2** **14-17-19-21-24-25-26**	**C3** **14-17-19-22-25-26**	**C4** **14-17-19-23-26**
		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	**Low** potential to adversely affect large volume wells • The route is located downgradient of the large volume municipal wells for Stratford.	**Low** potential to adversely affect large volume wells • The route is located downgradient of the large volume municipal wells for Stratford.	**Low** potential to adversely affect large volume wells • The route is located downgradient of the large volume municipal wells for Stratford.	**Low** potential to adversely affect large volume wells • The route is located downgradient of the large volume municipal wells for Stratford.
	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	**Low** potential to adversely affect private wells • The route is in close proximity (<150 m) to a shallow dug well located immediately to the west of Road 111 along Lorne Avenue East. • The dug well in this area is sensitive to surface contamination (i.e. road salt). The potential exists for long-term and short-term adverse effects to these wells due to their close proximity to the route. • Mitigation measures to prevent adverse impact to these wells due to highway maintenance should be implemented, such as a road salt management plan. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer. Five of these deep bedrock wells are located in close proximity (<50 m) to the edge of the proposed route. Depending on further well investigation these may require decommissioning and replacement prior to highway construction.	**Low** potential to adversely affect private wells • The route is in close proximity (<150 m) to a shallow dug well located immediately to the west of Road 111 along Lorne Avenue East. • The dug well in this area is sensitive to surface contamination (i.e. road salt). The potential exists for long-term and short-term adverse effects to these wells due to their close proximity to the route. • Mitigation measures to prevent adverse impact to these wells due to highway maintenance should be implemented, such as a road salt management plan. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer. Five of these deep bedrock wells are located in close proximity (<50 m) to the edge of the proposed route. Depending on further well investigation these may require decommissioning and replacement prior to highway construction.	**Medium** potential to adversely affect private wells • Will directly result in the removal of one well and potential to adversely affect private wells • The proposed route is in close proximity (<150 m) to a shallow dug well located immediately to the west of Road 111 along Lorne Avenue East. • The dug well in this area is sensitive to surface contamination (i.e. road salt). The potential exists for long-term and short-term adverse effects to these wells due to their close proximity to the route. • Mitigation measures to prevent adverse impact to this dug well due to highway maintenance should be implemented, such as a road salt management plan. • The proposed route appears to intersect the location of one deep drilled well located along 110th Road south of the railway tracks. This well will require decommissioning prior to highway construction. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer. Five of these deep bedrock wells are located in close proximity (<50 m) to the edge of the proposed route. Depending on further well investigation these may require decommissioning and replacement prior to highway construction.	**Low** potential to adversely affect private wells • The route is in close proximity (<150 m) to a shallow dug well located immediately to the west of Road 111 along Lorne Avenue East. • The dug well is this area is sensitive to surface contamination (i.e. road salt). The potential exists for long-term and short-term adverse effects to these wells due to their close proximity to the route. • Mitigation measures to prevent adverse impact to these wells due to highway maintenance should be implemented, such as a road salt management plan. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer. Five of these deep bedrock wells are located in close proximity (<50 m) to the edge of the proposed route. Depending on further well investigation these may require decommissioning and replacement prior to highway construction.

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT C – EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			C1 **14-17-20-24-25-26**	**C2** **14-17-19-21-24-25-26**	**C3** **14-17-19-22-25-26**	**C4** **14-17-19-23-26**
	1.3.5 Groundwater-Dependent Commercial Enterprises (e.g. water bottling operations)	Potential and significance of alteration to groundwater use by groundwater-dependent commercial enterprises due to physical intrusion, or groundwater interception, draw-down, impoundment, obstruction and by soil compaction	**No** potential to adversely affect groundwater dependent commercial enterprises • No groundwater dependent commercial enterprises have been identified along this route.	**No** potential to adversely affect groundwater dependent commercial enterprises • No groundwater dependent commercial enterprises have been identified along this route.	**No** potential to adversely affect groundwater dependent commercial enterprises • No groundwater dependent commercial enterprises have been identified along this route.	**No** potential to adversely affect groundwater dependent commercial enterprises • No groundwater dependent commercial enterprises have been identified along this route.
	1.3.6 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	**Medium** potential to adversely affect groundwater sensitive ecosystems • Possible encroachment on an evaluated high quality wetland • Potential long-term adverse effect to groundwater quality due to increased road salt use and road run-off. • Potential temporary effects to groundwater quantity are possible if construction dewatering is required.	**Medium** potential to adversely affect groundwater sensitive ecosystems • Possible encroachment on an evaluated high quality wetland • Potential long-term adverse effect to groundwater quality due to increased road salt use and road run-off. • Potential temporary effects to groundwater quantity are possible if construction dewatering is required.	**High** potential to adversely affect groundwater sensitive ecosystems • Encroachment on an evaluated high quality wetland • Potential long-term adverse effect to groundwater quality due to increased road salt use and road run-off. • Potential temporary effects to groundwater quantity are possible if construction dewatering is required.	**High** potential to adversely affect groundwater sensitive ecosystems • Encroachment on an evaluated high quality wetland • Potential long-term adverse effect to groundwater quality due to increased road salt use and road run-off. • Potential temporary effects to groundwater quantity are possible if construction dewatering is required.
1.4 Surface Water						
	1.4.1 Watershed / Sub-Watershed Drainage Features/Patterns	Potential and significance of: • encroachment, severance, displacement; • long-term alteration/ disruption. as applicable to the following: • watercourse crossings (permanent, intermittent and ephemeral) • floodplain or meander belts • riparian areas • sensitive headwater areas • watershed and subwatershed management plans	**Medium** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 5 watercourses • Abuts the existing Central municipal drain	**Medium** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 4 watercourses • Crosses the existing Central municipal drain	**Medium** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 4 watercourses • Crosses the Central municipal drain	**Medium** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 3 watercourses • Crosses the Central municipal drain
	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 Potential and significance of impacts on hydrology due to changes in ground permeability, modifications to surface drainage patterns and alterations of water bodies				
2. LAND USE / SOCIO-ECONOMIC FACTORS						
2.1 Land Use Planning Policies, Goals, Objectives						
	2.1.1 First Nations Land Claims	Potential and significance of encroachment, severance, displacement to areas for which	**Low** potential to displace areas where there are outstanding First Nations	**Low** potential to displace areas where there are outstanding First Nations	**Low** potential to displace areas where there are outstanding First Nations	**Low** potential to displace areas where there are outstanding First Nations

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study

EVALUATION OF ROUTE ALTERNATIVES

Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT C – EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			C1 **14-17-20-24-25-26**	**C2** **14-17-19-21-24-25-26**	**C3** **14-17-19-22-25-26**	**C4** **14-17-19-23-26**
		there are First Nations outstanding land claims	lands claims. • 5 First Nations land claims have been filed in the study area	lands claims. • 5 First Nations land claims have been filed in the study area	lands claims. • 5 First Nations land claims have been filed in the study area	lands claims. • 5 First Nations land claims have been filed in the study area
	2.1.2 Provincial/ Federal land use planning policies/ goals/objectives	Degree of compatibility with federal/provincial land use policies/goals/objectives NOTES: PPS Policy 1.6.6.4 stipulates that when planning for corridors for significant transportation facilities, consideration will be given to significant natural heritage, water, agricultural, mineral, cultural heritage and archaeological resources. PPS Policy 2.3 requires prime agricultural areas be protected for long-term use. Prime agricultural areas include specialty crop areas and Classes 1, 2, and 3 soils in this order of priority.	**Low** compatibility with federal/ provincial land use policies/goals • Route is predominantly on new alignment which results in increased impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area	**Low** compatibility with federal/ provincial land use policies/goals • Route is predominantly on new alignment which results in increased impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area	**Low** compatibility with federal/ provincial land use policies/goals • Route is predominantly on new alignment which results in increased impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area	**Low** compatibility with federal/ provincial land use policies/goals • Route is predominantly on new alignment which results in increased impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area
	2.1.3 Municipal (regional and local) land use planning policies/goals/ objectives (Official Plans)	Degree of compatibility with municipal Official Plans	**Medium** compatibility with municipal Official Plans. • The corridor impacts agricultural designated lands in County of Perth O.P.	**Medium** compatibility with municipal Official Plans. • The corridor impacts agricultural designated lands in County of Perth O.P.	**Medium** compatibility with municipal Official Plans. • The corridor impacts agricultural designated lands in County of Perth O.P.	**Medium** compatibility with municipal Official Plans. • The corridor impacts agricultural designated lands in County of Perth O.P.
	2.1.4 Development Objectives of Private Property Owners	Potential to isolate property from current/future urban envelope Impact on future land use	**Low** potential to impact future land use • Route alternative does not limit the potential for future development	**Low** potential to impact future land use • Route alternative does not limit the potential for future development	**Low** potential to impact future land use • Route alternative does not limit the potential for future development	**Low** potential to impact future land use • Route alternative does not limit the potential for future development
2.2 Land Use / Community						
	2.2.1 First Nation Reserves	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time. to First Nation Reserves	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area
	2.2.2 First Nations' Sacred Grounds	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts;	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area

LEGEND

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SEGMENT C – EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			C1 14-17-20-24-25-26	**C2 14-17-19-21-24-25-26**	**C3 14-17-19-22-25-26**	**C4 14-17-19-23-26**
		• change to access / travel time. to First Nations' sacred grounds				
	2.2.3 Urban and Rural Residential	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption (e.g. loss of parking area); • change in area character / aesthetics (e.g. loss of trees/garden area); • nuisance impacts (e.g. intrusion of highway into current residential envelope); • change to access / travel time; • change to facilities / utilities / services; • interference with residential community cohesion; • change to highway operational impacts (e.g. snow storage and highway access visibility). to urban and rural residential areas (residents [owners/tenants] and community groups).	**Low** potential for impacts to urban and rural residential areas • Loss of some frontage (property acquisition) to 12 residential properties along Perth Line 33. Loss of some mature trees. No long term alteration/disruption to residence or farm buildings. Likely nuisance impacts to this property. • Loss (acquisition) of some residential/farm properties along entire route. • Field observation identified no change to facilities / utilities / services.	**Low** potential for impacts to urban and rural residential areas • Loss of some frontage (property acquisition) to 13 residential properties along Perth Line 33. Loss of some mature trees. No long term alteration/disruption to residence or farm buildings. Likely nuisance impacts to this property. • Loss (acquisition) of some residential/farm properties along entire route. • Field observation identified no change to facilities / utilities / services.	**Low** potential for impacts to urban and rural residential areas • Loss of some frontage (property acquisition) to 11 residential properties along Perth Line 33. Loss of some mature trees. No long term alteration/disruption to residence or farm buildings. Likely nuisance impacts to this property. • Loss (acquisition) of some residential/farm properties along entire route. • Field observation identified no change to facilities / utilities / services.	**Low** potential for impacts to urban and rural residential areas • Loss of some frontage (property acquisition) to 3 residential properties along Perth Line 33. Loss of some mature trees. No long term alteration/disruption to residence or farm buildings. Likely nuisance impacts to this property. • Loss (acquisition) of some residential/farm properties along entire route. • Field observation identified no change to facilities / utilities / services.
	2.2.4 Commercial / Industrial	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services; • interference with commercial community cohesion; • change to highway operation impacts (e.g. customer parking, cargo loading/off-loading). to commercial and industrial areas (business owners/tenants and customers).	**Low** potential for impacts to commercial and industrial areas • Loss of some frontage (property acquisition) to some commercial properties on Perth Line 33 around Road 111. Likely nuisance impacts to these properties. • Field observation identified no change to facilities / utilities / services.	**Low** potential for impacts to commercial and industrial areas • Loss of some frontage (property acquisition) to some commercial properties on Perth Line 33 around Road 111. Likely nuisance impacts to these properties. • Field observation identified no change to facilities / utilities / services.	**Low** potential for impacts to commercial and industrial areas • Loss of some frontage (property acquisition) to some commercial properties on Perth Line 33 around Road 111. Likely nuisance impacts to these properties. • Field observation identified no change to facilities / utilities / services.	**Low** potential for impacts to commercial and industrial areas • Loss of some frontage (property acquisition) to some commercial properties on Perth Line 33 around Road 111. Likely nuisance impacts to these properties. • Field observation identified no change to facilities / utilities / services.
	2.2.5 Tourist Areas and Attractions (e.g. museums, theatres, etc.)	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services; • loss of "critical mass" in number of signature	**Low** potential for impacts to tourist areas and attractions • No change or impacts to tourist areas and attractions in terms of any property encroachment or acquisition. • No nuisance impacts anticipated given absence of any tourist attractions or areas along this	**Low** potential for impacts to tourist areas and attractions • No change or impacts to tourist areas and attractions in terms of any property encroachment or acquisition. • No nuisance impacts anticipated given absence of any tourist attractions or areas along this	**Low** potential for impacts to tourist areas and attractions • No change or impacts to tourist areas and attractions in terms of any property encroachment or acquisition. • No nuisance impacts anticipated given absence of any tourist attractions or areas along this	**Low** potential for impacts to tourist areas and attractions • No change or impacts to tourist areas and attractions in terms of any property encroachment or acquisition. • No nuisance impacts anticipated given absence of any tourist attractions or areas along this

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Highway 7&8 Transportation Corridor Planning and Class EA Study
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SEGMENT C – EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			C1 14-17-20-24-25-26	**C2** 14-17-19-21-24-25-26	**C3** 14-17-19-22-25-26	**C4** 14-17-19-23-26
		business attractions (e.g. number of antique shops). to tourist areas and attractions.	alternative. • Field observation identified no change to facilities / utilities / services. • No interference with area character/aesthetics of tourist area • No signature business attractions (none along this alternative)	alternative. • Field observation identified no change to facilities / utilities / services. • No interference with area character/aesthetics of tourist area • No signature business attractions (none along this alternative)	alternative. • Field observation identified no change to facilities / utilities / services. • No interference with area character/aesthetics of tourist area • No signature business attractions (none along this alternative)	alternative. • Field observation identified no change to facilities / utilities / services. • No interference with area character/aesthetics of tourist area • No signature business attractions (none along this alternative)
	2.2.6 Community Facilities / Institutions (e.g. hospitals, schools, places of worship, unique community features)	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services • change to ease and safety of pedestrian movements across the highway and within the highway right-of-way; • change to highway operation impacts to current use (e.g. highway noise and vibration interfering with church services). to community facilities and institutions.	**No** potential for impacts to community facilities and institutions • No change or impacts to community facilities or institutions in terms of any property encroachment or acquisition. • No long term alteration /disruption • No nuisance impacts anticipated given absence of any community facilities or areas along this alternative. • Field observation identified no change to facilities / utilities / services.	**No** potential for impacts to community facilities and institutions • No change or impacts to community facilities or institutions in terms of any property encroachment or acquisition. • No long term alteration /disruption • No nuisance impacts anticipated given absence of any community facilities or areas along this alternative. • Field observation identified no change to facilities / utilities / services.	**No** potential for impacts to community facilities and institutions • No change or impacts to community facilities or institutions in terms of any property encroachment or acquisition. • No long term alteration /disruption • No nuisance impacts anticipated given absence of any community facilities or areas along this alternative. • Field observation identified no change to facilities / utilities / services.	**No** potential for impacts to community facilities and institutions • No change or impacts to community facilities or institutions in terms of any property encroachment or acquisition. • No long term alteration /disruption • No nuisance impacts anticipated given absence of any community facilities or areas along this alternative. • Field observation identified no change to facilities / utilities / services.
	2.2.7 Municipal Infrastructure and Public Service Facilities (e.g. sewage and water services, police/emergency services, local utilities)	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. to municipal infrastructure and public service facilities.	**Low** potential for impacts to municipal infrastructure / public service facilities • Potential encroachment to municipal landfill located on Perth Line 33, west of Road 111. Site backs onto roadway so potential disruption due to widening of the road is likely minimal. • From field observations, no other impacts to municipal infrastructure and public service facilities.	**Low** potential for impacts to municipal infrastructure / public service facilities • Potential encroachment to municipal landfill located on Perth Line 33, west of Road 111. Site backs onto roadway so potential disruption due to widening of the road is likely minimal. • From field observations, no other impacts to municipal infrastructure and public service facilities.	**Low** potential for impacts to municipal infrastructure / public service facilities • Potential encroachment to municipal landfill located on Perth Line 33, west of Road 111. Site backs onto roadway so potential disruption due to widening of the road is likely minimal. • From field observations, no other impacts to municipal infrastructure and public service facilities.	**Low** potential for impacts to municipal infrastructure / public service facilities • Potential encroachment to municipal landfill located on Perth Line 33, west of Road 111. Site backs onto roadway so potential disruption due to widening of the road is likely minimal. • From field observations, no other impacts to municipal infrastructure and public service facilities.
	2.2.8 Downtown Historic Crossroads Function	Potential and significance of interference by long-distance through-traffic on: • "main street" function and structure; • character/aesthetics; • change to ease and safety of pedestrian movements across the highway and within the highway right-of-way; • change to on-street parking	**No** potential for interference in the historic downtown area • Alternative does not affect any downtown or historical areas. • No adverse effects on Main Street function, character, pedestrian movements or street parking	**No** potential for interference in the historic downtown area • Alternative does not affect any downtown or historical areas. • No adverse effects on Main Street function, character, pedestrian movements or street parking	**No** potential for interference in the historic downtown area • Alternative does not affect any downtown or historical areas. • No adverse effects on Main Street function, character, pedestrian movements or street parking	**No** potential for interference in the historic downtown area • Alternative does not affect any downtown or historical areas. • No adverse effects on Main Street function, character, pedestrian movements or street parking

LEGEND

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SEGMENT C – EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			C1 **14-17-20-24-25-26**	**C2** **14-17-19-21-24-25-26**	**C3** **14-17-19-22-25-26**	**C4** **14-17-19-23-26**
		in the historic downtown area				
2.3 Noise Sensitive Areas (NSAs) (residential areas and sensitive institutional uses)						
	2.3.1 Highway Noise	• Potential for significant traffic noise increases in NSAs and for noise-sensitive receivers immediately adjacent to the highway.	**Low** potential for significant noise increases • Potential noise impacts of 65 dBA or a 5 dB increase are expected for about 15 NSAs within the area of influence. • A decrease of noise impacts by 5 dB or more is expected for about 17 NSAs due to reduced traffic on the roadway that is currently Hwy 7/8.	**Low** potential for significant noise increases • Potential noise impacts of 65 dBA or a 5 dB increase are expected for about 16 NSAs within the area of influence. • A decrease of noise impacts by 5 dB or more is expected for about 17 NSAs due to reduced traffic on the roadway that is currently Hwy 7/8.	**Low** potential for significant noise increases • Potential noise impacts of 65 dBA or a 5 dB increase are expected for about 14 NSAs within the area of influence. • A decrease of noise impacts by 5 dB or more is expected for about 17 NSAs due to reduced traffic on the roadway that is currently Hwy 7/8.	**Low** potential for significant noise increases • Potential noise impacts of 65 dBA or a 5 dB increase are expected for about 16 NSAs within the area of influence. • A decrease of noise impacts by 5 dB or more is expected for about 17 NSAs due to reduced traffic on the roadway that is currently Hwy 7/8.
	2.3.2 Construction Noise	To be considered during Preliminary Design phase				
2.4 Agriculture						
	2.4.1 Agriculture - Canada Land Inventory Class 1,2,3 Land	Potential and significance of encroachment, severance of Canada Land Inventory Classes 1, 2 and 3 soils	**High** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 51 hectares of Class 1 / 2 soil	**High** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 53 hectares of Class 1 / 2 soil	**High** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 49 hectares of Class 1 / 2 soil	**High** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 49 hectares of Class 1 / 2 soil
	2.4.2 Agriculture – Farm Infrastructure	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • nuisance impacts; to farm infrastructure (field tile drainage systems/outlets, irrigation systems, barns / silos/ structures, etc.)	**Medium** potential impacts on farm infrastructure • 2 minor encroachments on farm infrastructure west of Road 110 and south of Perth Line 33 • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified and mitigation concepts for these impacts will be developed during preliminary design	**High** potential impacts on farm infrastructure • 3 encroachments on farm infrastructure on Road 110 • 2 minor encroachments on farm infrastructure west of Road 110 and south of Perth Line 33 • Potential to displace multiple farm buildings. • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified and mitigation concepts for these impacts will be developed during preliminary design	**High** potential impacts on farm infrastructure • Displaces infrastructure on 1 livestock and cash crop operation on Road 110 • 2 encroachments on farm infrastructure, 1 on Road 110 and 1 west of Road 110 and north of Perth Line 33 • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified and mitigation concepts for these impacts will be developed during preliminary design	**Medium** potential impacts on farm infrastructure • 2 encroachments on farm infrastructure, 1 on Road 110 and 1 west of Road 100 north of Perth Line 33 • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified and mitigation concepts for these impacts will be developed during preliminary design
	2.4.3 Agriculture – Operations on Individual Farms	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • nuisance impacts;	**Medium** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established agricultural community including:	**Medium** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established agricultural community including:	**High** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established agricultural community including:	**High** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established agricultural community including:

LEGEND

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SEGMENT C – EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

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			C1 **14-17-20-24-25-26**	**C2** **14-17-19-21-24-25-26**	**C3** **14-17-19-22-25-26**	**C4** **14-17-19-23-26**
		to in-farm field operations (planting, harvesting, grazing, nutrient management, etc.) as applicable to the following: • Specialty crops/cropland • Diary/livestock operations • Field crop operations • High investment agricultural operations • Established agricultural farm communities	- Minor frontage impacts and encroachment on lands on 3 live stock and cash crop operations on Perth Line 33 - Minor frontage impacts and encroachment on lands on 10 parcels on Perth Line 33 - Severs 3 parcels between Road 109 and Road 110 - Severs 1 parcel west of Road 110 - Significant encroachment on portions of land abutting the railway on 7 parcels, 3 of which are associated with a cash crop and livestock operation in the area - 3 parcels where nutrient management has been reported by the farmer are impacted significantly - 4 parcels where nutrient management is assumed to occur in association with livestock operations are significantly impacted - Additional nutrient management operations may still be identified by potentially impacted farmers	- Minor frontage impacts and encroachment on lands on 2 live stock and cash crop operations on Road 110 - Minor frontage impacts and encroachment on lands on 3 live stock and cash crop operations on Perth Line 33 - Minor frontage impacts and encroachment on lands on 10 parcels on Perth Line 33 - Severs 2 parcels on Road 110 - Significant encroachment on portions of land abutting the railway on 9 parcels, 3 of which are associated with a cash crop and livestock operation in the area - Displaces portions of land fronting onto Road 110 on 2 parcels - 3 parcels where nutrient management has been reported by the farmer are impacted significantly - 6 parcels where nutrient management is assumed to occur in association with livestock operations are significantly impacted - Additional nutrient management operations may still be identified by potentially impacted farmers	- Minor frontage impacts and encroachment on lands on 1 live stock and cash crop operation on Perth Line 33 - Minor frontage impacts and encroachment on lands on 7 parcels on Perth Line 33 - Severs 2 parcels fronting onto Road 110 - Severs 2 parcels west of Road 110 on Perth Line 33 - Significant encroachment on portions of land abutting the railway on 9 parcels, 3 of which are associated with a cash crop and livestock operation in the area - 3 parcels where nutrient management has been reported by the farmer are impacted significantly - 4 parcels where nutrient management is assumed to occur in association with livestock operations are impacted significantly - Additional nutrient management operations may still be identified by potentially impacted farmers	- Minor frontage impacts and encroachment on lands on 1 parcel of land on Perth Line 33 on Perth Line 33 - Severs 6 parcels west of Road 110 - Significant encroachment on portions of land abutting the railway on 9 parcels, 3 of which are associated with a cash crop and livestock operation in the area - 3 parcels where nutrient management has been reported by the farmer are impacted significantly - 4 parcels where nutrient management is assumed to occur in association with livestock operations are impacted significantly - Additional nutrient management operations may still be identified by potentially impacted farmers
	2.4.4 Agriculture – Transportation Linkages between Integrated Agricultural Business Units (IABUs)	Potential to sever/disrupt transportation linkages between integrated agricultural business units (movement between integrated agricultural business units of equipment, materials, workers, etc.)	**Medium** potential to sever / disrupt transportation linkages • Route alternative 1 passes between parcels of land associated with 2 IABU's as identified to the study team by the farming community	**Medium** potential to sever / disrupt transportation linkages • Route alternative 2 passes between parcels of land associated with 2 IABU's as identified to the study team by the farming community however, this alternative involves additional lanes to cross rather than a new route to cross.	**Medium** potential to sever / disrupt transportation linkages • Route alternative 3 passes between parcels of land associated with 2 IABU's as identified to the study team by the farming community	**Medium** potential to sever / disrupt transportation linkages • Route alternative 4 passes between parcels of land associated with 2 IABU's as identified to the study team by the farming community

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2.5 Land Use / Resources						
	2.5.1 First Nations' 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: • encroachment, severance, displacement; • long-term alteration / disruption; • nuisance impacts; • change to access / travel time. to First Nations' treaty rights or use of land and resources for traditional purposes	**Medium** potential to affect First Nation Treaty Rights or use of land and resources for traditional purposes • Route alternative has both existing roadway and new alignment components.	**Medium** potential to affect First Nation Treaty Rights or use of land and resources for traditional purposes • Route alternative has both existing roadway and new alignment components.	**Medium** potential to affect First Nation Treaty Rights or use of land and resources for traditional purposes • Route alternative has both existing roadway and new alignment components.	**Medium** potential to affect First Nation Treaty Rights or use of land and resources for traditional purposes • Route alternative has both existing roadway and new alignment components.
	2.5.2 Parks and Recreational Areas (e.g. national/ provincial parks, conservation areas, municipal parks, public spaces, golf courses, trails, greenways and open space linkages)	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to parks and recreational areas.	**No** potential for impacts to parks and recreational areas • No encroachment or impacts to any parks or recreational areas as they do not exist along this route. • Field observation identified no change to facilities / utilities / services.	**No** potential for impacts to parks and recreational areas • No encroachment or impacts to any parks or recreational areas as they do not exist along this route. • Field observation identified no change to facilities / utilities / services.	**No** potential for impacts to parks and recreational areas • No encroachment or impacts to any parks or recreational areas as they do not exist along this route. • Field observation identified no change to facilities / utilities / services.	**No** potential for impacts to parks and recreational areas • No encroachment or impacts to any parks or recreational areas as they do not exist along this route. • Field observation identified no change to facilities / utilities / services.
	2.5.3 Aggregates, Mineral-Resources	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. to current/future extraction of aggregate and mineral resources.	**No** potential for impacts to current/future aggregate / mineral resources • No impacts to mineral-aggregate resources	**No** potential for impacts to current/future aggregate / mineral resources • No impacts to mineral-aggregate resources	**No** potential for impacts to current/future aggregate / mineral resources • No impacts to mineral-aggregate resources	**No** potential for impacts to current/future aggregate / mineral resources • No impacts to mineral-aggregate resources
2.6 Major Utility Transmission Corridors (e.g. railroads, hydro, gas, oil)						
		Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. To major utility transmission corridors.	**Low** potential for impacts to major utility transmission corridors • No railway crossings • One major hydro transmission corridor crossing • No major gas / oil corridor crossings	**Low** potential for impacts to major utility transmission corridors • No railway crossings • One major hydro transmission corridor crossing • No major gas / oil corridor crossings	**Low** potential for impacts to major utility transmission corridors • No railway crossings • One major hydro transmission corridor crossing • No major gas / oil corridor crossings	**Low** potential for impacts to major utility transmission corridors • No railway crossings • One major hydro transmission corridor crossing • No major gas / oil corridor crossings

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			C1 **14-17-20-24-25-26**	**C2** **14-17-19-21-24-25-26**	**C3** **14-17-19-22-25-26**	**C4** **14-17-19-23-26**
2.7 Contaminated Property and Waste Management (e.g. Landfills, Hazardous Waste Sites, "Brownfield" Areas, other known contaminated sites, and high-risk contamination areas)						
		Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. to contaminated property and waste management.	**Low** potential for impacts to contaminated property and waste including exposure of contaminants and unstable substrates and potential concerns from soil and groundwater contamination. • The Stratford Landfill Facility is located approximately 0.25 km east and northeast of the proposed terminus of the route C1 alignment. Any development within 500 m of a landfill requires a MOE D-4 Assessment. • Mitigation measures to prevent the exposure of contaminants and unstable substrates should be implemented, as required, based on the assessment of the landfill data and the D-4 study. • No other waste disposal sites were identified in the vicinity of the proposed alignment. • No vehicle fuel and repair facilities were identified within 1 km of the proposed route alignment. Wilhelm Concrete, a concrete forming company, is located approximately 0.2 km north of the proposed alignment. Fuel ASTs were observed on the property in aerial photographs; however, this property is not believed to present a significant environmental concern. • Mitigation measures should be implemented to prevent the exposure of contaminants.	**Low** potential for impacts to contaminated property and waste including exposure of contaminants and unstable substrates and potential concerns from soil and groundwater contamination. • The Stratford Landfill Facility is located approximately 0.25km east and northeast of the proposed terminus of the route C2 alignment Any development within 500 m of a landfill requires a MOE D-4 Assessment. • Mitigation measures to prevent the exposure of contaminants and unstable substrates should be implemented, as required, based on the assessment of the landfill data and the D-4 study. • No other waste disposal sites were identified in the vicinity of the proposed alignment. • No vehicle fuel and repair facilities were identified within 1 km of the proposed route alignment. Wilhelm Concrete, a concrete forming company, is located approximately 0.2 km north of the proposed alignment. Fuel ASTs were observed on the property in aerial photographs; however, this property is not believed to present a significant environmental concern. • Mitigation measures should be implemented to prevent the exposure of contaminants.	**Low** potential for impacts to contaminated property and waste including exposure of contaminants and unstable substrates and potential concerns from soil and groundwater contamination. • The Stratford Landfill Facility is located approximately 0.25km east and northeast of the proposed terminus of the route C3 alignment. Any development within 500 m of a landfill requires a MOE D-4 Assessment. • Mitigation measures to prevent the exposure of contaminants and unstable substrates should be implemented, as required, based on the assessment of the landfill data and the D-4 study. • No other waste disposal sites were identified in the vicinity of the proposed alignment. • No vehicle fuel and repair facilities were identified within 1 km of the proposed route alignment. Wilhelm Concrete, a concrete forming company, is located approximately 0.2 km north of the proposed alignment. Fuel ASTs were observed on the property in aerial photographs; however, this property is not believed to present a significant environmental concern. • Mitigation measures should be implemented to prevent the exposure of contaminants.	**Low** potential for impacts to contaminated property and waste including exposure of contaminants and unstable substrates and potential concerns from soil and groundwater contamination. • The Stratford Landfill Facility is located approximately 0.25km east and northeast of the proposed terminus of the route C4 alignment. Any development within 500 m of a landfill requires a MOE D-4 Assessment. • Mitigation measures to prevent the exposure of contaminants and unstable substrates should be implemented, as required, based on the assessment of the landfill data and the D-4 study. • No other waste disposal sites were identified in the vicinity of the proposed alignment. • No vehicle fuel and repair facilities were identified within 1 km of the proposed route alignment. Wilhelm Concrete, a concrete forming company, is located approximately 0.2 km north of the proposed alignment. Fuel ASTs were observed on the property in aerial photographs; however, this property is not believed to present a significant environmental concern. • Mitigation measures should be implemented to prevent the exposure of contaminants.
2.8 Landscape Composition						
	2.8.1 Scenic Composition (total aesthetic value of landscape	Potential and significance of change to scenic composition (total aesthetic value of landscape components).	**Low** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative	**Low** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative	**Low** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative	**Low** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT C – EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			C1 **14-17-20-24-25-26**	**C2** **14-17-19-21-24-25-26**	**C3** **14-17-19-22-25-26**	**C4** **14-17-19-23-26**
	components)		• low/moderate negative impacts on farming community due to existing railroad corridor • high negative impacts on affected farms • moderate/high negative impact due to potential loss of vegetation • moderate visual interest through agricultural fields • low/moderate visual interest of flat terrain and railroad corridor • high visual interest of adjacent woodlots • moderate/high visual interest of riparian areas and associated vegetation	• low/moderate negative impacts on farming community due to existing railroad corridor • moderate negative impacts on affected farms along Road 110 • moderate/high negative impact on adjacent properties on existing footprint of Road 110 due to the loss of frontage and associated loss of farmland • moderate visual interest through agricultural fields • low/moderate visual interest of flat terrain and railroad corridor • moderate/high visual interest of nearby woodlots	• low/moderate negative impacts on farming community due to existing railroad corridor • moderate/high negative impact on affected farms • moderate visual interest through agricultural fields • low/moderate visual interest of flat terrain and railroad corridor • moderate visual interest of nearby woodlots • low/moderate visual interest of riparian areas and associated vegetation	• low/moderate negative impacts on farming community due to existing railroad corridor • high negative impact on affected farmhouses on western entry • high negative impact on farm community due to the loss of farmland • high negative impact on subdivision to north • moderate visual interest through agricultural fields • low/moderate visual interest of flat terrain and railroad corridor • moderate visual interest of nearby woodlots • high visual interest of nearby riparian areas and associated vegetation • low visual interest of nearby residential backyards
	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	To be considered during Preliminary Design phase				
2.9 Air Quality						
	2.9.1 Local and Regional Air Quality (Total contaminant and greenhouse gas emissions)	Previously addressed during Needs Assessment Phase				
	2.9.2 Sensitive receptors to air pollutants and greenhouse gas emissions	Presence and potential for impacts to sensitive receptors to air pollutants and greenhouse gas emissions, including consideration of number of sensitive receptors immediately adjacent to the highway.	**Low** potential impact to sensitive receptors adjacent to the highway • 6 sensitive receptors within 20m of the edge of the right of way.	**Low** potential impact to sensitive receptors adjacent to the highway • 6 sensitive receptors within 20m of the edge of the right of way.	**Low** potential impact to sensitive receptors adjacent to the highway • 6 sensitive receptors within 20m of the edge of the right of way.	**Low** potential impact to sensitive receptors adjacent to the highway • 3 sensitive receptors within 20m of the edge of the right of way.
3. CULTURAL ENVIRONMENTAL FACTORS						
3.1 Cultural Heritage – Built Heritage and Cultural Landscapes						
	3.1.1 Buildings or “Standing” Sites of Architectural or Heritage Significance or	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character / aesthetics;	**Low** potential for impacts to sites of heritage significance and Heritage Foundation Easement Properties • There are two non-inventoried heritage buildings just to the west of	**Low** potential for impacts to sites of heritage significance and Heritage Foundation Easement Properties • There are two non-inventoried heritage buildings just to the west of	**Low** potential for impacts to sites of heritage significance and Heritage Foundation Easement Properties • There are two non-inventoried heritage buildings just to the west of	**Low** potential for impacts to sites of heritage significance and Heritage Foundation Easement Properties • There are three heritage structures in close proximity to the route but

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SEGMENT C – EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			C1 **14-17-20-24-25-26**	**C2** **14-17-19-21-24-25-26**	**C3** **14-17-19-22-25-26**	**C4** **14-17-19-23-26**
	Ontario Heritage Foundation Easement Properties	• nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to buildings or "standing" sites of extreme local, provincial or national interest or Ontario Heritage Foundation easements properties.	this route along Perth Line 33 • The setting might be changed somewhat	this route along Perth Line 33 • The setting might be changed somewhat	this route along Perth Line 33 • The setting might be changed somewhat	not within it. Two are non-inventoried heritage buildings just to the west of this route along Perth Line 33; their setting might be changed somewhat. Another is James Reaney's Birthplace – the route passes just to the south of it. Its rear setting may change somewhat.
	3.1.2 Heritage Bridges	Potential for destruction or significant alteration of heritage bridges				
	3.1.3 Areas of Historic 19th Century Settlement	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to areas of historic 19th century settlement.	**No** potential for impacts to areas of historic settlement • There are no areas of historic 19th century settlement within the route	**No** potential for impacts to areas of historic settlement • There are no areas of historic 19th century settlement within the route	**No** potential for impacts to areas of historic settlement • There are no areas of historic 19th century settlement within the route	**No** potential for impacts to areas of historic settlement • There are no areas of historic 19th century settlement within the route
	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.	**No** potential for impacts to cultural heritage landscapes based on existing data • Dilse did not identify any cultural heritage landscapes within the proposed route	**No** potential for impacts to cultural heritage landscapes based on existing data • Dilse did not identify any cultural heritage landscapes within the proposed route	**No** potential for impacts to cultural heritage landscapes based on existing data • Dilse did not identify any cultural heritage landscapes within the proposed route	**No** potential for impacts to cultural heritage landscapes based on existing data • Dilse did not identify any cultural heritage landscapes within the proposed route
	3.1.5 First Nations' Burial Sites	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time. to First Nations' burial sites.	**No** potential for impacts to First Nations burial sites • There are no known / reported First Nations' burial sites within this route	**No** potential for impacts to First Nations burial sites • There are no known / reported First Nations' burial sites within this route	**No** potential for impacts to First Nations burial sites • There are no known/reported First Nations' burial sites within this route	**No** potential for impacts to First Nations burial sites • There are no known/reported First Nations' burial sites within this route
	3.1.6 Cemeteries	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to cemeteries.	**No** potential for impacts to cemeteries • There are no cemeteries within or in proximity to this route	**No** potential for impacts to cemeteries • There are no cemeteries within or in proximity to this route	**No** potential for impacts to cemeteries • There are no cemeteries within or in proximity to this route	**No** potential for impacts to cemeteries • There are no cemeteries within or in proximity to this route

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study
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SEGMENT C – EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative C1 14-17-20-24-25-26 (Selected Corridor)	C2 14-17-19-21-24-25-26	C3 14-17-19-22-25-26	C4 14-17-19-23-26
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	**Low** potential for destruction or disturbance of archaeological sites based on existing data • There are no known/registered archaeological sites within or in close proximity to the route • There is potential for previously undocumented archaeological sites	**Low** potential for destruction or disturbance of archaeological sites based on existing data • There are no known/registered archaeological sites within or in close proximity to the route • There is potential for previously undocumented archaeological sites	**Low** potential for destruction or disturbance of archaeological sites based on existing data • There are no known/registered archaeological sites within or in close proximity to the route • There is potential for previously undocumented archaeological sites	**Low** potential for destruction or disturbance of archaeological sites based on existing data • There are no known/registered archaeological sites within or in close proximity to the route • There is potential for previously undocumented archaeological sites
	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				
4. AREA ECONOMY – Previously addressed during Needs Assessment Phase						
5. TRANSPORTATION FACTORS						
5.1 Area Transportation System Capacity and Efficiency						
	5.1.1 Federal/ Provincial/Municipal transportation planning policies/goals/ objectives	Previously addressed during Needs Assessment Phase.				
	5.1.2 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	**High** potential to support efficient movement of people. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Stratford to route	**High** potential to support efficient movement of people. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Stratford to route	**High** potential to support efficient movement of people. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Stratford to route	**High** potential to support efficient movement of people. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Stratford to route
	5.1.3 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)	**High** potential to support efficient movement of goods. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Stratford to route	**High** potential to support efficient movement of goods. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Stratford to route	**High** potential to support efficient movement of goods. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Stratford to route	**High** potential to support efficient movement of goods. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Stratford to route
5.2 Area Transportation System Reliability / Redundancy						
		Potential to support system reliability and redundancy for travel (people and goods) between regions and communities during adverse conditions	**High** potential to support system reliability and redundancy • Route is predominantly on new alignment, which provides a new	**High** potential to support system reliability and redundancy • Route is predominantly on new alignment, which provides a new	**High** potential to support system reliability and redundancy • Route is predominantly on new alignment, which provides a new	**High** potential to support system reliability and redundancy • Route is predominantly on new alignment, which provides a new

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study EVALUATION OF ROUTE ALTERNATIVES Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.						
SEGMENT C – EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR						
Factor / Sub-Factor	**Criteria**	**Indicator for Route Selection**	**Route Alternative**			
			C1 14-17-20-24-25-26	**C2 14-17-19-21-24-25-26**	**C3 14-17-19-22-25-26**	**C4 14-17-19-23-26**
			connection in the area to accommodate travel during adverse conditions (i.e. provides an alternate route)	connection in the area to accommodate travel during adverse conditions (i.e. provides an alternate route)	connection in the area to accommodate travel during adverse conditions (i.e. provides an alternate route)	connection in the area to accommodate travel during adverse conditions (i.e. provides an alternate route)
5.3 Safety						
	5.3.1 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	**High** potential to improve traffic safety • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances • A four/five lane cross section provides for good passing opportunity, provides a wider platform to accommodate evasive moves during potential accidents, and a centre left turn lane would accommodate safer left turns along the highway at intersection and driveway locations	**High** potential to improve traffic safety • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances • A four/five lane cross section provides for good passing opportunity, provides a wider platform to accommodate evasive moves during potential accidents, and a centre left turn lane would accommodate safer left turns along the highway at intersection and driveway locations	**High** potential to improve traffic safety • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances • A four/five lane cross section provides for good passing opportunity, provides a wider platform to accommodate evasive moves during potential accidents, and a centre left turn lane would accommodate safer left turns along the highway at intersection and driveway locations	**High** potential to improve traffic safety • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances • A four/five lane cross section provides for good passing opportunity, provides a wider platform to accommodate evasive moves during potential accidents, and a centre left turn lane would accommodate safer left turns along the highway at intersection and driveway locations
	5.3.2 Emergency Access	Potential to support emergency access to/from existing and/or new provincial facilities.	**High** potential to support emergency access to/from route • Opportunity to provide connections via north-south crossing roads	**High** potential to support emergency access to/from route • Opportunity to provide connections via north-south crossing roads	**High** potential to support emergency access to/from route • Opportunity to provide connections via north-south crossing roads	**High** potential to support emergency access to/from route • Opportunity to provide connections via north-south crossing roads
	5.3.3 Pedestrian, Cyclist and Snowmobile Safety within the highway right-of-way	Potential and significance of change to ease and safety of movement across the highway and within the right-of-way.	**High** potential to improve pedestrian, cyclist and snowmobile safety • Route predominantly on new alignment so limited need for movement within the right-of-way • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**High** potential to improve pedestrian, cyclist and snowmobile safety • Route predominantly on new alignment so limited need for movement within the right-of-way • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**High** potential to improve pedestrian, cyclist and snowmobile safety • Route predominantly on new alignment so limited need for movement within the right-of-way • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**High** potential to improve pedestrian, cyclist and snowmobile safety • Route predominantly on new alignment so limited need for movement within the right-of-way • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations
5.4 Mobility and Accessibility						
	5.4.1 Modal integration, balance and efficiency	Potential to improve modal choice and increase mode split for person trips between communities, regions and major transit station areas based on connection to concentrations of population, travel performance indicators (LOS, v/c, travel speed) at critical screenlines and on potential to provide higher order transit	**Medium** potential to improve modal integration, balance and efficiency. • Transit service is potentially constrained by the bypass of existing development along Highway 7&8.	**Medium** potential to improve modal integration, balance and efficiency. • Transit service is potentially constrained by the bypass of existing development along Highway 7&8.	**Medium** potential to improve modal integration, balance and efficiency. • Transit service is potentially constrained by the bypass of existing development along Highway 7&8.	**Medium** potential to improve modal integration, balance and efficiency. • Transit service is potentially constrained by the bypass of existing development along Highway 7&8.

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
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SEGMENT C – EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative C1 14-17-20-24-25-26 (Selected Corridor)	C2 14-17-19-21-24-25-26	C3 14-17-19-22-25-26	C4 14-17-19-23-26
		service.	• Use of existing Perth Road 33 corridor limits opportunities to provide higher order transit service • Opportunity to support interface between rail transit service and highway	• Use of existing Perth Road 33 corridor limits opportunities to provide higher order transit service • Opportunity to support interface between rail transit service and highway	• Use of existing Perth Road 33 corridor limits opportunities to provide higher order transit service • Opportunity to support interface between rail transit service and highway	• Use of existing Perth Road 33 corridor limits opportunities to provide higher order transit service • Opportunity to support interface between rail transit service and highway
	5.4.2 Linkages to Population and Employment Centres	Potential to improve linkages to population and employment centres for people and goods movement	**High** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved	**High** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved	**High** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved	**High** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved
	5.4.3 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)	**High** potential to support recreation and tourism travel • Tourist travel through the analysis area is facilitated	**High** potential to support recreation and tourism travel • Tourist travel through the analysis area is facilitated	**High** potential to support recreation and tourism travel • Tourist travel through the analysis area is facilitated	**High** potential to support recreation and tourism travel • Tourist travel through the analysis area is facilitated
	5.4.4 Accommodate mobility of pedestrians, cyclists and snowmobiles	Potential to accommodate mobility of pedestrians, cyclists within critical travel corridors in urbanized areas and snowmobiles in recognized rural trails	**High** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route predominantly on new alignment so limited need for movement within the right-of-way • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**High** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route predominantly on new alignment so limited need for movement within the right-of-way • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**High** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route predominantly on new alignment so limited need for movement within the right-of-way • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**High** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route predominantly on new alignment so limited need for movement within the right-of-way • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations
5.5 Network Compatibility						
	5.5.1 Network Connectivity	Potential to improve transportation system connectivity within and to/from the analysis area.	**High** potential to improve transportation system connectivity • Provides improved linkage between Stratford and New Hamburg	**High** potential to improve transportation system connectivity • Provides improved linkage between Stratford and New Hamburg	**High** potential to improve transportation system connectivity • Provides improved linkage between Stratford and New Hamburg	**High** potential to improve transportation system connectivity • Provides improved linkage between Stratford and New Hamburg
	5.5.2 Flexibility for Future Expansion	Potential to address future transportation needs beyond the forecasted planning horizons.	**High** potential for future expansion. • Route is predominantly on new alignment so the majority of the right-of-way could accommodate future expansion	**High** potential for future expansion. • Route is predominantly on new alignment so the majority of the right-of-way could accommodate future expansion	**High** potential for future expansion. • Route is predominantly on new alignment so the majority of the right-of-way could accommodate future expansion	**High** potential for future expansion. • Route is predominantly on new alignment so the majority of the right-of-way could accommodate future expansion

LEGEND

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SEGMENT C – EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			C1 **14-17-20-24-25-26**	**C2** **14-17-19-21-24-25-26**	**C3** **14-17-19-22-25-26**	**C4** **14-17-19-23-26**
5.6 Engineering						
	5.6.1 Constructability	Potential ease of implementation considering feasibility/difficulty of physical, property or environmental constraints	**Low** potential for constructability issues • Utilizes segment of existing Perth Road 33 corridor • No railway crossings • No new major watercourse crossings	**Low** potential for constructability issues • Utilizes segment of existing Perth Road 33 and Road 110 corridors • No railway crossings • No new major watercourse crossings	**Low** potential for constructability issues • Utilizes segment of existing Perth Road 33 corridor • No railway crossings • No new major watercourse crossings	**Low** potential for constructability issues • Utilizes segment of existing Perth Road 33 corridor • No railway crossings • No new major watercourse crossings
	5.6.2 Compliance with Design Criteria	Conformity to applicable provincial safety and design standards.	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths
5.7 Traffic Operations						
		Potential for negative impact on traffic operations due to factors such as design features, private access, and transportation network connections	**Low** potential for negative impact on traffic operations • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances. • Opportunity to provide connections via north-south crossing roads	**Medium** potential for negative impact on traffic operations • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrance; however route utilizes a segment of Road 110 which will impact the connectivity of Road 110. • Opportunity to provide connections via north-south crossing roads	**Low** potential for negative impact on traffic operations • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances. • Opportunity to provide connections via north-south crossing roads	**Low** potential for negative impact on traffic operations • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances. • Opportunity to provide connections via north-south crossing roads
5.8 Construction Cost (excludes property costs and engineering costs)						
		Relative road construction cost, excluding property and engineering costs	**Medium** cost $10.0 M	**Medium** cost $10.0 M	**Medium** cost $10.0 M	**Medium** cost $10.0 M

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SEGMENT C – EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			C1 **14-17-20-24-25-26**	**C2** **14-17-19-21-24-25-26**	**C3** **14-17-19-22-25-26**	**C4** **14-17-19-23-26**
SUMMARY OF EVALUATION			**Summary of Natural Environment** Route Alternatives C2 is preferred from a natural environment perspective as it has lower potential impacts to terrestrial ecosystems, including wetlands, forests and vegetation, and to groundwater. **Summary of Land Use / Socio-Economic Environment** Route Alternative C1 is preferred from a land use / socio-economic environment perspective as it has lower potential impacts to agriculture, **Summary of Cultural Environment** All route alternatives are comparable in terms of the potential impacts on built heritage and archaeological sites. **Summary of Transportation** All route alternatives are comparable in their ability to support transportation criteria for most transportation factors. However, Route Alternatives C1, C3 and C4 are preferred because they have lower potential for negative impacts to traffic operations. **Conclusion** Based upon the above, Route Alternative C1 is the preferred alternative south of the railway corridor east of Stratford.		

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

SEGMENT C - EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

FACTORS	Weighting	Alternative			
		1	2	3	4
1.0 NATURAL ENVIRONMENT	**20.00**				
1.1 Fisheries and Aquatic Ecosystems	8.00				
Weighted Score		2.64	2.64	2.64	2.64
1.2 Terrestrial Ecosystems	5.00				
Weighted Score		2.42	3.35	2.67	2.93
1.3 Groundwater	5.00				
Weighted Score		3.34	3.34	2.67	3.01
1.4 Surface Water	2.00				
Weighted Score		0.66	0.66	0.66	0.66
Factor Score	**20.00**	**9.06**	**9.99**	**8.64**	**9.24**
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	**35.00**				
2.1 Land Use Planning Policies, Goals, Objectives	3.50				
Weighted Score		2.17	2.17	2.17	2.17
2.2 Land Use / Community	7.00				
Weighted Score		6.08	6.08	6.08	6.08
2.3 Noise Sensitive Areas	5.25				
Weighted Score		3.52	3.52	3.52	3.52
2.4 Agriculture	7.00				
Weighted Score		2.08	1.16	0.23	1.16
2.5 Land Use / Resources	3.50				
Weighted Score		3.27	3.27	3.27	3.38
2.6 Major Utility Transmission Corridors	0.70				
Weighted Score		0.47	0.47	0.47	0.47
2.7 Contaminated Property and Waste Management	0.70				
Weighted Score		0.47	0.47	0.47	0.47
2.8 Landscape Composition	2.10				
Weighted Score		1.41	1.41	1.41	1.41
2.9 Air Quality	5.25				
Weighted Score		3.52	3.52	3.52	3.52
Factored Score	**35.00**	**22.97**	**22.04**	**21.12**	**22.16**
3.0 CULTURAL ENVIRONMENT	**20.00**				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	16.00				
Weighted Score		13.36	13.36	13.36	13.36
3.2 Archaeology	4.00				
Weighted Score		2.68	2.68	2.68	2.68
Factored Score	**20.00**	**16.04**	**16.04**	**16.04**	**16.04**
5.0 TRANSPORTATION	**25.00**				
5.1 Area Transportation System Capacity and Efficiency	3.75				
Weighted Score		3.75	3.75	3.75	3.75
5.2 Area Transportation System Reliability / Redundancy	3.75				
Weighted Score		3.75	3.75	3.75	3.75
5.3 Safety	6.25				
Weighted Score		6.25	6.25	6.25	6.25
5.4 Mobility and Accessibility	2.50				
Weighted Score		2.42	2.42	2.42	2.42
5.5 Network Compatibility	1.25				
Weighted Score		1.25	1.25	1.25	1.25
5.6 Engineering	2.50				
Weighted Score		1.84	1.84	1.84	1.84
5.7 Traffic Operations	3.75				
Weighted Score		2.51	1.24	2.51	2.51
5.8 Construction Cost	1.25				
Weighted Score		1.24	1.24	1.24	1.24
Factored Score	**25.00**	**23.01**	**21.73**	**23.01**	**23.01**
	100.00				
Total Alternative Score		**71.07**	**69.81**	**68.81**	**70.45**

ALTERNATIVE DESCRIPTIONS
1: C1: 14-17-20-24-25-26
2: C2: 14-17-19-21-24-25-26
3: C3: 14-17-19-22-25-26
4: C4: 14-17-19-23-26

NATURAL ENVIRONMENT WEIGHTING TABLE - SEGMENT C: EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative			
				1	2	3	4
1.0 NATURAL ENVIRONMENT			**20.00**				
1.1 Fisheries and Aquatic Ecosystems			8.00				
1.1.1 Fish Habitat	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: critical fish habitat features, riparian areas and habitat rehabilitation goals.	No / Low / Medium / High Effects	8.00	0.33	0.33	0.33	0.33
1.1.2 Fish Community	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: fish species at risk (vulnerable, threatened or endangered fish species), fish movement/migration, critical fish life stage processes (spawning, rearing, nursery, feeding) and long-term fish community management goals.						
		Weighted Score		2.64	2.64	2.64	2.64
1.2 Terrestrial Ecosystems			5.00				
1.2.1 Wildlife	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: wildlife species at risk (vulnerable, threatened or endangered wildlife species); wildlife of local and regional importance; migratory birds; critical wildlife habitat features; ecologically functional areas such as connective corridors or travel ways for movement/migration; important wildlife areas such as deeryards, heronries, waterfowl areas, important bird areas; wildlife management, rehabilitation/research program sites; and interference with critical wildlife life stage processes (eg mating/rearing, etc.).	No / Low / Medium / High Effects	0.75	0.33	0.67	0.33	0.67
1.2.2 Wetlands	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: provincially significant wetlands, their buffer areas, and their wetland function; evaluated and un-evaluated wetlands, their wetland buffer areas, and their wetland function; and wetland management, research and/or wetland conservation programs/areas.	No / Low / Medium / High Effects	1.25	0.67	0.67	0.33	0.33
1.2.3 Forests	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: significant woodlands/valley lands; and forest management/research program areas.	No / Low / Medium / High Effects	1.25	0.33	0.67	0.67	0.67
1.2.4 Vegetation	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: subpopulations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant regional/local flora/communities; areas/corridors supporting known populations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant flora/communities; and vegetation management, rehabilitation/research program sites.	No / Low / Medium / High Effects	0.75	0.33	0.67	0.67	0.67
1.2.5 Designated/Special Areas	Potential and significance of: encroachment, severance, displacement, long-term alteration/disruption, change in area character/aesthetics, nuisance impacts, change to access/travel time, and change to facilities/utilities/services to designated/special areas.	No / Low / Medium / High Effects	1.00	0.67	0.67	0.67	0.67
		Weighted Score		2.42	3.35	2.67	2.93
1.3 Groundwater			5.00				
1.3.1 Areas of Groundwater Recharge and Discharge	Potential and significance of alteration to areas of groundwater recharge and discharge due to physical intrusion or groundwater inception, draw-down, impoundment, obstruction, or soil compaction impacting groundwater base-flow and quality.	No / Low / Medium / High Effects	0.50	0.67	0.67	0.67	0.67
1.3.2 Groundwater Source Areas and Wellhead Protection Areas	Potential and significance of alteration to areas of groundwater resource areas and wellhead protection areas due to physical intrusion, or groundwater interception, draw-down, impoundment, obstruction and by soil compaction.	No / Low / Medium / High Effects	1.00	0.67	0.67	0.67	0.67
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.	No / Low / Medium / High Effects	0.50	0.67	0.67	0.67	0.67

NATURAL ENVIRONMENT WEIGHTING TABLE - SEGMENT C: EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative			
				1	2	3	4
1.0 NATURAL ENVIRONMENT			**20.00**				
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.	No / Low / Medium / High Effects	1.00	0.67	0.67	0.33	0.67
1.3.5 Groundwater-Dependent Commercial Enterprises (e.g. water bottling operations)	Potential and significance of alteration to groundwater use by groundwater-dependent commercial enterprises due to physical intrusion, or groundwater interception, draw-down, impoundment, obstruction and by soil compaction.	No / Low / Medium / High Effects	1.00	1.00	1.00	1.00	1.00
1.3.6 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.	No / Low / Medium / High Effects	1.00	0.33	0.33	0.00	0.00
		Weighted Score		3.34	3.34	2.67	3.01
1.4 Surface Water			2.00				
1.4.1 Watershed / Sub-Watershed Drainage Features / Patterns	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: watercourse crossings (permanent, intermittent and ephemeral); floodplain or meander belts; riparian areas; sensitive headwater areas; and watershed and sub watershed management plans.	No / Low / Medium / High Effects	2.00	0.33	0.33	0.33	0.33
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. Potential and significance of impacts on hydrology due to changes in ground permeability, modifications to surface drainage patterns and alterations of waterbodies.	No / Low / Medium / High Effects					
		Weighted Score		0.66	0.66	0.66	0.66
		Factored Score	**20.00**	**9.06**	**9.99**	**8.64**	**9.24**

ALTERNATIVE DESCRIPTIONS
1: C1: 14-17-20-24-25-26
2: C2: 14-17-19-21-24-25-26
3: C3: 14-17-19-22-25-26
4: C4: 14-17-19-23-26

SUMMARY WEIGHTING TABLE - SEGMENT C: EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative			
				1	2	3	4
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT			35.00				
2.0 Land Use Planning Policies, Goals and Objectives			3.50				
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	No / Low / Medium / High Effects	0.18	0.67	0.67	0.67	0.67
2.1.2 Provincial/Federal land use planning policies/goals/objectives	Degree of compatibility with federal/provincial land use policies/goals/objectives	No / Low / Medium / High Effects	0.52	0.33	0.33	0.33	0.33
2.1.3 Municipal (regional and local land use planning policies/goals/ objectives (Official Plans)	Degree of compatibility with municipal Official Plans	No / Low / Medium / High Effects	2.28	0.67	0.67	0.67	0.67
2.1.4 Development Objectives of Private Property Owners	Potential to isolate property from current/future urban envelope. Impact on future land use.	No / Low / Medium / High Effects	0.52	0.67	0.67	0.67	0.67
		Weighted Score		2.17	2.17	2.17	2.17
2.2 Land Use / Community			7.00				
2.2.1 First Nation Reserves	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts and change to access / travel time to First Nation Reserves.	No / Low / Medium / High Effects	0.35	1.00	1.00	1.00	1.00
2.2.2 First Nations' Sacred Grounds	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts and change to access / travel time to First Nations' sacred grounds.	No / Low / Medium / High Effects	0.35	0.67	0.67	0.67	0.67
2.2.3 Urban and Rural Residential	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption (e.g. loss of parking area); change in area character / aesthetics (e.g. loss of trees/garden area); nuisance impacts (e.g. intrusion of highway into current residential envelope); change to access / travel time; change to facilities / utilities / services; interference with residential community cohesion; change to highway operational impacts (e.g. snow storage and highway access visibility) to urban and rural residential areas (residents (owners/tenants) and community groups).	No / Low / Medium / High Effects	1.05	0.67	0.67	0.67	0.67
2.2.4 Commercial/Industrial	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/aesthetics; nuisance impacts; change to travel access/travel time; change to facilities/utilities/services; interference with commercial community cohesion; change to highway operation impacts (e.g. customer parking, cargo loading/off-loading): to commercial and industrial areas (business owners/tenants and customers).	No / Low / Medium / High Effects	1.05	0.67	0.67	0.67	0.67
2.2.5 Tourist Areas and Attractions (e.g. museums, theatres, etc.)	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/aesthetics; nuisance impacts; change to travel access/travel time; change to facilities/utilities/services; loss of "critical mass" in number of signature business attractions (e.g. number of antique shops); to tourist areas and attractions.	No / Low / Medium / High Effects	1.05	1.00	1.00	1.00	1.00
2.2.6 Community Facilities/Institutions (e.g. hospitals, schools, places of worship, unique community features)	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/aesthetics; nuisance impacts; change to travel access/travel time; change to facilities/utilities/services; change to ease and safety of pedestrian movements across the highway and within the highway right-of-way; change to highway operation impacts to current use (e.g. highway noise and vibration interfering with church services); to community facilities and institutions.	No / Low / Medium / High Effects	1.05	1.00	1.00	1.00	1.00
2.2.7 Municipal Infrastructure and Public Service Facilities (e.g. sewage and water services, police/emergency services, local utilities)	Potential and significance of: encroachment, severance, displacement; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to municipal infrastructure and public service facilities.	No / Low / Medium / High Effects	0.35	0.67	0.67	0.67	0.67
2.2.8 Downtown Historic Crossroads Function	Potential and significance of interference by long-distance through-traffic on: "main street" function and structure; character/aesthetics; change to ease and safety of pedestrian movements across the highway and within the highway right-of-way; change to on-street parking; in historic downtown area.	No / Low / Medium / High Effects	1.75	1.00	1.00	1.00	1.00
		Weighted Score		6.08	6.08	6.08	6.08
2.3 Noise Sensitive Areas (NSAs) (residential areas and sensitive institutional uses)			5.25				
2.3.1 Highway Noise	Potential for significant traffic noise increases in NSAs and for noise-sensitive receivers immediately adjacent to the highway	No / Low / Medium / High Effects	5.25	0.67	0.67	0.67	0.67
		Weighted Score		3.52	3.52	3.52	3.52

SUMMARY WEIGHTING TABLE - SEGMENT C: EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative			
				1	2	3	4
2.4 Agriculture			7.00				
2.4.1 Agriculture - Canada Land Inventory Class 1, 2, 3 Land	Potential and significance of encroachment, severance of Canada Land inventory Classes 1, 2 and 3 soils	No / Low / Medium / High Effects	0.70	0.00	0.00	0.00	0.00
2.4.2 Agriculture - Farm Infrastructure	Potential and significance of: encroachment, severance, displacement; long-term alteration/disruption; nuisance impacts; to farm infrastructure (field tile drainage systems/outlets, irrigation systems, barns/silos/structures, etc.).	No / Low / Medium / High Effects	2.80	0.33	0.00	0.00	0.33
2.4.3 Agriculture - Operations on Individual Farms	Potential and significance of: encroachment, severance, displacement; long-term alteration/disruption; nuisance impacts; to in-farm field operations (planting, harvesting, grazing, nutrient management, etc.) as applicable to the following: specialty crops/cropland; diary/livestock operations; field crop operations; high investment agricultural operations; established agricultural farm communities.	No / Low / Medium / High Effects	2.80	0.33	0.33	0.00	0.00
2.4.4 Agriculture - Transportation Linkages between Integrated Agricultural Business Units	Potential to sever/disrupt transportation linkages between integrated agricultural business units (movement between integrated agricultural business units of equipment, materials, workers, etc.)	No / Low / Medium / High Effects	0.70	0.33	0.33	0.33	0.33
		Weighted Score		2.08	1.16	0.23	1.16
2.5 Land Use / Resources			3.50				
2.5.1 First Nations' 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: encroachment, severance, displacement; long-term alteration/disruption; nuisance impacts; change to access/travel time; to First Nations' treaty rights or use of land and resources for traditional purposes.	No / Low / Medium / High Effects	0.35	0.33	0.33	0.33	0.67
2.5.2 Parks and Recreational Areas (e.g. national/provincial parks, conservation areas, municipal parks, public spaces, golf courses, trails, greenways and open space linkages)	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/ aesthetics; nuisance impacts; change to access/travel time; change to facilities/utilities/services; to parks and recreational areas.	No / Low / Medium / High Effects	2.45	1.00	1.00	1.00	1.00
2.5.3 Aggregates, Mineral Resources	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to current/future extraction of aggregate and mineral resources.	No / Low / Medium / High Effects	0.70	1.00	1.00	1.00	1.00
		Weighted Score		3.27	3.27	3.27	3.38
2.6 Major Utility Transmission Corridors (e.g. railroads, hydro, gas, oil)			0.70				
	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to major utility transmission corridors.	No / Low / Medium / High Effects	0.70	0.67	0.67	0.67	0.67
		Weighted Score		0.47	0.47	0.47	0.47
2.7 Contaminated Property and Waste Management (e.g. landfills, hazardous waste sites, "brownfield" areas, other known contaminated sites, and high-risk contamination areas)			0.70				
	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to contaminated property and waste management.	No / Low / Medium / High Effects	0.70	0.67	0.67	0.67	0.67
		Weighted Score		0.47	0.47	0.47	0.47
2.8 Landscape Composition			2.10				
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).	No / Low / Medium / High Effects	2.10	0.67	0.67	0.67	0.67
2.8.2 Sensitive Viewer Groups	Potential and significance of change to vistas/outlooks for sensitive viewer groups.	No / Low / Medium / High Effects					
2.8.3 Scenic Value of Views/Vistas from the transportation facility	Potential and significance of views/vistas from the transportation facility.	No / Low / Medium / High Effects					
		Weighted Score		1.41	1.41	1.41	1.41
2.9 Air Quality			5.25				
2.9.2 Sensitive receptors to air pollutants and greenhouse gas emissions	Presence and potential for impacts to sensitive receptors to air pollutants and greenhouse gas emissions, including consideration of number of sensitive receptors immediately adjacent to the highway.	No / Low / Medium / High Effects	5.25	0.67	0.67	0.67	0.67
		Weighted Score		3.52	3.52	3.52	3.52
		Factored Score	**35.00**	**22.97**	**22.04**	**21.12**	**22.16**

ALTERNATIVE DESCRIPTIONS

1: C1: 14-17-20-24-25-26
2: C2: 14-17-19-21-24-25-26
3: C3: 14-17-19-22-25-26
4: C4: 14-17-19-23-26

SUMMARY WEIGHTING TABLE - SEGMENT C: EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative 1	2	3	4
3.0 CULTURAL ENVIRONMENT			20.00				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes			16.00				
3.1.1 Buildings or "Standing" Sites of Architectural or Heritage Significance or Ontario Heritage Foundation Easement Properties	Potential and significance of encroachment, severance, displacement, property acquisition, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, change to facilities / utilities/ service to buildings or "standing" sites of extreme local, provincial or national interest or Ontario Heritage Foundation easements properties.	No / Low / Medium / High Effects	8.00	0.67	0.67	0.67	0.67
3.1.2 Heritage Bridges	Potential for destruction or significant alteration of heritage bridges.	No / Low / Medium / High Effects					
3.1.3 Areas of Historic 19th Century Settlement	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, change to facilities / utilities/ service to areas of historic 19th century settlement.	No / Low / Medium / High Effects	3.00	1.00	1.00	1.00	1.00
3.1.4 Cultural Heritage Landscapes (collection of individual manmade features modifying pristine landscape)	Potential and significance of change to composition of cultural landscapes.	No / Low / Medium / High Effects	2.00	1.00	1.00	1.00	1.00
3.1.5 First Nations' Burial Sites	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, to First Nations' burial sites.	No / Low / Medium / High Effects	0.00	1.00	1.00	1.00	1.00
3.1.6 Cemeteries	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, change to facilities / utilities/ service to cemeteries.	No / Low / Medium / High Effects	3.00	1.00	1.00	1.00	1.00
		Weighted Score		13.36	13.36	13.36	13.36
3.2 Cultural Heritage - Archaeology			4.00				
3.2.1 Pre-Historic and Historic First Nations Sites	Potential for destruction or disturbance of prehistoric and historic First Nations archaeological sites of extreme local, provincial or national interest	No / Low / Medium / High Effects	4.00	0.67	0.67	0.67	0.67
3.2.2 Historic EuorCanadian Archaeological Sites	Potential for destruction or disturbance of historic EuroCanadian archaeological sites of extreme local, provincial or national interest	No / Low / Medium / High Effects					
		Weighted Score		2.68	2.68	2.68	2.68
		Factored Score	**20.00**	**16.04**	**16.04**	**16.04**	**16.04**

ALTERNATIVE DESCRIPTIONS
1: C1: 14-17-20-24-25-26
2: C2: 14-17-19-21-24-25-26
3: C3: 14-17-19-22-25-26
4: C4: 14-17-19-23-26

SUMMARY WEIGHTING TABLE - SEGMENT C: EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative 1	Alternative 2	Alternative 3	Alternative 4
5.0 TRANSPORTATION			25.00				
5.1 Area Transportation System Capacity and Efficiency			3.75				
5.1.2 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	No / Low / Medium / High Effects	1.88	1.00	1.00	1.00	1.00
5.1.3 Efficient movement of goods	Potential to support the efficient movement of goods between communities and regions based on Level of Service (LOS) and volume to capacity (v/c) on a network, screenline and critical link basis	No / Low / Medium / High Effects	1.88	1.00	1.00	1.00	1.00
		Weighted Score		3.75	3.75	3.75	3.75
5.2 Area Transportation System Reliability / Redundancy			3.75				
	Potential to support system reliability and redundancy for travel (people and goods) between regions and communities during adverse conditions.	No / Low / Medium / High Effects	3.75	1.00	1.00	1.00	1.00
		Weighted Score		3.75	3.75	3.75	3.75
5.3 Safety			6.25				
5.3.1 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	No / Low / Medium / High Effects	2.50	1.00	1.00	1.00	1.00
5.3.2 Emergency Access	Potential to support emergency access to/from existing and/or new provincial facilities	No / Low / Medium / High Effects	1.25	1.00	1.00	1.00	1.00
5.3.3 Pedestrian, Cyclist and Snowmobile Safety within the highway right-of-way	Potential and significance of change to ease and safety of movement across the highway and within the right-of-way.	No / Low / Medium / High Effects	2.50	1.00	1.00	1.00	1.00
		Weighted Score		6.25	6.25	6.25	6.25
5.4 Mobility and Accessibility			2.50				
5.4.1 Modal integration, balance and efficiency	Potential to improve modal choice and increase mode split for person trips between communities, regions and major transit station areas based on connection to concentrations of population, travel performance indicators (LOS, v/c, travel speed) at critical screenlines and on potential to provide higher order transit service.	No / Low / Medium / High Effects	0.25	0.67	0.67	0.67	0.67
5.4.2 Linkages to Population and Employment Centres	Potential to improve linkages to population and employment centres for people and goods movement.	No / Low / Medium / High Effects	0.75	1.00	1.00	1.00	1.00
5.4.3 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)	No / Low / Medium / High Effects	0.75	1.00	1.00	1.00	1.00
5.4.4 Accommodate mobility of pedestrians, cyclists and snowmobiles	Potential to accommodate mobility of pedestrians, cyclists within critical travel corridors in urbanized areas and snowmobiles in recognized rural trails.	No / Low / Medium / High Effects	0.75	1.00	1.00	1.00	1.00
		Weighted Score		2.42	2.42	2.42	2.42
1			1.25				
5.5.1 Network Connectivity	Potential to improve transportation system connectivity within and to/from the analysis area.	No / Low / Medium / High Effects	1.00	1.00	1.00	1.00	1.00
5.5.2 Flexibility for Future Expansion	Potential to address future transportation needs beyond the forecasted planning horizons.	No / Low / Medium / High Effects	0.25	1.00	1.00	1.00	1.00
		Weighted Score		1.25	1.25	1.25	1.25
5.6 Engineering			2.50				
5.6.1 Constructability	Potential ease of implementation considering feasibility/difficulty of physical, property or environmental constraints.	No / Low / Medium / High Effects	2.00	0.67	0.67	0.67	0.67
5.6.2 Compliance with Design Criteria	Conformity to applicable provincial safety and design standards.	No / Low / Medium / High Effects	0.50	1.00	1.00	1.00	1.00
		Weighted Score		1.84	1.84	1.84	1.84
5.7 Traffic Operations			3.75				
	Potential for negative impact on traffic operations due to factors such as design features, private access, and transportation network connections.	No / Low / Medium / High Effects	3.75	0.67	0.33	0.67	0.67
		Weighted Score		2.51	1.24	2.51	2.51
5.8 Construction Cost (excludes property costs and engineering costs)			1.25				
	Relative road construction cost, excluding property and engineering costs.	No / Low / Medium / High Effects	1.25	0.33	0.33	0.33	0.33
		Weighted Score		1.24	1.24	1.24	1.24
		Factored Score	**25.00**	**23.01**	**21.73**	**23.01**	**23.01**

ALTERNATIVE DESCRIPTIONS
1: C1: 14-17-20-24-25-26
2: C2: 14-17-19-21-24-25-26
3: C3: 14-17-19-22-25-26
4: C4: 14-17-19-23-26

SUMMARY WEIGHTING TABLE - SEGMENT C: EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR
SUMMARY OF SENSITIVITY ANALYSIS - RANKING OF ALTERNATIVES

FACTORS	RATING	WEIGHT	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Evaluation Team	Initial Weights		1	3	4	2
SENSITIVITY ANALYSIS						
Natural Environment	High	50%	2	1	4	3
	Low	10%	1	3	4	2
Land Use / Socio-Economic Environment	High	85%	1	3	4	2
	Low	10%	2	3	4	1
Cultural Environment	High	50%	1	3	4	2
	Low	10%	1	3	4	2
Transportation	High	70%	1	4	3	2
	Low	10%	1	2	4	3
Overall Ranking			1	3	4	2

ALTERNATIVE DESCRIPTIONS

1: C1: 14-17-20-24-25-26
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3: C3: 14-17-19-22-25-26
4: C4: 14-17-19-23-26

Highway 7/8 Transportation Corridor
Planning and Class EA Study

SEGMENT C - EAST OF STRATFORD, SOUTH OF RAILWAY CORRIDOR

FACTORS	Weighting	Alternative 1	2	3	4
1.0 NATURAL ENVIRONMENT	20.00				
1.1 Fisheries and Aquatic Ecosystems	8.00				
Weighted Score		2.64	2.64	2.64	2.64
1.2 Terrestrial Ecosystems	5.00				
Weighted Score		2.42	3.35	2.67	2.93
1.3 Groundwater	5.00				
Weighted Score		3.34	3.34	2.67	3.01
1.4 Surface Water	2.00				
Weighted Score		0.66	0.66	0.66	0.66
Factored Score	20.00	9.06	9.99	8.64	9.24
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	35.00				
2.1 Land Use Planning Policies, Goals, Objectives	3.50				
Weighted Score		2.17	2.17	2.17	2.17
2.2 Land Use / Community	7.00				
Weighted Score		6.08	6.08	6.08	6.08
2.3 Noise Sensitive Areas	5.25				
Weighted Score		3.52	3.52	3.52	3.52
2.4 Agriculture	7.00				
Weighted Score		2.08	1.16	0.23	1.16
2.5 Land Use / Resources	3.50				
Weighted Score		3.27	3.27	3.27	3.38
2.6 Major Utility Transmission Corridors	0.70				
Weighted Score		0.47	0.47	0.47	0.47
2.7 Contaminated Property and Waste Management	0.70				
Weighted Score		0.47	0.47	0.47	0.47
2.8 Landscape Composition	2.10				
Weighted Score		1.41	1.41	1.41	1.41
2.9 Air Quality	5.25				
Weighted Score		3.52	3.52	3.52	3.52
Factored Score	35.00	22.97	22.04	21.12	22.16
3.0 CULTURAL ENVIRONMENT	20.00				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	16.00				
Weighted Score		13.36	13.36	13.36	13.36
3.2 Archaeology	4.00				
Weighted Score		2.68	2.68	2.68	2.68
Factored Score	20.00	16.04	16.04	16.04	16.04
5.0 TRANSPORTATION	25.00				
5.1 Area Transportation System Capacity and Efficiency	3.75				
Weighted Score		3.75	3.75	3.75	3.75
5.2 Area Transportation System Reliability / Redundancy	3.75				
Weighted Score		3.75	3.75	3.75	3.75
5.3 Safety	6.25				
Weighted Score		6.25	6.25	6.25	6.25
5.4 Mobility and Accessibility	2.50				
Weighted Score		2.42	2.42	2.42	2.42
5.5 Network Compatibility	1.25				
Weighted Score		1.25	1.25	1.25	1.25
5.6 Engineering	2.50				
Weighted Score		1.84	1.84	1.84	1.84
5.7 Traffic Operations	3.75				
Weighted Score		2.51	1.24	2.51	2.51
5.8 Construction Cost	1.25				
Weighted Score		1.24	1.24	1.24	1.24
Factored Score	25.00	23.01	21.73	23.01	23.01
	100.00				
Total Alternative Score		71.07	69.81	68.81	70.45

Natural 50%

Weighting	Alternative 1	2	3	4
50.00				
20.00	6.60	6.60	6.60	6.60
12.50	6.04	8.38	6.68	7.31
12.50	8.35	8.35	6.68	7.53
5.00	1.65	1.65	1.65	1.65
50.00	22.64	24.98	21.60	23.09
22.00				
2.20	1.36	1.36	1.36	1.36
4.40	3.82	3.82	3.82	3.82
3.30	2.21	2.21	2.21	2.21
4.40	1.31	0.73	0.15	0.73
2.20	2.05	2.05	2.05	2.13
0.44	0.29	0.29	0.29	0.29
0.44	0.29	0.29	0.29	0.29
1.32	0.88	0.88	0.88	0.88
3.30	2.21	2.21	2.21	2.21
22.00	14.44	13.86	13.28	13.93
12.50				
10.00	8.35	8.35	8.35	8.35
2.50	1.68	1.68	1.68	1.68
12.50	10.03	10.03	10.03	10.03
15.50				
2.33	2.33	2.33	2.33	2.33
2.33	2.33	2.33	2.33	2.33
3.88	3.88	3.88	3.88	3.88
1.55	1.50	1.50	1.50	1.50
0.78	0.78	0.78	0.78	0.78
1.55	1.14	1.14	1.14	1.14
2.33	1.56	0.77	1.56	1.56
0.78	0.77	0.77	0.77	0.77
15.50	14.26	13.47	14.26	14.26
100.00	61.36	62.33	59.17	61.31

Natural 10%

	Weighting	Alternative 1	2	3	4	
2.5	10.00					0.5
	4.00	1.32	1.32	1.32	1.32	
	2.50	1.21	1.68	1.34	1.46	
	2.50	1.67	1.67	1.34	1.51	
	1.00	0.33	0.33	0.33	0.33	
	10.00	4.53	5.00	4.32	4.62	
0.63	39.50					1.13
	3.95	2.45	2.45	2.45	2.45	
	7.90	6.86	6.86	6.86	6.86	
	5.93	3.97	3.97	3.97	3.97	
	7.90	2.35	1.30	0.26	1.30	
	3.95	3.69	3.69	3.69	3.82	
	0.79	0.53	0.53	0.53	0.53	
	0.79	0.53	0.53	0.53	0.53	
	2.37	1.59	1.59	1.59	1.59	
	5.93	3.97	3.97	3.97	3.97	
	39.50	25.92	24.88	23.84	25.01	
0.63	22.50					1.13
	18.00	15.03	15.03	15.03	15.03	
	4.50	3.02	3.02	3.02	3.02	
	22.50	18.05	18.05	18.05	18.05	
0.62	28.00					1.12
	4.20	4.20	4.20	4.20	4.20	
	4.20	4.20	4.20	4.20	4.20	
	7.00	7.00	7.00	7.00	7.00	
	2.80	2.71	2.71	2.71	2.71	
	1.40	1.40	1.40	1.40	1.40	
	2.80	2.06	2.06	2.06	2.06	
	4.20	2.81	1.39	2.81	2.81	
	1.40	1.39	1.39	1.39	1.39	
	28.00	25.77	24.34	25.77	25.77	
	100.00	74.26	72.26	71.97	73.44	

ALTERNATIVE DESCRIPTIONS
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2: C2: 14-17-19-21-24-25-26
3: C3: 14-17-19-22-25-26
4: C4: 14-17-19-23-26

Highway 7/8 Transportation Corridor
Planning and Class EA Study **SEGMENT C - EAST OF STRATFORD,** Land Use / Socio-Economic 85%

FACTORS	Weighting	Alternative 1	2	3	4
1.0 NATURAL ENVIRONMENT	5.00				
1.1 Fisheries and Aquatic Ecosystems	2.00				
Weighted Score		0.66	0.66	0.66	0.66
1.2 Terrestrial Ecosystems	1.25				
Weighted Score		0.60	0.84	0.67	0.73
1.3 Groundwater	1.25				
Weighted Score		0.84	0.84	0.67	0.75
1.4 Surface Water	0.50				
Weighted Score		0.17	0.17	0.17	0.17
Factored Score	**5.00**	**2.26**	**2.50**	**2.16**	**2.31**
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	**85.00**				
2.1 Land Use Planning Policies, Goals, Objectives	8.50				
Weighted Score		5.27	5.27	5.27	5.27
2.2 Land Use / Community	17.00				
Weighted Score		14.76	14.76	14.76	14.76
2.3 Noise Sensitive Areas	12.75				
Weighted Score		8.54	8.54	8.54	8.54
2.4 Agriculture	17.00				
Weighted Score		5.05	2.81	0.56	2.81
2.5 Land Use / Resources	8.50				
Weighted Score		7.93	7.93	7.93	8.22
2.6 Major Utility Transmission Corridors	1.70				
Weighted Score		1.14	1.14	1.14	1.14
2.7 Contaminated Property and Waste Management	1.70				
Weighted Score		1.14	1.14	1.14	1.14
2.8 Landscape Composition	5.10				
Weighted Score		3.42	3.42	3.42	3.42
2.9 Air Quality	12.75				
Weighted Score		8.54	8.54	8.54	8.54
Factored Score	**85.00**	**55.78**	**53.54**	**51.29**	**53.83**
3.0 CULTURAL ENVIRONMENT	**5.00**				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	4.00				
Weighted Score		3.34	3.34	3.34	3.34
3.2 Archaeology	1.00				
Weighted Score		0.67	0.67	0.67	0.67
Factored Score	**5.00**	**4.01**	**4.01**	**4.01**	**4.01**
5.0 TRANSPORTATION	**5.00**				
5.1 Area Transportation System Capacity and Efficiency	0.75				
Weighted Score		0.75	0.75	0.75	0.75
5.2 Area Transportation System Reliability / Redundancy	0.75				
Weighted Score		0.75	0.75	0.75	0.75
5.3 Safety	1.25				
Weighted Score		1.25	1.25	1.25	1.25
5.4 Mobility and Accessibility	0.50				
Weighted Score		0.48	0.48	0.48	0.48
5.5 Network Compatibility	0.25				
Weighted Score		0.25	0.25	0.25	0.25
5.6 Engineering	0.50				
Weighted Score		0.37	0.37	0.37	0.37
5.7 Traffic Operations	0.75				
Weighted Score		0.50	0.25	0.50	0.50
5.8 Construction Cost	0.25				
Weighted Score		0.25	0.25	0.25	0.25
Factored Score	**5.00**	**4.60**	**4.35**	**4.60**	**4.60**
Total Alternative Score	**100.00**	**66.66**	**64.39**	**62.06**	**64.75**

Land Use / Socio-Economic 10%

	Weighting	Alternative 1	2	3	4
0.25	**28.00**				
	11.20	3.70	3.70	3.70	3.70
	7.00	3.38	4.69	3.74	4.10
	7.00	4.68	4.68	3.74	4.21
	2.80	0.92	0.92	0.92	0.92
	28.00	**12.68**	**13.99**	**12.10**	**12.93**
2.43	**10.00**				
	1.00	0.62	0.62	0.62	0.62
	2.00	1.74	1.74	1.74	1.74
	1.50	1.01	1.01	1.01	1.01
	2.00	0.59	0.33	0.07	0.33
	1.00	0.93	0.93	0.93	0.97
	0.20	0.13	0.13	0.13	0.13
	0.20	0.13	0.13	0.13	0.13
	0.60	0.40	0.40	0.40	0.40
	1.50	1.01	1.01	1.01	1.01
	10.00	**6.56**	**6.30**	**6.03**	**6.33**
0.25	**28.00**				
	22.40	18.70	18.70	18.70	18.70
	5.60	3.75	3.75	3.75	3.75
	28.00	**22.46**	**22.46**	**22.46**	**22.46**
0.2	**34.00**				
	5.10	5.10	5.10	5.10	5.10
	5.10	5.10	5.10	5.10	5.10
	8.50	8.50	8.50	8.50	8.50
	3.40	3.29	3.29	3.29	3.29
	1.70	1.70	1.70	1.70	1.70
	3.40	2.50	2.50	2.50	2.50
	5.10	3.42	1.68	3.42	3.42
	1.70	1.68	1.68	1.68	1.68
	34.00	**31.29**	**29.56**	**31.29**	**31.29**
	100.00	**72.99**	**72.30**	**71.88**	**73.01**

Cultural 50%

	Weighting	Alternative 1	2	3	4	
1.4	**12.50**					0.625
	5.00	1.65	1.65	1.65	1.65	
	3.13	1.51	2.09	1.67	1.83	
	3.13	2.09	2.09	1.67	1.88	
	1.25	0.41	0.41	0.41	0.41	
	12.50	**5.66**	**6.24**	**5.40**	**5.77**	
0.29	**22.00**					0.63
	2.20	1.36	1.36	1.36	1.36	
	4.40	3.82	3.82	3.82	3.82	
	3.30	2.21	2.21	2.21	2.21	
	4.40	1.31	0.73	0.15	0.73	
	2.20	2.05	2.05	2.05	2.13	
	0.44	0.29	0.29	0.29	0.29	
	0.44	0.29	0.29	0.29	0.29	
	1.32	0.88	0.88	0.88	0.88	
	3.30	2.21	2.21	2.21	2.21	
	22.00	**14.44**	**13.86**	**13.28**	**13.93**	
1.40	**50.00**					2.50
	40.00	33.40	33.40	33.40	33.40	
	10.00	6.70	6.70	6.70	6.70	
	50.00	**40.10**	**40.10**	**40.10**	**40.10**	
1.36	**15.50**					0.82
	2.33	2.33	2.33	2.33	2.33	
	2.33	2.33	2.33	2.33	2.33	
	3.88	3.88	3.88	3.88	3.88	
	1.55	1.50	1.50	1.50	1.50	
	0.78	0.78	0.78	0.78	0.78	
	1.55	1.14	1.14	1.14	1.14	
	2.33	1.56	0.77	1.56	1.56	
	0.78	0.77	0.77	0.77	0.77	
	15.50	**14.26**	**13.47**	**14.26**	**14.26**	
	100.00	**74.46**	**73.67**	**73.04**	**74.07**	

ALTERNATIVE DESCRIPTIONS
1: C1: 14-17-20-24-25-26
2: C2: 14-17-19-21-24-25-26
3: C3: 14-17-19-22-25-26
4: C4: 14-17-19-23-26

Highway 7/8 Transportation Corridor
Planning and Class EA Study **SEGMENT C - EAST OF STRATFORD,** Cultural 10%

FACTORS	Weighting	Alternative 1	2	3	4
1.0 NATURAL ENVIRONMENT	**22.50**				
1.1 Fisheries and Aquatic Ecosystems	9.00				
Weighted Score		2.97	2.97	2.97	2.97
1.2 Terrestrial Ecosystems	5.63				
Weighted Score		2.72	3.77	3.00	3.29
1.3 Groundwater	5.63				
Weighted Score		3.76	3.76	3.00	3.39
1.4 Surface Water	2.25				
Weighted Score		0.74	0.74	0.74	0.74
Factored Score	**22.50**	**10.19**	**11.24**	**9.72**	**10.39**
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	**39.50**				
2.1 Land Use Planning Policies, Goals, Objectives	3.95				
Weighted Score		2.45	2.45	2.45	2.45
2.2 Land Use / Community	7.90				
Weighted Score		6.86	6.86	6.86	6.86
2.3 Noise Sensitive Areas	5.93				
Weighted Score		3.97	3.97	3.97	3.97
2.4 Agriculture	7.90				
Weighted Score		2.35	1.30	0.26	1.30
2.5 Land Use / Resources	3.95				
Weighted Score		3.69	3.69	3.69	3.82
2.6 Major Utility Transmission Corridors	0.79				
Weighted Score		0.53	0.53	0.53	0.53
2.7 Contaminated Property and Waste Management	0.79				
Weighted Score		0.53	0.53	0.53	0.53
2.8 Landscape Composition	2.37				
Weighted Score		1.59	1.59	1.59	1.59
2.9 Air Quality	5.93				
Weighted Score		3.97	3.97	3.97	3.97
Factored Score	**39.50**	**25.92**	**24.88**	**23.84**	**25.01**
3.0 CULTURAL ENVIRONMENT	**10.00**				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	8.00				
Weighted Score		6.68	6.68	6.68	6.68
3.2 Archaeology	2.00				
Weighted Score		1.34	1.34	1.34	1.34
Factored Score	**10.00**	**8.02**	**8.02**	**8.02**	**8.02**
5.0 TRANSPORTATION	**28.00**				
5.1 Area Transportation System Capacity and Efficiency	4.20				
Weighted Score		4.20	4.20	4.20	4.20
5.2 Area Transportation System Reliability / Redundancy	4.20				
Weighted Score		4.20	4.20	4.20	4.20
5.3 Safety	7.00				
Weighted Score		7.00	7.00	7.00	7.00
5.4 Mobility and Accessibility	2.80				
Weighted Score		2.71	2.71	2.71	2.71
5.5 Network Compatibility	1.40				
Weighted Score		1.40	1.40	1.40	1.40
5.6 Engineering	2.80				
Weighted Score		2.06	2.06	2.06	2.06
5.7 Traffic Operations	4.20				
Weighted Score		2.81	1.39	2.81	2.81
5.8 Construction Cost	1.40				
Weighted Score		1.39	1.39	1.39	1.39
Factored Score	**28.00**	**25.77**	**24.34**	**25.77**	**25.77**
Total Alternative Score	**100.00**	**69.90**	**68.48**	**67.34**	**69.19**

Transportation 70%

	Weighting	Alternative 1	2	3	4
1.125	**8.00**				
	3.20				
		1.06	1.06	1.06	1.06
	2.00				
		0.97	1.34	1.07	1.17
	2.00				
		1.34	1.34	1.07	1.20
	0.80				
		0.26	0.26	0.26	0.26
	8.00	**3.62**	**4.00**	**3.46**	**3.69**
1.13	**14.00**				
	1.40				
		0.87	0.87	0.87	0.87
	2.80				
		2.43	2.43	2.43	2.43
	2.10				
		1.41	1.41	1.41	1.41
	2.80				
		0.83	0.46	0.09	0.46
	1.40				
		1.31	1.31	1.31	1.35
	0.28				
		0.19	0.19	0.19	0.19
	0.28				
		0.19	0.19	0.19	0.19
	0.84				
		0.56	0.56	0.56	0.56
	2.10				
		1.41	1.41	1.41	1.41
	14.00	**9.19**	**8.82**	**8.45**	**8.87**
0.50	**8.00**				
	6.40				
		5.34	5.34	5.34	5.34
	1.60				
		1.07	1.07	1.07	1.07
	8.00	**6.42**	**6.42**	**6.42**	**6.42**
1.12	**70.00**				
	10.50				
		10.50	10.50	10.50	10.50
	10.50				
		10.50	10.50	10.50	10.50
	17.50				
		17.50	17.50	17.50	17.50
	7.00				
		6.77	6.77	6.77	6.77
	3.50				
		3.50	3.50	3.50	3.50
	7.00				
		5.15	5.15	5.15	5.15
	10.50				
		7.04	3.47	7.04	7.04
	3.50				
		3.47	3.47	3.47	3.47
	70.00	**64.42**	**60.85**	**64.42**	**64.42**
	100.00	**83.65**	**80.08**	**82.74**	**83.40**

Transportation 10%

	Weighting	Alternative 1	2	3	4	
0.4	**24.00**					1.2
	9.60					
		3.17	3.17	3.17	3.17	
	6.00					
		2.90	4.02	3.20	3.51	
	6.00					
		4.01	4.01	3.20	3.61	
	2.40					
		0.79	0.79	0.79	0.79	
	24.00	**10.87**	**11.99**	**10.37**	**11.08**	
0.40	**42.00**					1.20
	4.20					
		2.60	2.60	2.60	2.60	
	8.40					
		7.29	7.29	7.29	7.29	
	6.30					
		4.22	4.22	4.22	4.22	
	8.40					
		2.49	1.39	0.28	1.39	
	4.20					
		3.92	3.92	3.92	4.06	
	0.84					
		0.56	0.56	0.56	0.56	
	0.84					
		0.56	0.56	0.56	0.56	
	2.52					
		1.69	1.69	1.69	1.69	
	6.30					
		4.22	4.22	4.22	4.22	
	42.00	**27.56**	**26.45**	**25.34**	**26.60**	
0.40	**24.00**					1.20
	19.20					
		16.03	16.03	16.03	16.03	
	4.80					
		3.22	3.22	3.22	3.22	
	24.00	**19.25**	**19.25**	**19.25**	**19.25**	
2.8	**10.00**					0.4
	1.50					
		1.50	1.50	1.50	1.50	
	1.50					
		1.50	1.50	1.50	1.50	
	2.50					
		2.50	2.50	2.50	2.50	
	1.00					
		0.97	0.97	0.97	0.97	
	0.50					
		0.50	0.50	0.50	0.50	
	1.00					
		0.74	0.74	0.74	0.74	
	1.50					
		1.01	0.50	1.01	1.01	
	0.50					
		0.50	0.50	0.50	0.50	
	10.00	**9.20**	**8.69**	**9.20**	**9.20**	
	100.00	**66.88**	**66.38**	**64.16**	**66.13**	

ALTERNATIVE DESCRIPTIONS
1: C1: 14-17-20-24-25-26
2: C2: 14-17-19-21-24-25-26
3: C3: 14-17-19-22-25-26
4: C4: 14-17-19-23-26

Segment D: East of Stratford, Connecting to Existing Highway 7&8 Corridor

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT D – EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7&8 CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			D1 **15-16-20-24-25-26**	**D2** **15-16-18-21-24-25-26**	**D3** **15-16-18-22-25-26**	**D4** **15-16-18-23-26**
1. NATURAL ENVIRONMENTAL FACTORS						
1.1 Fisheries and Aquatic Ecosystems						
	1.1.1 Fish Habitat	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • critical fish habitat features • riparian areas • habitat rehabilitation goals	**Medium** potential to affect fish and fish habitat • Proposed alignment crosses 2 permanent unassigned tributaries and 1 permanent warmwater tributary of Trout Creek, Thames River Watershed • Proposed alignment crosses 1 permanent unassigned tributary of Avon River, Thames River Watershed. • Watercourses contain low quality habitat an may directly support warmwater fish species • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Feeding and spawning areas are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route. • There are no SAR within the route • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated.	**High** potential to affect fish and fish habitat • Proposed alignment crosses 2 permanent unassigned tributaries and 1 permanent warmwater tributary of Trout Creek, Thames River Watershed • Proposed alignment crosses 1 permanent unassigned tributary of Avon River, Thames River Watershed. • The Avon River crossing is an existing crossing at Highway 7&8. • Impacts may also occur to shorelines of an existing standing water body (i.e. pond) • Watercourses contain low quality habitat and may directly support warmwater fish species. • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Feeding and spawning areas are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route. • There are no SAR within the route • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated. • Impacts to waterbody may include edge effects resulting in loss of some shoreline features.	**High** potential to affect fish and fish habitat • Proposed alignment crosses 2 permanent unassigned tributaries and 1 permanent warmwater tributary of Trout Creek, Thames River Watershed • Proposed alignment crosses 1 permanent unassigned tributary of Avon River, Thames River Watershed . • The Avon River crossing is an existing crossing at Highway 7&8 • Impacts may also occur to shorelines of an existing standing water body (i.e. pond) and edge effects to an unassigned wetland • Watercourses contain low quality habitat and may directly support warmwater fish species. • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Feeding and spawning areas are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route. • There are no SAR within the route • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated. • Impacts to waterbody may include edge effects resulting in loss of some shoreline features.	**High** potential to affect fish and fish habitat • Proposed alignment crosses 2 permanent unassigned tributaries of Trout Creek, Thames River Watershed • Proposed alignment crosses 1 permanent unassigned tributary of Avon River, Thames River Watershed. • The Avon River crossing is an existing crossing at Highway 7&8 • Impacts may also occur to shorelines of an existing standing water body (i.e. pond). • Watercourses contain low quality habitat and may directly support warmwater fish species. • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Feeding and spawning areas are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route. • There are no SAR within the route • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated. • Impacts to waterbody may include edge effects resulting in loss of some shoreline features.
	1.1.2 Fish Community	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • fish species at risk (vulnerable, threatened or endangered fish species) • fish movement/migration • critical fish life stage processes (spawning, rearing, nursery, feeding) • long-term fish community management goals				

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT D – EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7&8 CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			D1 **15-16-20-24-25-26**	**D2** **15-16-18-21-24-25-26**	**D3** **15-16-18-22-25-26**	**D4** **15-16-18-23-26**
1.2 Terrestrial Ecosystems						
	1.2.1 Wildlife	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • wildlife species at risk (vulnerable, threatened or endangered wildlife species) • wildlife of local and regional importance • migratory birds • critical wildlife habitat features • ecologically functional areas such as connective corridors or travel ways for movement/migration • important wildlife areas such as deeryards, heronries, waterfowl areas, important bird areas • wildlife management, rehabilitation/research program sites • interference with critical wildlife life stage processes (eg mating/rearing) etc	**Medium** potential to affect wildlife and their habitat • No special concern, endangered or threatened wildlife species • No provincially rare species (S1 – S3) • 2 area sensitive bird species recorded in study corridor • 1 MNR area sensitive bird species • 2 frog species were recorded within the route, potential to disrupt habitat for these species • Route would bi-sect large track of forest, potential to impact important wildlife area	**Medium** potential to affect wildlife and their habitat • No special concern, endangered or threatened wildlife species • No provincially rare species (S1 – S3) • 2 area sensitive bird species recorded in study corridor • 1 MNR area sensitive bird species • 2 frog species were recorded within the route, potential to disrupt habitat for these species	**Medium** potential to affect wildlife and their habitat • No special concern, endangered or threatened wildlife species • No provincially rare species (S1 – S3) • 3 area sensitive bird species recorded in study corridor • 1 MNR area sensitive bird species • 3 frog species were recorded within the route, potential to disrupt habitat for these species	**Low** potential to affect wildlife and their habitat • No special concern, endangered or threatened wildlife species • No provincially rare species (S1 – S3) • 1 frog species were recorded within the route, potential to disrupt habitat for these species
	1.2.2 Wetlands	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • provincially significant wetlands, their buffer areas, and their wetland function • evaluated and un-evaluated wetlands, their wetland buffer areas, and their wetland function • wetland management, research and/or wetland conservation programs/areas	**Low** potential to affect wetlands • No PSW or LSW are present within the study corridor • 3 unevaluated low-moderate quality wetlands	**Low** potential to affect wetlands • No PSW or LSW are present within the study corridor • 2 unevaluated low-moderate quality wetlands	**Medium** potential to affect wetlands • No PSW or LSW are present within the study corridor • 2 unevaluated low-moderate quality wetlands • 1 unevaluated wetland/standing water body impacted	**Moderate** potential to affect wetlands • No PSW or LSW are present within the study corridor • 1evaluated low-moderate quality wetlands • 1 unevaluated wetland/standing water body impacted low-moderate quality
	1.2.3 Forests	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • significant woodlands/valley lands • forest management / research program areas	**Medium** potential to affect significant or established woodlands of forests • The route will require a significant removal of vegetation from 2 woodlands, the removal of this woodland would impact (reduce and/or remove) core interior forest habitat on both sides of the route • Impact to these woodlands includes severance and edge effects	**Low** potential to affect significant or established woodlands of forests • 4 woodland units are impacted, these woodlands are relatively small • Impacts to these woodlands include edge effects	**Low** potential to affect significant or established woodlands of forests • 4 woodland units are impacted, these woodlands are relatively small • Impacts to these woodlands include edge effects	**Low** potential to affect significant or established woodlands of forests • 3 relatively small woodland units are impacted, • Impacts to these woodlands include edge effects

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study EVALUATION OF ROUTE ALTERNATIVES Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.						
SEGMENT D – EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7&8 CORRIDOR						
Factor / Sub-Factor	**Criteria**	**Indicator for Route Selection**	**Route Alternative**			
			D1 15-16-20-24-25-26	**D2 15-16-18-21-24-25-26**	**D3 15-16-18-22-25-26**	**D4 15-16-18-23-26**
			• 4 additional woodland units are impacted, these woodlands are relatively small • Impacts to these woodlands include edge effects			
	1.2.4 Vegetation	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • populations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant regional/local flora/communities • areas/corridors supporting known populations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant flora/communities • vegetation management, rehabilitation/research program sites	**Medium** potential to affect vegetation • Route is predominantly existing roadway and agricultural field • 1 Provincially Significant NHIC record found in database • Impacts include severance and displacement of high forest habitat	**Low** potential to affect vegetation • Route is predominantly existing roadway and agricultural field • 1 provincially significant NHIC record found in database	**Low** potential to affect vegetation • Route is predominantly existing roadway and agricultural field • 1 provincially significant NHIC record found in database	**Low** potential to affect vegetation • Route is predominantly existing roadway and agricultural field • 1 provincially significant NHIC record found in database
	1.2.5 Designated/ Special Areas	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to designated/special areas.	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI
1.3 Groundwater						
	1.3.1 Areas of Groundwater 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	**Low** potential to adversely affect volume of groundwater at recharge and discharge areas • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings,	**Low** potential to adversely affect volume of groundwater at recharge and discharge areas • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings,	**Low** potential to adversely affect volume of groundwater at recharge and discharge areas • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings,	**Low** potential to adversely affect volume of groundwater at recharge and discharge areas • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings,

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
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SEGMENT D – EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7&8 CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			D1 **15-16-20-24-25-26**	**D2** **15-16-18-21-24-25-26**	**D3** **15-16-18-22-25-26**	**D4** **15-16-18-23-26**
			higher infiltration can be expected. • No temporary or long-term change to groundwater recharge or discharge is anticipated due to the small surface area affected by highway construction in the proposed corridor.	higher infiltration can be expected. • No temporary or long-term change to groundwater recharge or discharge is anticipated due to the small surface area affected by highway construction in the proposed corridor.	higher infiltration can be expected. • No temporary or long-term change to groundwater recharge or discharge is anticipated due to the small surface area affected by highway construction in the proposed corridor.	higher infiltration can be expected. • No temporary or long-term change to groundwater recharge or discharge is anticipated due to the small surface area affected by highway construction in the proposed corridor.
	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	**Low** potential to adversely affect groundwater wellhead protection area • The route is located downgradient of the designated wellhead protection areas for Stratford.	**Low** potential to adversely affect groundwater wellhead protection area • The route is located downgradient of the designated wellhead protection areas for Stratford.	**Low** potential to adversely affect groundwater wellhead protection area. • The route is located downgradient of the designated wellhead protection areas for Stratford	**Low** potential to adversely affect groundwater wellhead protection area. • The route is located downgradient of the designated wellhead protection areas for Stratford.
	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	**Low** potential to adversely affect large volume wells. • The route is located downgradient of the large volume municipal wells for Stratford.	**Low** potential to adversely affect large volume wells. • The route is located downgradient of the large volume municipal wells for Stratford.	**Low** potential to adversely affect large volume wells. • The route is located downgradient of the large volume municipal wells for Stratford.	**Low** potential to adversely affect large volume wells. • The route is located downgradient of the large volume municipal wells for Stratford.
	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	**Low** potential to adversely affect private wells • The route is in close proximity (<150 m) to two shallow dug wells. These wells are located where the route turns south at Road 109 and immediately to the west of Road 111 along Lorne Avenue East. • These wells are sensitive to surface contamination (i.e. road salt). The potential exists for long-term and short-term effects to these wells due to their close proximity to the route. • Mitigation measures to prevent adverse impact to these wells due to highway construction should be implemented, such as a road salt management plan. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer. Five of these deep bedrock wells are located in close proximity (<50 m) to the edge of the proposed route. Depending on further well	**High** potential to adversely affect private wells • Will directly result in the removal of one well and potential to adversely affect other private wells • The route appears to intersect the location of one deep aquifer well located along highway 110th Road, south of the railway tracks. This well will require decommissioning prior to highway construction. The proposed route is also in close proximity (<150 m) to four shallow dug wells. These wells are located along the existing highway 7/8 corridor west of Road 109 and immediately to the west of Road 111 along Lorne Avenue East. • These wells are sensitive to surface contamination (i.e. road salt). The potential exists for long-term and short-term effects to these wells due to their close proximity to the route. • Mitigation measures to prevent adverse impact to these wells due to	**Medium** potential to adversely affect private wells • The route is in close proximity (<150 m) to four shallow dug wells. These wells are located along the existing highway 7/8 corridor west of Road 109 and immediately to the west of Road 111 along Lorne Avenue East. • These wells are sensitive to surface contamination (i.e. road salt). The potential exists for long-term and short-term effects to these wells due to their close proximity to the route. • Mitigation measures to prevent adverse impact to these wells due to highway construction should be implemented, such as a road salt management plan. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer. Six of these deep bedrock wells are located in close proximity (<50 m) to the edge of the proposed route. Depending on further well	**Medium** potential to adversely affect private wells • The route is in close proximity (<150 m) to four shallow dug wells. These wells are located along the existing highway 7/8 corridor west of Road 109 and immediately to the west of Road 111 along Lorne Avenue East. • These wells are sensitive to surface contamination (i.e. road salt). The potential exists for long-term and short-term effects to these wells due to their close proximity to the route. • Mitigation measures to prevent adverse impact to these wells due to highway construction should be implemented, such as a road salt management plan. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer. Five of these deep bedrock wells are located in close proximity (<50 m) to the edge of the proposed route. Depending on further well

LEGEND

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SEGMENT D – EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7&8 CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			D1 **15-16-20-24-25-26**	**D2** **15-16-18-21-24-25-26**	**D3** **15-16-18-22-25-26**	**D4** **15-16-18-23-26**
			investigations these may require decommissioning and replacement prior to highway construction.	highway construction should be implemented, such as a road salt management plan. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer. Five of these deep bedrock wells are located in close proximity (<50 m) to the edge of the proposed route. Depending on further well investigations these may require decommissioning and replacement prior to highway construction.	investigations these may require decommissioning and replacement prior to highway construction.	investigations these may require decommissioning and replacement prior to highway construction.
	1.3.5 Groundwater-Dependent Commercial Enterprises (e.g. water bottling operations)	Potential and significance of alteration to groundwater use by groundwater-dependent commercial enterprises due to physical intrusion, or groundwater interception, draw-down, impoundment, obstruction and by soil compaction	**No** potential to adversely affect groundwater dependent commercial enterprises • Route intersects surficial irrigation / drainage features. No groundwater dependent commercial enterprises have been identified along this route.	**No** potential to adversely affect groundwater dependent commercial enterprises • Route intersects surficial irrigation / drainage features. No groundwater dependent commercial enterprises have been identified along this route.	**No** potential to adversely affect groundwater dependent commercial enterprises • No groundwater dependent commercial enterprises have been identified along this route.	**No** potential to adversely affect groundwater dependent commercial enterprises • Route intersects surficial irrigation / drainage features. No groundwater dependent commercial enterprises have been identified along this route.
	1.3.6 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	**Medium** potential to adversely affect groundwater sensitive ecosystems • In close proximity to an evaluated high quality wetland • Potential long-term adverse effect to groundwater quality due to increased road salt use and road run-off. • Potential for temporary adverse effects to groundwater quantity should construction dewatering be required.	**Medium** potential to adversely affect groundwater sensitive ecosystems • In close proximity to an evaluated high quality wetland • Potential long-term adverse effect to groundwater quality due to increased road salt use and road run-off. • Potential for temporary adverse effects to groundwater quantity should construction dewatering be required.	**High** potential to adversely affect groundwater sensitive ecosystems • Encroachment on an evaluated high quality wetland and a water body. • Potential long-term adverse effect to groundwater quality due to increased road salt use and road run-off. • Potential for temporary adverse effects to groundwater quantity should construction dewatering be required.	**High** potential to adversely affect groundwater sensitive ecosystems • Encroachment on an evaluated high quality wetland and a water body. • Potential long-term adverse effect to groundwater quality due to increased road salt use and road run-off. • Potential for temporary adverse effects to groundwater quantity should construction dewatering be required.
1.4 Surface Water						
	1.4.1 Watershed / Sub-Watershed Drainage Features/Patterns	Potential and significance of: • encroachment, severance, displacement; • long-term alteration/ disruption. as applicable to the following: • watercourse crossings (permanent, intermittent and ephemeral) • floodplain or meander belts • riparian areas	**Medium** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 4 watercourses	**Medium** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 5 watercourses	**Medium** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 5 watercourses	**Medium** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 5 watercourses

LEGEND

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SEGMENT D – EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7&8 CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			D1 **15-16-20-24-25-26**	**D2** **15-16-18-21-24-25-26**	**D3** **15-16-18-22-25-26**	**D4** **15-16-18-23-26**
		• sensitive headwater areas • watershed and subwatershed management plans				
	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 Potential and significance of impacts on hydrology due to changes in ground permeability, modifications to surface drainage patterns and alterations of water bodies				
2. LAND USE / SOCIO-ECONOMIC FACTORS						
2.1 Land Use Planning Policies, Goals, Objectives						
	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	**Low** potential to displace areas where there are outstanding First Nations lands claims. • 5 First Nations land claims have been filed in the study area	**Low** potential to displace areas where there are outstanding First Nations lands claims. • 5 First Nations land claims have been filed in the study area	**Low** potential to displace areas where there are outstanding First Nations lands claims. • 5 First Nations land claims have been filed in the study area	**Low** potential to displace areas where there are outstanding First Nations lands claims. • 5 First Nations land claims have been filed in the study area
	2.1.2 Provincial/ Federal land use planning policies/ goals/objectives	Degree of compatibility with federal/provincial land use policies/goals/objectives NOTES: PPS Policy 1.6.6.4 stipulates that when planning for corridors for significant transportation facilities, consideration will be given to significant natural heritage, water, agricultural, mineral, cultural heritage and archaeological resources. PPS Policy 2.3 requires prime agricultural areas be protected for long-term use. Prime agricultural areas include specialty crop areas and Classes 1, 2, and 3 soils in this order of priority.	**Low** compatibility with federal/ provincial land use policies/goals • Route is on new alignment and also uses the existing corridor which results in reduced impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area	**Medium** compatibility with federal/ provincial land use policies/goals • Route predominantly uses existing roadway corridors which results in reduced impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area	**Low** compatibility with federal/ provincial land use policies/goals • Route is on new alignment and also uses the existing corridor which results in reduced impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area	**Low** compatibility with federal/ provincial land use policies/goals • Route is on new alignment and also uses the existing corridor which results in reduced impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area
	2.1.3 Municipal (regional and local) land use planning policies/goals/ objectives (Official Plans)	Degree of compatibility with municipal Official Plans	**Medium** compatibility with municipal Official Plans. • The corridor impacts agricultural designated lands in County of Perth O.P. Perth OP Agriculture designation for all sections	**Medium** compatibility with municipal Official Plans. • The corridor impacts agricultural designated lands in County of Perth O.P. Perth OP Agriculture designation for all sections	**Medium** compatibility with municipal Official Plans. • The corridor impacts agricultural designated lands in County of Perth O.P. Perth OP Agriculture designation for all sections	**Medium** compatibility with municipal Official Plans. • The corridor impacts agricultural designated lands in County of Perth O.P. Perth OP Agriculture designation for all sections

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT D – EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7&8 CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			D1 **15-16-20-24-25-26**	**D2** **15-16-18-21-24-25-26**	**D3** **15-16-18-22-25-26**	**D4** **15-16-18-23-26**
	2.1.4 Development Objectives of Private Property Owners	Potential to isolate property from current/future urban envelope Impact on future land use	**Low** potential to impact future land use • Route alternative does not limit the potential for future development	**Low** potential to impact future land use • Route alternative does not limit the potential for future development	**Low** potential to impact future land use • Route alternative does not limit the potential for future development	**Low** potential to impact future land use • Route alternative does not limit the potential for future development
2.2 Land Use / Community						
	2.2.1 First Nation Reserves	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time. to First Nation Reserves	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area
	2.2.2 First Nations' Sacred Grounds	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time. to First Nations' sacred grounds	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area
	2.2.3 Urban and Rural Residential	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption (e.g. loss of parking area); • change in area character / aesthetics (e.g. loss of trees/garden area); • nuisance impacts (e.g. intrusion of highway into current residential envelope); • change to access / travel time; • change to facilities / utilities / services; • interference with residential community cohesion; • change to highway operational impacts (e.g. snow storage and highway access visibility). to urban and rural residential areas (residents [owners/tenants] and community groups).	**Medium** potential for impacts to urban and rural residential areas • Loss of some frontage (property acquisition) to 22 residential properties along the existing corridor and Perth Line 33. Loss of some mature trees. Likely nuisance impacts to this property. • Possible encroachment and displacement of some residential or farm buildings at 2 residences (located on the south side of Highway 7, east and west of Conc.109). Likely nuisance impacts to these properties • Loss (acquisition) of some residential/farm properties along entire route. • Field observation identified no change to facilities / utilities / services.	**Medium** potential for impacts to urban and rural residential areas • Loss of some frontage (property acquisition) to 28 residential properties along the existing corridor and Perth Line 33. Loss of some mature trees. Likely nuisance impacts to this property. • Possible encroachment and displacement of some residential or farm buildings at 1 residence (located north of the train tracks, on the east side of Road 110). Likely nuisance impacts to this property. • Loss (acquisition) of some residential/farm properties along entire route. • Field observation identified no change to facilities / utilities / services.	**High** potential for impacts to urban and rural residential areas • Loss of some frontage (property acquisition) to 27 residential properties along the existing corridor and Perth Line 33. Loss of some mature trees. Likely nuisance impacts to this property. • Likely encroachment and displacement of some residential or farm buildings at 1 residence (located north of the train tracks, on the east side of Road 110). Likely displacement of the entire residential building. • Loss (acquisition) of some residential/farm properties along entire route. • Field observation identified no change to facilities / utilities / services	**High** potential for impacts to urban and rural residential areas • Loss of some frontage (property acquisition) to 19 residential properties along the existing corridor and Perth Line 33. Loss of some mature trees. Likely nuisance impacts to this property. • Likely encroachment and displacement of some residential or farm buildings at 1 residence (located north of the train tracks, on the east side of Road 110). Likely displacement of the entire residential building. • Likely encroachment and displacement of some residential or farm buildings at 1 residence (located north of the train tracks, on the west side of Road 110). • Loss (acquisition) of some residential/farm properties along

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Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT D – EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7&8 CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative D1 15-16-20-24-25-26	D2 15-16-18-21-24-25-26	D3 15-16-18-22-25-26	D4 15-16-18-23-26
						entire route. • Field observation identified no change to facilities / utilities / services.
	2.2.4 Commercial / Industrial	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services; • interference with commercial community cohesion; • change to highway operation impacts (e.g. customer parking, cargo loading/off-loading). to commercial and industrial areas (business owners/tenants and customers).	**Low** potential for impacts to commercial and industrial areas • Loss of some frontage (property acquisition) to some commercial properties on Perth Line 33 around Road 111. Likely nuisance impacts to these properties. • Field observation identified no change to facilities / utilities / services.	**Low** potential for impacts to commercial and industrial areas • Loss of some frontage (property acquisition) to one commercial property on existing right-of-way. Likely nuisance impacts to this property. • Loss of some frontage (property acquisition) to some commercial properties on Perth Line 33 around Road 111. Likely nuisance impacts to these properties. • Field observation identified no change to facilities / utilities / services.	**Low** potential for impacts to commercial and industrial areas • Loss of some frontage (property acquisition) to one commercial property on existing right-of-way. Likely nuisance impacts to this property. • Loss of some frontage (property acquisition) to some commercial properties on Perth Line 33 around Road 111. Likely nuisance impacts to these properties. • Field observation identified no change to facilities / utilities / services.	**Low** potential for impacts to commercial and industrial areas • Loss of some frontage (property acquisition) to one commercial property on existing right-of-way. Likely nuisance impacts to this property. • Potential acquisition of property of the Little Lake Golf Centre, located in vicinity of Road 110. • Loss of some frontage (property acquisition) to some commercial properties on Perth Line 33 west of Road 111. Likely nuisance impacts to these properties. • Field observation identified no change to facilities / utilities / services.
	2.2.5 Tourist Areas and Attractions (e.g. museums, theatres, etc.)	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services; • loss of "critical mass" in number of signature business attractions (e.g. number of antique shops). to tourist areas and attractions.	**Low** potential for impacts to tourist areas and attractions • No change or impacts to tourist areas and attractions in terms of any property encroachment or acquisition. • No nuisance impacts anticipated given absence of any tourist attractions or areas along this alternative. • Field observation identified no change to facilities / utilities / services. • No interference with area character/aesthetics of tourist area • No signature business attractions (none along this alternative)	**Low** potential for impacts to tourist areas and attractions • No change or impacts to tourist areas and attractions in terms of any property encroachment or acquisition. • No nuisance impacts anticipated given absence of any tourist attractions or areas along this alternative. • Field observation identified no change to facilities / utilities / services. • No interference with area character/aesthetics of tourist area • No signature business attractions (none along this alternative)	**Low** potential for impacts to tourist areas and attractions • No change or impacts to tourist areas and attractions in terms of any property encroachment or acquisition. • No nuisance impacts anticipated given absence of any tourist attractions or areas along this alternative. • Field observation identified no change to facilities / utilities / services. • No interference with area character/aesthetics of tourist area • No signature business attractions (none along this alternative)	**Low** potential for impacts to tourist areas and attractions • No change or impacts to tourist areas and attractions in terms of any property encroachment or acquisition. • No nuisance impacts anticipated given absence of any tourist attractions or areas along this alternative. • Field observation identified no change to facilities / utilities / services. • No interference with area character/aesthetics of tourist area • No signature business attractions (none along this alternative)
	2.2.6 Community Facilities / Institutions (e.g. hospitals,	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption;	**No** potential for impacts to community facilities and institutions • No change or impacts to community facilities or institutions in terms of	**No** potential for impacts to community facilities and institutions • No change or impacts to community facilities or institutions in terms of	**No** potential for impacts to community facilities and institutions • No change or impacts to community facilities or institutions in terms of	**No** potential for impacts to community facilities and institutions • No change or impacts to community facilities or institutions in terms of

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study EVALUATION OF ROUTE ALTERNATIVES Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.						
SEGMENT D – EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7&8 CORRIDOR						
Factor / Sub-Factor	**Criteria**	**Indicator for Route Selection**	**Route Alternative**			
			D1 15-16-20-24-25-26 (Selected Corridor)	**D2 15-16-18-21-24-25-26**	**D3 15-16-18-22-25-26**	**D4 15-16-18-23-26**
	schools, places of worship, unique community features)	• change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services • change to ease and safety of pedestrian movements across the highway and within the highway right-of-way; • change to highway operation impacts to current use (e.g. highway noise and vibration interfering with church services). to community facilities and institutions.	any property encroachment or acquisition. • No long term alteration /disruption • No nuisance impacts anticipated given absence of any community facilities or areas along this alternative. • Field observation identified no change to facilities / utilities / services.	any property encroachment or acquisition. • No long term alteration /disruption • No nuisance impacts anticipated given absence of any community facilities or areas along this alternative. • Field observation identified no change to facilities / utilities / services.	any property encroachment or acquisition. • No long term alteration /disruption • No nuisance impacts anticipated given absence of any community facilities or areas along this alternative. • Field observation identified no change to facilities / utilities / services.	any property encroachment or acquisition. • No long term alteration /disruption • No nuisance impacts anticipated given absence of any community facilities or areas along this alternative. • Field observation identified no change to facilities / utilities / services.
	2.2.7 Municipal Infrastructure and Public Service Facilities (e.g. sewage and water services, police/emergency services, local utilities)	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. to municipal infrastructure and public service facilities.	**Low** potential for impacts to municipal infrastructure / public service facilities • Potential encroachment to municipal landfill located on Perth Line 33, west of Road 111. Site backs onto roadway so potential disruption due to widening of the road is likely minimal. • From field observations, no other impacts to municipal infrastructure and public service facilities.	**Low** potential for impacts to municipal infrastructure / public service facilities • Potential encroachment to municipal landfill located on Perth Line 33, west of Road 111. Site backs onto roadway so potential disruption due to widening of the road is likely minimal. • From field observations, no other impacts to municipal infrastructure and public service facilities.	**Low** potential for impacts to municipal infrastructure / public service facilities • Potential encroachment to municipal landfill located on Perth Line 33, west of Road 111. Site backs onto roadway so potential disruption due to widening of the road is likely minimal. • From field observations, no other impacts to municipal infrastructure and public service facilities.	**Low** potential for impacts to municipal infrastructure / public service facilities • Potential encroachment to municipal landfill located on Perth Line 33, west of Road 111. Site backs onto roadway so potential disruption due to widening of the road is likely minimal. • From field observations, no other impacts to municipal infrastructure and public service facilities.
	2.2.8 Downtown Historic Crossroads Function	Potential and significance of interference by long-distance through-traffic on: • "main street" function and structure; • character/aesthetics; • change to ease and safety of pedestrian movements across the highway and within the highway right-of-way; • change to on-street parking in the historic downtown area	**No** potential for interference in the historic downtown area • Alternative does not affect any downtown or historical areas. • No adverse effects on Main Street function, character, pedestrian movements or street parking	**No** potential for interference in the historic downtown area • Alternative does not affect any downtown or historical areas. • No adverse effects on Main Street function, character, pedestrian movements or street parking	**No** potential for interference in the historic downtown area • Alternative does not affect any downtown or historical areas. • No adverse effects on Main Street function, character, pedestrian movements or street parking	**No** potential for interference in the historic downtown area • Alternative does not affect any downtown or historical areas. • No adverse effects on Main Street function, character, pedestrian movements or street parking
2.3 Noise Sensitive Areas (NSAs) (residential areas and sensitive institutional uses)						
	2.3.1 Highway Noise	• Potential for significant traffic noise increases in NSAs and for noise-sensitive receivers immediately adjacent to the highway.	**Low** potential for significant noise increases • Potential noise impacts of 65 dBA or a 5 dB increase are expected for 20 NSAs within the area of influence. • A decrease of noise impacts by 5 dB or more is expected for 4 NSAs due to reduced traffic on the roadway that is currently Hwy 7/8. (Most Preferred)	**High** potential for significant noise increases • Potential noise impacts of 65 dBA or a 5 dB increase are expected for 26 NSAs within the area of influence. Approximately 10 additional NSAs may be added if the roadway bridges over the rail line. • Higher impacts are expected for 3 (Least Preferred)	**High** potential for significant noise increases • Potential noise impacts of 65 dBA or a 5 dB increase are expected for 26 NSAs within the area of influence. Approximately 15 additional NSAs may be added if the roadway bridges over the rail line. • Higher impacts are expected for 2 (Least Preferred)	**High** potential for significant noise increases • Potential noise impacts of 65 dBA or a 5 dB increase are expected for 26 NSAs within the area of influence. Approximately 20 additional NSAs may be added if the roadway bridges over the rail line. • Higher impacts are expected for (Least Preferred)

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
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SEGMENT D – EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7&8 CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			D1 **15-16-20-24-25-26**	**D2** **15-16-18-21-24-25-26**	**D3** **15-16-18-22-25-26**	**D4** **15-16-18-23-26**
				NSAs if an elevated roadway overpass of the rail line is used. Mitigation of the elevated roadway would be more challenging.	NSAs if an elevated roadway overpass of the rail line is used. Mitigation of the elevated roadway would be more challenging.	adjacent NSAs if an elevated roadway overpass of the rail line is used. Mitigation of the elevated roadway would be more challenging.
	2.3.2 Construction Noise	To be considered during Preliminary Design phase				
2.4 Agriculture						
	2.4.1 Agriculture - Canada Land Inventory Class 1,2,3 Land	Potential and significance of encroachment, severance of Canada Land Inventory Classes 1, 2 and 3 soils	**High** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 55 hectares of Class 1 / 2 soil	**High** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 59 hectares of Class 1 / 2 soil	**High** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 52 hectares of Class 1 / 2 soil	**High** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 52 hectares of Class 1 / 2 soil
	2.4.2 Agriculture – Farm Infrastructure	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • nuisance impacts; to farm infrastructure (field tile drainage systems/outlets, irrigation systems, barns / silos/ structures, etc.)	**Medium** potential impacts on farm infrastructure • 1 encroachment on farm infrastructure west of Road 109 • 2 minor encroachments on farm infrastructure west of Road 110 and south of Perth Line 33 • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified and mitigation concepts for these impacts will be developed during preliminary design	**High** potential impacts on farm infrastructure • 1 encroachment on farm infrastructure just east of Road 110 • 2 encroachments on farm infrastructure on Road 110 • Displaces infrastructure on 1 livestock and cash crop operation on Road 110 • 2 minor encroachments on farm infrastructure west of Road 110 and south of Perth Line 33 • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified and mitigation concepts for these impacts will be developed during preliminary design	**Medium** potential impacts on farm infrastructure • 1 encroachment on farm infrastructure just east of Road 110 • 2 encroachments on farm infrastructure, 1 on Road 110 and 1 west of Road 110 and north of Perth Line 33 • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified and mitigation concepts for these impacts will be developed during preliminary design	**Medium** potential impacts on farm infrastructure • 1 encroachment on farm infrastructure just east of Road 110 • 2 encroachments on farm infrastructure, 1 on Road 110 and 1 west of Road 100 north of Perth Line 33 • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified and mitigation concepts for these impacts will be developed during preliminary design
	2.4.3 Agriculture – Operations on Individual Farms	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • nuisance impacts; to in-farm field operations (planting, harvesting, grazing, nutrient management, etc.)	**High** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established agricultural community including: - Minor frontage impacts and encroachment on lands on 5 live stock and cash crop operations on existing right-of-way	**High** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established agricultural community including: - Minor frontage impacts and encroachment on lands on 6 live stock and cash crop operations on existing right-of-way	**High** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established agricultural community including: - Minor frontage impacts and encroachment on lands on 6 live stock and cash crop operations on existing right-of-way	**High** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established agricultural community including: - Minor frontage impacts and encroachment on lands on 6 live stock and cash crop operations on existing right-of-way

LEGEND

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SEGMENT D – EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7&8 CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			D1 **15-16-20-24-25-26**	**D2** **15-16-18-21-24-25-26**	**D3** **15-16-18-22-25-26**	**D4** **15-16-18-23-26**
			- Minor frontage impacts and encroachment on lands on 3 parcels on existing right-of-way - Minor frontage impacts and encroachment on lands on 3 live stock and cash crop operations on Perth Line 33 - Minor frontage impacts and encroachment on lands on 10 parcels on Perth Line 33 - Severs 4 parcels between Road 109 and Road 110 - Severs 1 parcel west of Road 110 - 3 parcels where nutrient management has been reported by the farmer are impacted significantly - 4 parcels where nutrient management is assumed to occur in association with livestock operations are significantly impacted - 5 parcels where nutrient management is assumed to occur in association with livestock operations are slightly impacted - Additional nutrient management operations may still be identified by potentially impacted farmers	- Minor frontage impacts and encroachment on lands on 8 parcels on existing right-of-way - Minor frontage impacts and encroachment on lands on 2 live stock and cash crop operations on Road 110 - Minor frontage impacts and encroachment on lands on 3 live stock and cash crop operations on Perth Line 33 - Minor frontage impacts and encroachment on lands on 10 parcels on Perth Line 33 - Severs 2 parcels on Road 110 - Displaces portions of land fronting onto Road 110 on 2 parcels - 3 parcels where nutrient management has been reported by the farmer are impacted significantly - 6 parcels where nutrient management is assumed to occur in association with livestock operations are significantly impacted - 6 parcels where nutrient management is assumed to occur in association with livestock operations are slightly impacted - Additional nutrient management operations may still be identified by potentially impacted farmers	- Minor frontage impacts and encroachment on lands on 8 parcels on existing right-of-way - Minor frontage impacts and encroachment on lands on 1 live stock and cash crop operation on Perth Line 33 - Minor frontage impacts and encroachment on lands on 7 parcels on Perth Line 33 - Severs 1 parcel fronting onto Road 110 - Severs 2 parcels west of Road 110 on Perth Line 33 - 3 parcels where nutrient management has been reported by the farmer are impacted significantly - 4 parcels where nutrient management is assumed to occur in association with livestock operations are impacted significantly - 6 parcels where nutrient management is assumed to occur in association with livestock operations are slightly impacted - Additional nutrient management operations may still be identified by potentially impacted farmers	- Minor frontage impacts and encroachment on lands on 8 parcels on existing right-of-way - Minor frontage impacts and encroachment on lands on 1 parcel of land on Perth Line 33 on Perth Line 33 - Severs 1 parcel fronting onto Road 110 - Severs 6 parcels west of Road 110 - 3 parcels where nutrient management has been reported by the farmer are impacted significantly - 4 parcels where nutrient management is assumed to occur in association with livestock operations are impacted significantly - 6 parcels where nutrient management is assumed to occur in association with livestock operations are slightly impacted - Additional nutrient management operations may still be identified by potentially impacted farmers
	2.4.4 Agriculture – Transportation Linkages between Integrated Agricultural Business Units	Potential to sever/disrupt transportation linkages between integrated agricultural business units (movement between integrated agricultural business units of equipment, materials, workers, etc.)	**Medium** potential to sever / disrupt transportation linkages • Route alternative passes between parcels of land associated with 2 IABU's as identified to the study team by the farming community	**Medium** potential to sever / disrupt transportation linkages • Route alternative passes between parcels of land associated with 2 IABU's as identified to the study team by the farming community	**Medium** potential to sever / disrupt transportation linkages • Route alternative passes between parcels of land associated with 2 IABU's as identified to the study team by the farming community	**Medium** potential to sever / disrupt transportation linkages • Route alternative passes between parcels of land associated with 2 IABU's as identified to the study team by the farming community

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study EVALUATION OF ROUTE ALTERNATIVES Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.						
SEGMENT D – EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7&8 CORRIDOR						
Factor / Sub-Factor	**Criteria**	**Indicator for Route Selection**	**Route Alternative**			
			D1 15-16-20-24-25-26	**D2 15-16-18-21-24-25-26**	**D3 15-16-18-22-25-26**	**D4 15-16-18-23-26**
2.5 Land Use / Resources						
	2.5.1 First Nations' 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: • encroachment, severance, displacement; • long-term alteration / disruption; • nuisance impacts; • change to access / travel time. to First Nations' treaty rights or use of land and resources for traditional purposes	**Medium** potential to affect First Nation Treaty Rights or use of land and resources for traditional purposes • Route alternative has both existing highway and new corridor components.	**Medium** potential to affect First Nation Treaty Rights or use of land and resources for traditional purposes • Route alternative predominantly uses existing roadway corridors.	**Medium** potential to affect First Nation Treaty Rights or use of land and resources for traditional purposes • Route alternative has both existing highway and new corridor components.	**Medium** potential to affect First Nation Treaty Rights or use of land and resources for traditional purposes • Route alternative has both existing highway and new corridor components.
	2.5.2 Parks and Recreational Areas (e.g. national/ provincial parks, conservation areas, municipal parks, public spaces, golf courses, trails, greenways and open space linkages)	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to parks and recreational areas.	**No** potential for impacts to parks and recreational areas • No encroachment or impacts to any parks or recreational areas as they do not exist along this route. • Field observation identified no change to facilities / utilities / services.	**No** potential for impacts to parks and recreational areas • No encroachment or impacts to any parks or recreational areas as they do not exist along this route. • Field observation identified no change to facilities / utilities / services.	**No** potential for impacts to parks and recreational areas • No encroachment or impacts to any parks or recreational areas as they do not exist along this route. • Field observation identified no change to facilities / utilities / services.	**No** potential for impacts to parks and recreational areas • No encroachment or impacts to any parks or recreational areas as they do not exist along this route. • Field observation identified no change to facilities / utilities / services.
	2.5.3 Aggregates, Mineral-Resources	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. to current/future extraction of aggregate and mineral resources.	**No** potential for impacts to current/future aggregate / mineral resources • No impacts to mineral-aggregate resources	**No** potential for impacts to current/future aggregate / mineral resources • No impacts to mineral-aggregate resources	**No** potential for impacts to current/future aggregate / mineral resources • No impacts to mineral-aggregate resources	**No** potential for impacts to current/future aggregate / mineral resources • No impacts to mineral-aggregate resources
2.6 Major Utility Transmission Corridors (e.g. railroads, hydro, gas, oil)						
		Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. to major utility transmission corridors.	**Medium** potential for impacts to major utility transmission corridors • One new railway crossing • One major hydro transmission corridor crossing • No major gas / oil corridor crossings	**Medium** potential for impacts to major utility transmission corridors • One new railway crossing • One major hydro transmission corridor crossing • No major gas / oil corridor crossings	**Medium** potential for impacts to major utility transmission corridors • One new railway crossing • One major hydro transmission corridor crossing • No major gas / oil corridor crossings	**Medium** potential for impacts to major utility transmission corridors • One new railway crossing • One major hydro transmission corridor crossing • No major gas / oil corridor crossings

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
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SEGMENT D – EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7&8 CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			D1 **15-16-20-24-25-26**	**D2** **15-16-18-21-24-25-26**	**D3** **15-16-18-22-25-26**	**D4** **15-16-18-23-26**
2.7 Contaminated Property and Waste Management (e.g. Landfills, Hazardous Waste Sites, "Brownfield" Areas, other known contaminated sites, and high-risk contamination areas)						
		Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. to contaminated property and waste management.	**Low** potential for impacts to contaminated property and waste including exposure of contaminants and unstable substrates and potential concerns from soil and groundwater contamination. • The Stratford Landfill Facility is located approximately 0.25 km east and northeast of the proposed terminus of the route C1 alignment. Any development within 500 m of a landfill requires a MOE D-4 Assessment. • Mitigation measures to prevent the exposure of contaminants and unstable substrates should be implemented, as required, based on the assessment of the landfill data and the D-4 study. • No other waste disposal sites were identified in the vicinity of the proposed alignment. • No vehicle fuel and repair facilities were identified within 1 km of the proposed route alignment. Wilhelm Concrete, a concrete forming company, is located approximately 0.2 km north of the proposed alignment. Fuel ASTs were observed on the property in aerial photographs; however, this property is not believed to present a significant environmental concern. • Mitigation measures should be implemented to prevent the exposure of contaminants.	**Low** potential for impacts to contaminated property and waste including exposure of contaminants and unstable substrates and potential concerns from soil and groundwater contamination. • The Stratford Landfill Facility is located approximately 0.25km east and northeast of the proposed terminus of the route C2 alignment Any development within 500 m of a landfill requires a MOE D-4 Assessment. • Mitigation measures to prevent the exposure of contaminants and unstable substrates should be implemented, as required, based on the assessment of the landfill data and the D-4 study. • No other waste disposal sites were identified in the vicinity of the proposed alignment. • No vehicle fuel and repair facilities were identified within 1 km of the proposed route alignment. Wilhelm Concrete, a concrete forming company, is located approximately 0.2 km north of the proposed alignment. Fuel ASTs were observed on the property in aerial photographs; however, this property is not believed to present a significant environmental concern. • Mitigation measures should be implemented to prevent the exposure of contaminants.	**Low** potential for impacts to contaminated property and waste including exposure of contaminants and unstable substrates and potential concerns from soil and groundwater contamination. • The Stratford Landfill Facility is located approximately 0.25km east and northeast of the proposed terminus of the route C3 alignment. Any development within 500 m of a landfill requires a MOE D-4 Assessment. • Mitigation measures to prevent the exposure of contaminants and unstable substrates should be implemented, as required, based on the assessment of the landfill data and the D-4 study. • No other waste disposal sites were identified in the vicinity of the proposed alignment. • No vehicle fuel and repair facilities were identified within 1 km of the proposed route alignment. Wilhelm Concrete, a concrete forming company, is located approximately 0.2 km north of the proposed alignment. Fuel ASTs were observed on the property in aerial photographs; however, this property is not believed to present a significant environmental concern. • Mitigation measures should be implemented to prevent the exposure of contaminants.	**Low** potential for impacts to contaminated property and waste including exposure of contaminants and unstable substrates and potential concerns from soil and groundwater contamination. • The Stratford Landfill Facility is located approximately 0.25km east and northeast of the proposed terminus of the route C4 alignment. Any development within 500 m of a landfill requires a MOE D-4 Assessment. • Mitigation measures to prevent the exposure of contaminants and unstable substrates should be implemented, as required, based on the assessment of the landfill data and the D-4 study. • No other waste disposal sites were identified in the vicinity of the proposed alignment. • No vehicle fuel and repair facilities were identified within 1 km of the proposed route alignment. Wilhelm Concrete, a concrete forming company, is located approximately 0.2 km north of the proposed alignment. Fuel ASTs were observed on the property in aerial photographs; however, this property is not believed to present a significant environmental concern. • Mitigation measures should be implemented to prevent the exposure of contaminants.
2.8 Landscape Composition						
	2.8.1 Scenic Composition (total aesthetic value of landscape	Potential and significance of change to scenic composition (total aesthetic value of landscape components).	**Low** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative	**Low** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative	**Low** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative	**Low** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative

LEGEND

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SEGMENT D – EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7&8 CORRIDOR

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			D1 **15-16-20-24-25-26**	**D2** **15-16-18-21-24-25-26**	**D3** **15-16-18-22-25-26**	**D4** **15-16-18-23-26**
	components)		• high negative impact on affected farmhouses on western entry • moderate negative impact on farm community due to the minimal loss of farmland • moderate visual interest through agricultural fields • low/moderate visual interest of flat terrain • high visual interest of nearby woodlots • high visual interest of nearby riparian areas and associated vegetation	• low/moderate negative impact on affected farmhouses on western entry • low negative impact on farm community due to the minimal loss of farmland • moderate negative impacts on affected farms along Road 110 • moderate negative impact on adjacent properties on existing footprint of Road 110 due to the loss of frontage and associated loss of farmland • moderate visual interest through agricultural fields on existing Road 110 footprint • low/moderate visual interest of flat terrain • moderate/high visual interest of nearby woodlots • high visual interest of nearby riparian areas and associated vegetation	• high negative impact on affected farms due to the loss of farmland • moderate visual interest through agricultural fields • low/moderate visual interest of flat terrain • low/moderate visual interest of nearby woodlots • moderate visual interest of nearby riparian areas and associated vegetation	• high negative impact on affected nearby residential area • high negative impact on affected farms due to the loss of farmland • low visual interest of nearby residential backyards • low/moderate visual interest of flat terrain • moderate visual interest through agricultural fields • moderate visual interest of nearby woodlots • high visual interest of nearby riparian areas and associated vegetation
	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	To be considered during Preliminary Design phase				
2.9 Air Quality						
	2.9.1 Local and Regional Air Quality (Total contaminant and greenhouse gas emissions)	Previously addressed during Needs Assessment Phase				
	2.9.2 Sensitive receptors to air pollutants and greenhouse gas emissions	Presence and potential for impacts to sensitive receptors to air pollutants and greenhouse gas emissions, including consideration of number of sensitive receptors immediately adjacent to the highway.	**Medium** potential impact to sensitive receptors adjacent to the highway • 11 sensitive receptors within 20m of the edge of the right of way.	**Medium** potential impact to sensitive receptors adjacent to the highway • 12 sensitive receptors within 20m of the edge of the right of way.	**Medium** potential impact to sensitive receptors adjacent to the highway • 9 sensitive receptors within 20m of the edge of the right of way.	**Medium** potential impact to sensitive receptors adjacent to the highway • 10 sensitive receptors within 20m of the edge of the right of way.

LEGEND

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			D1 **15-16-20-24-25-26**	**D2** **15-16-18-21-24-25-26**	**D3** **15-16-18-22-25-26**	**D4** **15-16-18-23-26**
3. CULTURAL ENVIRONMENTAL FACTORS						
3.1 Cultural Heritage – Built Heritage and Cultural Landscapes						
	3.1.1 Buildings or "Standing" Sites of Architectural or Heritage Significance or Ontario Heritage Foundation Easement Properties	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to buildings or "standing" sites of extreme local, provincial or national interest or Ontario Heritage Foundation easements properties.	**Medium** potential for impacts to sites of heritage significance • There are five built heritage structures within or just outside of the proposed route. Two non-inventoried buildings are just west of the route on Perth Line 33; their setting may be changed somewhat. • There are three inventoried structures along Highway 7/8 within or just outside of the route; one of these has been demolished and is not a concern; the two others of concern are the Alexander Anderson Farmstead on Road 109 and a barn at the corner of Highway 7/8 and Road 108 – south side; the latter two structures may be displaced or have their setting changed	**High** potential for impacts to sites of heritage significance • There are seven built heritage structures within or just outside of the proposed route. Two non-inventoried buildings are just west of the route on Perth Line 33; their setting may be changed somewhat. • There are five inventoried structures along Highway 7/8 within or just outside of the route; one of these has been demolished and is not a concern; three others are within the route on Highway 7/8 (the Alexander Anderson Farmstead on Road 109, a barn at the corner of Highway 7/8 and Road 108, James Rankin Farmstead on Hwy 7/8). One other is just to the northwest of the route where it crosses Hwy 7/8 – the McCallum Farmstead at 2797 Hwy 7/8. The structures on the route may be displaced or have their setting changed; the ones just outside may have their setting changed somewhat	**High** potential for impacts to sites of heritage significance • There are seven built heritage structures within or just outside of the proposed route. Two non-inventoried buildings are just west of the route on Perth Line 33; their setting may be changed somewhat. • There are five inventoried structures along Highway 7/8 within or just outside of the route; one of these has been demolished and is not a concern; three others are within the route on Highway 7/8 (the Alexander Anderson Farmstead on Road 109, a barn at the corner of Highway 7/8 and Road 108, James Rankin Farmstead on Hwy 7/8). One other is just to the northwest of the route where it crosses Hwy 7/8 – the McCallum Farmstead on Hwy 7/8. The structures on the route may be displaced or have their setting changed; the ones just outside may have their setting changed somewhat	**High** potential for impacts to sites of heritage significance • There are eight built heritage structures within or just outside of the proposed route. Two non-inventoried buildings are just west of the route on Perth Line 33; their setting may be changed somewhat. • There are six inventoried structures along Highway 7/8 within or just outside of the route; one of these has been demolished and is not a concern; three others are within the route on Highway 7/8 (the Alexander Anderson Farmstead on Road 109, a barn at the corner of Highway 7/8 and Road 108, James Rankin Farmstead on Hwy 7/8). One other is just to the northwest of the route where it crosses Hwy 7/8 – the McCallum Farmstead on Hwy 7/8. Another falls to the north of the route between Road 111 and Road 110 (James Reaney's Birthplace on Forest Road). The structures on the route may be displaced or have their setting changed; the ones just outside may have their setting changed somewhat.
	3.1.2 Heritage Bridges	Potential for destruction or significant alteration of heritage bridges				
	3.1.3 Areas of Historic 19th Century Settlement	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to areas of historic 19th century settlement.	**Low** potential for impacts to areas of historic settlement • There are no areas of historic 19th century settlement within the route but a portion of the route crosses Hwy 7/8 – an early transportation corridor	**Low** potential for impacts to areas of historic settlement • There are no areas of historic 19th century settlement within the route but a portion of the route crosses Hwy 7/8 – an early transportation corridor	**Low** potential for impacts to areas of historic settlement • There are no areas of historic 19th century settlement within the route but a portion of the route crosses Hwy 7/8 – an early transportation corridor	**Low** potential for impacts to areas of historic settlement • There are no areas of historic 19th century settlement within the route but a portion of the route crosses Hwy 7/8 – an early transportation corridor
	3.1.4 Cultural Heritage Landscapes	Potential and significance of change to composition of cultural landscapes.	**No** potential for impacts to cultural heritage landscapes based on existing data	**No** potential for impacts to cultural heritage landscapes based on existing data	**No** potential for impacts to cultural heritage landscapes based on existing data	**No** potential for impacts to cultural heritage landscapes based on existing data

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study
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SEGMENT D – EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7&8 CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
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	(collection of individual man-made features modifying pristine landscape)		• Dilse did not identify any cultural heritage landscapes within the proposed route	• Dilse did not identify any cultural heritage landscapes within the proposed route	• Dilse did not identify any cultural heritage landscapes within the proposed route	• Dilse did not identify any cultural heritage landscapes within the proposed route
	3.1.5 First Nations' Burial Sites	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time. to First Nations' burial sites.	**No** potential for impacts to First Nations burial sites • There are no known / reported First Nations' burial sites within this route	**No** potential for impacts to First Nations burial sites • There are no known / reported First Nations' burial sites within this route	**No** potential for impacts to First Nations burial sites • There are no known/reported First Nations' burial sites within this route	**No** potential for impacts to First Nations burial sites • There are no known/reported First Nations' burial sites within this route
	3.1.6 Cemeteries	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to cemeteries.	**Low** potential for impacts to cemeteries • There are no cemeteries within the route; however the James Rankin Cemetery is just to the west of it on Hwy 7/8; negligible impacts	**Medium** potential for impacts to cemeteries • There is one cemetery within/adjacent to the route (the James Rankin Cemetery on Hwy 7/8). The boundaries are poorly known but it may be set back enough from the road to avoid impact	**Medium** potential for impacts to cemeteries • There is one cemetery within/adjacent to the route (the James Rankin Cemetery on Hwy 7/8). The boundaries are poorly known but it may be set back enough from the road to avoid impact	**Medium** potential for impacts to cemeteries • There is one cemetery within/adjacent to the route (the James Rankin Cemetery on Hwy 7/8). The boundaries are poorly known but it may be set back enough from the road to avoid impact
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	**Medium** potential for destruction or disturbance of archaeological sites • There are three archaeological sites within this route, along Highway 7/8; all likely have portions intact. Existing information is not good (one EuroCanadian; 2 unknown) • There is potential for previously undocumented archaeological sites	**Medium** potential for destruction or disturbance of archaeological sites • There are three archaeological sites within this route, along Highway 7/8; all likely have portions intact. Existing information is not good (one EuroCanadian; 2 unknown) • There is potential for previously undocumented archaeological sites	**Medium** potential for destruction or disturbance of archaeological sites • There are three archaeological sites within this route, along Highway 7/8; all likely have portions intact. Existing information is not good (one EuroCanadian; 2 unknown) • There is potential for previously undocumented archaeological sites	**Medium** potential for destruction or disturbance of archaeological sites • There are three archaeological sites within this route, along Highway 7/8; all likely have portions intact. Existing information is not good (one EuroCanadian; 2 unknown) • There is potential for previously undocumented archaeological sites
	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				
4. AREA ECONOMY – Previously addressed during Needs Assessment Phase						
5. TRANSPORTATION FACTORS						
5.1 Area Transportation System Capacity and Efficiency						
	5.1.1 Federal/ Provincial/Municipal transportation planning policies/goals/ objectives	Previously addressed during Needs Assessment Phase.				

LEGEND

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	5.1.2 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	**High** potential to support efficient movement of people. • Route consists of new alignment and existing roadway segments, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Stratford to route	**High** potential to support efficient movement of people. • Route predominantly uses existing roadway corridors, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Stratford to route	**High** potential to support efficient movement of people. • Route consists of new alignment and existing roadway segments, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Stratford to route	**High** potential to support efficient movement of people. • Route consists of new alignment and existing roadway segments, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Stratford to route
	5.1.3 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)	**High** potential to support efficient movement of goods. • Route consists of new alignment and existing roadway segments, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Stratford to route	**High** potential to support efficient movement of goods. • Route predominantly uses existing roadway corridors, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Stratford to route	**High** potential to support efficient movement of goods. • Route consists of new alignment and existing roadway segments, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Stratford to route	**High** potential to support efficient movement of goods. • Route consists of new alignment and existing roadway segments, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Stratford to route
5.2 Area Transportation System Reliability / Redundancy						
		Potential to support system reliability and redundancy for travel (people and goods) between regions and communities during adverse conditions	**High** potential to support system reliability and redundancy • Route is predominantly on new alignment, which provides a new connection in the Stratford area to accommodate travel during adverse conditions (i.e. provides an alternate route)	**Low** potential to support system reliability and redundancy • Route predominantly uses existing roadway corridors	**High** potential to support system reliability and redundancy • Route is predominantly on new alignment, which provides a new connection in the Stratford area to accommodate travel during adverse conditions (i.e. provides an alternate route)	**High** potential to support system reliability and redundancy • Route is predominantly on new alignment, which provides a new connection in the Stratford area to accommodate travel during adverse conditions (i.e. provides an alternate route)
5.3 Safety						
	5.3.1 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	**High** potential to improve traffic safety • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances • A four/five lane cross section provides for good passing opportunity, provides a wider platform to accommodate evasive moves during potential accidents,	**High** potential to improve traffic safety • Route predominantly uses existing roadway corridors, with limited number of access points at intersection locations and a few access points associated with private entrances • A four/five lane cross section provides for good passing opportunity, provides a wider platform to accommodate evasive	**High** potential to improve traffic safety • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances • A four/five lane cross section provides for good passing opportunity, provides a wider platform to accommodate evasive moves during potential accidents,	**High** potential to improve traffic safety • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances • A four/five lane cross section provides for good passing opportunity, provides a wider platform to accommodate evasive moves during potential accidents,

LEGEND

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			and a centre left turn lane would accommodate safer left turns along the highway at intersection and driveway locations	moves during potential accidents, and a centre left turn lane would accommodate safer left turns along the highway at intersection and driveway locations	and a centre left turn lane would accommodate safer left turns along the highway at intersection and driveway locations	and a centre left turn lane would accommodate safer left turns along the highway at intersection and driveway locations
	5.3.2 Emergency Access	Potential to support emergency access to/from existing and/or new provincial facilities.	**High** potential to support emergency access to/from route • Opportunity to provide connections via north-south crossing roads	**High** potential to support emergency access to/from route • Opportunity to provide connections via north-south crossing roads	**High** potential to support emergency access to/from route • Opportunity to provide connections via north-south crossing roads	**High** potential to support emergency access to/from route • Opportunity to provide connections via north-south crossing roads
	5.3.3 Pedestrian, Cyclist and Snowmobile Safety within the highway right-of-way	Potential and significance of change to ease and safety of movement across the highway and within the right-of-way.	**High** potential to improve pedestrian, cyclist and snowmobile safety • Route predominantly on new alignment so limited need for movement within the right-of-way • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**Medium** potential to improve pedestrian, cyclist and snowmobile safety • Route predominantly uses existing roadway corridors so some need for movement within the right-of-way • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**High** potential to improve pedestrian, cyclist and snowmobile safety • Route predominantly on new alignment so limited need for movement within the right-of-way • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**High** potential to improve pedestrian, cyclist and snowmobile safety • Route predominantly on new alignment so limited need for movement within the right-of-way • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations
5.4 Mobility and Accessibility						
	5.4.1 Modal integration, balance and efficiency	Potential to improve modal choice and increase mode split for person trips between communities, regions and major transit station areas based on connection to concentrations of population, travel performance indicators (LOS, v/c, travel speed) at critical screenlines and on potential to provide higher order transit service.	**Medium** potential to improve modal integration, balance and efficiency. • Transit service is potentially constrained by the bypass of existing development along Highway 7&8. • Use of existing Perth Road 33 corridor limits opportunities to provide higher order transit service • Opportunity to support interface between rail transit service and highway	**Medium** potential to improve modal integration, balance and efficiency. • Transit service is potentially constrained by the bypass of existing development along Highway 7&8. • Use of existing Perth Road 33 corridor limits opportunities to provide higher order transit service • Opportunity to support interface between rail transit service and highway	**Medium** potential to improve modal integration, balance and efficiency. • Transit service is potentially constrained by the bypass of existing development along Highway 7&8. • Use of existing Perth Road 33 corridor limits opportunities to provide higher order transit service • Opportunity to support interface between rail transit service and highway	**Medium** potential to improve modal integration, balance and efficiency. • Transit service is potentially constrained by the bypass of existing development along Highway 7&8. • Use of existing Perth Road 33 corridor limits opportunities to provide higher order transit service • Opportunity to support interface between rail transit service and highway
	5.4.2 Linkages to Population and Employment Centres	Potential to improve linkages to population and employment centres for people and goods movement	**High** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved	**High** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved	**High** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved	**High** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved

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			D1 **15-16-20-24-25-26**	**D2** **15-16-18-21-24-25-26**	**D3** **15-16-18-22-25-26**	**D4** **15-16-18-23-26**
	5.4.3 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)	**High** potential to support recreation and tourism travel • Tourist travel through the analysis area is facilitated	**High** potential to support recreation and tourism travel • Tourist travel through the analysis area is facilitated	**High** potential to support recreation and tourism travel • Tourist travel through the analysis area is facilitated	**High** potential to support recreation and tourism travel • Tourist travel through the analysis area is facilitated
	5.4.4 Accommodate mobility of pedestrians, cyclists and snowmobiles	Potential to accommodate mobility of pedestrians, cyclists within critical travel corridors in urbanized areas and snowmobiles in recognized rural trails	**High** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route predominantly on new alignment so limited need for movement within the right-of-way • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**Medium** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route predominantly uses existing roadway corridors so so some need for movement within the right-of-way • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**High** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route predominantly on new alignment so limited need for movement within the right-of-way • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**High** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route predominantly on new alignment so limited need for movement within the right-of-way • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations
5.5 Network Compatibility						
	5.5.1 Network Connectivity	Potential to improve transportation system connectivity within and to/from the analysis area.	**High** potential to improve transportation system connectivity • Provides improved linkage between Stratford and New Hamburg	**High** potential to improve transportation system connectivity • Provides improved linkage between Stratford and New Hamburg	**High** potential to improve transportation system connectivity • Provides improved linkage between Stratford and New Hamburg	**High** potential to improve transportation system connectivity • Provides improved linkage between Stratford and New Hamburg
	5.5.2 Flexibility for Future Expansion	Potential to address future transportation needs beyond the forecasted planning horizons.	**High** potential for future expansion. • Route is predominantly on new alignment so the majority of the right-of-way could accommodate future expansion	**Medium** potential for future expansion. • Route predominantly uses existing roadway corridor, limiting potential for future expansion	**High** potential for future expansion. • Route is predominantly on new alignment so the majority of the right-of-way could accommodate future expansion	**High** potential for future expansion. • Route is predominantly on new alignment so the majority of the right-of-way could accommodate future expansion
5.6 Engineering						
	5.6.1 Constructability	Potential ease of implementation considering feasibility/difficulty of physical, property or environmental constraints	**Medium** potential for constructability issues • Utilizes segment of existing Highway 7&8 corridor and Lorne Avenue • One railway crossing • Several new watercourse crossings	**Medium** potential for constructability issues • Utilizes segment of existing Highway 7&8 corridor, Perth Road 110 and Lorne Avenue • One railway crossing • Several new watercourse crossings	**Medium** potential for constructability issues • Utilizes segment of existing Highway 7&8 corridor and Lorne Avenue • One railway crossing • Several new watercourse crossings	**Medium** potential for constructability issues • Utilizes segment of existing Highway 7&8 corridor and Lorne Avenue • One railway crossing • Several new watercourse crossings

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT D – EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7&8 CORRIDOR

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			D1 **15-16-20-24-25-26**	**D2** **15-16-18-21-24-25-26**	**D3** **15-16-18-22-25-26**	**D4** **15-16-18-23-26**
	5.6.2 Compliance with Design Criteria	Conformity to applicable provincial safety and design standards.	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths
5.7 Traffic Operations						
		Potential for negative impact on traffic operations due to factors such as design features, private access, and transportation network connections	**Low** potential for negative impact on traffic operations • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances. • Opportunity to provide connections via north-south crossing roads	**Medium** potential for negative impact on traffic operations • Route predominantly uses existing roadway corridors, with limited number of access points at intersection locations and a few access points associated with private entrance; however route utilizes a segment of Road 110 which will impact the connectivity of Road 110. • Opportunity to provide connections via north-south crossing roads	**Low** potential for negative impact on traffic operations • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances. • Opportunity to provide connections via north-south crossing roads	**Low** potential for negative impact on traffic operations • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances. • Opportunity to provide connections via north-south crossing roads
5.8 Construction Cost (excludes property costs and engineering costs)						
		Relative road construction cost, excluding property and engineering costs	**High** cost $16 M	**High** cost $16 M	**High** cost $16 M	**High** cost $16 M
SUMMARY OF EVALUATION			**Summary of Natural Environment** Route Alternatives D1 is preferred from a natural environment perspective as it has lower potential impacts to fisheries and aquatic ecosystems and to groundwater. **Summary of Land Use / Socio-Economic Environment** Route Alternative D1 is preferred from a land use / socio-economic environment perspective as it has lower potential impacts to rural and urban residential area, noise sensitive area and agriculture, **Summary of Cultural Environment** Route Alternative D1 is preferred from a cultural environment perspective as it has lower potential impacts on built heritage and archaeological sites. **Summary of Transportation** All route alternatives are comparable in their ability to support transportation criteria for most transportation factors. However, Route Alternatives D1, D3 and D4 are preferred because they have lower potential for negative impacts to traffic operations and higher potential to improve pedestrian and cyclist safety and mobility and to support system reliability and redundancy. **Conclusion** Based upon the above, Route Alternative D1 is the preferred alternative connecting to existing Highway 7&8 east of Stratford.			

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

SEGMENT D - EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7/8 CORRIDOR

FACTORS	Weighting	Alternative			
		1	2	3	4
1.0 NATURAL ENVIRONMENT	**20.00**				
1.1 Fisheries and Aquatic Ecosystems	8.00				
Weighted Score		2.64	0.00	0.00	0.00
1.2 Terrestrial Ecosystems	5.00				
Weighted Score		2.42	3.35	2.67	2.93
1.3 Groundwater	5.00				
Weighted Score		3.34	2.67	2.67	2.67
1.4 Surface Water	2.00				
Weighted Score		0.66	0.66	0.66	0.66
Factor Score	**20.00**	**9.06**	**6.68**	**6.00**	**6.26**
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	**35.00**				
2.1 Land Use Planning Policies, Goals, Objectives	3.50				
Weighted Score		2.17	2.35	2.17	2.17
2.2 Land Use / Community	7.00				
Weighted Score		5.37	5.03	5.03	5.03
2.3 Noise Sensitive Areas	5.25				
Weighted Score		3.52	0.00	0.00	0.00
2.4 Agriculture	7.00				
Weighted Score		1.16	0.23	1.16	1.16
2.5 Land Use / Resources	3.50				
Weighted Score		3.27	3.27	2.57	3.27
2.6 Major Utility Transmission Corridors	0.70				
Weighted Score		0.23	0.23	0.23	0.23
2.7 Contaminated Property and Waste Management	0.70				
Weighted Score		0.47	0.47	0.47	0.47
2.8 Landscape Composition	2.10				
Weighted Score		1.41	1.41	1.41	1.41
2.9 Air Quality	5.25				
Weighted Score		1.73	1.73	1.73	1.73
Factored Score	**35.00**	**19.32**	**14.71**	**14.75**	**15.45**
3.0 CULTURAL ENVIRONMENT	**20.00**				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	16.00				
Weighted Score		8.66	5.00	5.00	5.00
3.2 Archaeology	4.00				
Weighted Score		1.32	1.32	1.32	1.32
Factored Score	**20.00**	**9.98**	**6.32**	**6.32**	**6.32**
5.0 TRANSPORTATION	**25.00**				
5.1 Area Transportation System Capacity and Efficiency	3.75				
Weighted Score		3.75	3.75	3.75	3.75
5.2 Area Transportation System Reliability / Redundancy	3.75				
Weighted Score		3.75	1.24	3.75	3.75
5.3 Safety	6.25				
Weighted Score		6.25	5.43	6.25	6.25
5.4 Mobility and Accessibility	2.50				
Weighted Score		2.42	2.17	2.42	2.42
5.5 Network Compatibility	1.25				
Weighted Score		1.25	1.17	1.25	1.25
5.6 Engineering	2.50				
Weighted Score		1.16	1.16	1.16	1.16
5.7 Traffic Operations	3.75				
Weighted Score		2.51	1.24	2.51	2.51
5.8 Construction Cost	1.25				
Weighted Score		1.24	1.24	1.24	1.24
Factored Score	**25.00**	**22.33**	**17.39**	**22.33**	**22.33**
	100.00				
Total Alternative Score		**60.68**	**45.09**	**49.40**	**50.36**

ALTERNATIVE DESCRIPTIONS
1: D1: 15-16-20-24-25-26
2: D2: 15-16-18-21-24-25-26
3: D3: 15-16-18-22-25-26
4: D4: 15-16-18-23-26

NATURAL ENVIRONMENT WEIGHTING TABLE - SEGMENT D: EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7/8 CORRIDOR

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative			
				1	2	3	4
1.0 NATURAL ENVIRONMENT			**20.00**				
1.1 Fisheries and Aquatic Ecosystems			8.00				
1.1.1 Fish Habitat	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: critical fish habitat features, riparian areas and habitat rehabilitation goals.	No / Low / Medium / High Effects	8.00	0.33	0.00	0.00	0.00
1.1.2 Fish Community	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: fish species at risk (vulnerable, threatened or endangered fish species), fish movement/migration, critical fish life stage processes (spawning, rearing, nursery, feeding) and long-term fish community management goals.						
		Weighted Score		2.64	0.00	0.00	0.00
1.2 Terrestrial Ecosystems			5.00				
1.2.1 Wildlife	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: wildlife species at risk (vulnerable, threatened or endangered wildlife species); wildlife of local and regional importance; migratory birds; critical wildlife habitat features; ecologically functional areas such as connective corridors or travel ways for movement/migration; important wildlife areas such as deeryards, heronries, waterfowl areas, important bird areas; wildlife management, rehabilitation/research program sites; and interference with critical wildlife life stage processes (eg mating/rearing, etc.).	No / Low / Medium / High Effects	0.75	0.33	0.67	0.33	0.67
1.2.2 Wetlands	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: provincially significant wetlands, their buffer areas, and their wetland function; evaluated and un-evaluated wetlands, their wetland buffer areas, and their wetland function; and wetland management, research and/or wetland conservation programs/areas.	No / Low / Medium / High Effects	1.25	0.67	0.67	0.33	0.33
1.2.3 Forests	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: significant woodlands/valley lands; and forest management/research program areas.	No / Low / Medium / High Effects	1.25	0.33	0.67	0.67	0.67
1.2.4 Vegetation	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: subpopulations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant regional/local flora/communities; areas/corridors supporting known populations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant flora/communities; and vegetation management, rehabilitation/research program sites.	No / Low / Medium / High Effects	0.75	0.33	0.67	0.67	0.67
1.2.5 Designated/Special Areas	Potential and significance of: encroachment, severance, displacement, long-term alteration/disruption, change in area character/aesthetics, nuisance impacts, change to access/travel time, and change to facilities/utilities/services to designated/special areas.	No / Low / Medium / High Effects	1.00	0.67	0.67	0.67	0.67
		Weighted Score		2.42	3.35	2.67	2.93
1.3 Groundwater			5.00				
1.3.1 Areas of Groundwater Recharge and Discharge	Potential and significance of alteration to areas of groundwater recharge and discharge due to physical intrusion or groundwater inception, draw-down, impoundment, obstruction, or soil compaction impacting groundwater base-flow and quality.	No / Low / Medium / High Effects	0.50	0.67	0.67	0.67	0.67
1.3.2 Groundwater Source Areas and Wellhead Protection Areas	Potential and significance of alteration to areas of groundwater resource areas and wellhead protection areas due to physical intrusion, or groundwater interception, draw-down, impoundment, obstruction and by soil compaction.	No / Low / Medium / High Effects	1.00	0.67	0.67	0.67	0.67
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.	No / Low / Medium / High Effects	0.50	0.67	0.67	0.67	0.67

NATURAL ENVIRONMENT WEIGHTING TABLE - SEGMENT D: EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7/8 CORRIDOR

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative			
				1	2	3	4
1.0 NATURAL ENVIRONMENT			**20.00**				
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.	No / Low / Medium / High Effects	1.00	0.67	0.00	0.33	0.33
1.3.5 Groundwater-Dependent Commercial Enterprises (e.g. water bottling operations)	Potential and significance of alteration to groundwater use by groundwater-dependent commercial enterprises due to physical intrusion, or groundwater interception, draw-down, impoundment, obstruction and by soil compaction.	No / Low / Medium / High Effects	1.00	1.00	1.00	1.00	1.00
1.3.6 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.	No / Low / Medium / High Effects	1.00	0.33	0.33	0.00	0.00
		Weighted Score		3.34	2.67	2.67	2.67
1.4 Surface Water			2.00				
1.4.1 Watershed / Sub-Watershed Drainage Features / Patterns	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: watercourse crossings (permanent, intermittent and ephemeral); floodplain or meander belts; riparian areas; sensitive headwater areas; and watershed and sub watershed management plans.	No / Low / Medium / High Effects	2.00	0.33	0.33	0.33	0.33
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. Potential and significance of impacts on hydrology due to changes in ground permeability, modifications to surface drainage patterns and alterations of waterbodies.	No / Low / Medium / High Effects					
		Weighted Score		0.66	0.66	0.66	0.66
		Factored Score	**20.00**	**9.06**	**6.68**	**6.00**	**6.26**

ALTERNATIVE DESCRIPTIONS

1: D1: 15-16-20-24-25-26
2: D2: 15-16-18-21-24-25-26
3: D3: 15-16-18-22-25-26
4: D4: 15-16-18-23-26

SUMMARY WEIGHTING TABLE - SEGMENT D: EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7/8 CORRIDOR

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative			
				1	2	3	4
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT			35.00				
2.0 Land Use Planning Policies, Goals and Objectives			3.50				
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	No / Low / Medium / High Effects	0.18	0.67	0.67	0.67	0.67
2.1.2 Provincial/Federal land use planning policies/goals/objectives	Degree of compatibility with federal/provincial land use policies/goals/objectives	No / Low / Medium / High Effects	0.52	0.33	0.67	0.33	0.33
2.1.3 Municipal (regional and local land use planning policies/goals/ objectives (Official Plans)	Degree of compatibility with municipal Official Plans	No / Low / Medium / High Effects	2.28	0.67	0.67	0.67	0.67
2.1.4 Development Objectives of Private Property Owners	Potential to isolate property from current/future urban envelope. Impact on future land use.	No / Low / Medium / High Effects	0.52	0.67	0.67	0.67	0.67
		Weighted Score		2.17	2.35	2.17	2.17
2.2 Land Use / Community			7.00				
2.2.1 First Nation Reserves	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts and change to access / travel time to First Nation Reserves.	No / Low / Medium / High Effects	0.35	1.00	1.00	1.00	1.00
2.2.2 First Nations' Sacred Grounds	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts and change to access / travel time to First Nations' sacred grounds.	No / Low / Medium / High Effects	0.35	0.67	0.67	0.67	0.67
2.2.3 Urban and Rural Residential	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption (e.g. loss of parking area); change in area character / aesthetics (e.g. loss of trees/garden area); nuisance impacts (e.g. intrusion of highway into current residential envelope); change to access / travel time; change to facilities / utilities / services; interference with residential community cohesion; change to highway operational impacts (e.g. snow storage and highway access visibility) to urban and rural residential areas (residents (owners/tenants) and community groups).	No / Low / Medium / High Effects	1.05	0.33	0.00	0.00	0.00
2.2.4 Commercial/Industrial	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/aesthetics; nuisance impacts; change to travel access/travel time; change to facilities/utilities/services; interference with commercial community cohesion; change to highway operation impacts (e.g. customer parking, cargo loading/off-loading); to commercial and industrial areas (business owners/tenants and customers).	No / Low / Medium / High Effects	1.05	0.67	0.67	0.67	0.67
2.2.5 Tourist Areas and Attractions (e.g. museums, theatres, etc.)	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/aesthetics; nuisance impacts; change to travel access/travel time; change to facilities/utilities/services; loss of "critical mass" in number of signature business attractions (e.g. number of antique shops); to tourist areas and attractions.	No / Low / Medium / High Effects	1.05	0.67	0.67	0.67	0.67
2.2.6 Community Facilities/Institutions (e.g. hospitals, schools, places of worship, unique community features)	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/aesthetics; nuisance impacts; change to travel access/travel time; change to facilities/utilities/services; change to ease and safety of pedestrian movements across the highway and within the highway right-of-way; change to highway operation impacts to current use (e.g. highway noise and vibration interfering with church services); to community facilities and institutions.	No / Low / Medium / High Effects	1.05	1.00	1.00	1.00	1.00
2.2.7 Municipal Infrastructure and Public Service Facilities (e.g. sewage and water services, police/emergency services, local utilities)	Potential and significance of: encroachment, severance, displacement; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to municipal infrastructure and public service facilities.	No / Low / Medium / High Effects	0.35	0.67	0.67	0.67	0.67
2.2.8 Downtown Historic Crossroads Function	Potential and significance of interference by long-distance through-traffic on: "main street" function and structure; character/aesthetics; change to ease and safety of pedestrian movements across the highway and within the highway right-of-way; change to on-street parking; in historic downtown area.	No / Low / Medium / High Effects	1.75	1.00	1.00	1.00	1.00
		Weighted Score		5.37	5.03	5.03	5.03
2.3 Noise Sensitive Areas (NSAs) (residential areas and sensitive institutional uses)			5.25				
2.3.1 Highway Noise	Potential for significant traffic noise increases in NSAs and for noise-sensitive receivers immediately adjacent to the highway	No / Low / Medium / High Effects	5.25	0.67	0.00	0.00	0.00
		Weighted Score		3.52	0.00	0.00	0.00

SUMMARY WEIGHTING TABLE - SEGMENT D: EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7/8 CORRIDOR

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative			
				1	2	3	4
2.4 Agriculture			7.00				
2.4.1 Agriculture - Canada Land Inventory Class 1, 2, 3 Land	Potential and significance of encroachment, severance of Canada Land inventory Classes 1, 2 and 3 soils	No / Low / Medium / High Effects	0.70	0.00	0.00	0.00	0.00
2.4.2 Agriculture - Farm Infrastructure	Potential and significance of: encroachment, severance, displacement; long-term alteration/disruption; nuisance impacts: to farm infrastructure (field tile drainage systems/outlets, irrigation systems, barns/silos/structures, etc.).	No / Low / Medium / High Effects	2.80	0.33	0.00	0.33	0.33
2.4.3 Agriculture - Operations on Individual Farms	Potential and significance of: encroachment, severance, displacement; long-term alteration/disruption; nuisance impacts: to in-farm field operations (planting, harvesting, grazing, nutrient management, etc.) as applicable to the following: specialty crops/cropland; diary/livestock operations; field crop operations; high investment agricultural operations; established agricultural farm communities.	No / Low / Medium / High Effects	2.80	0.00	0.00	0.00	0.00
2.4.4 Agriculture - Transportation Linkages between Integrated Agricultural Business Units	Potential to sever/disrupt transportation linkages between integrated agricultural business units (movement between integrated agricultural business units of equipment, materials, workers, etc.)	No / Low / Medium / High Effects	0.70	0.33	0.33	0.33	0.33
		Weighted Score		1.16	0.23	1.16	1.16
2.5 Land Use / Resources			3.50				
2.5.1 First Nations' 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: encroachment, severance, displacement; long-term alteration/disruption; nuisance impacts: change to access/travel time; to First Nations' treaty rights or use of land and resources for traditional purposes.	No / Low / Medium / High Effects	0.35	0.33	0.33	0.33	0.33
2.5.2 Parks and Recreational Areas (e.g. national/provincial parks, conservation areas, municipal parks, public spaces, golf courses, trails, greenways and open space linkages)	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/ aesthetics; nuisance impacts; change to access/travel time; change to facilities/utilities/services; to parks and recreational areas.	No / Low / Medium / High Effects	2.45	1.00	1.00	1.00	1.00
2.5.3 Aggregates, Mineral-Resources	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to current/future extraction of aggregate and mineral resources.	No / Low / Medium / High Effects	0.70	1.00	1.00	0.00	1.00
		Weighted Score		3.27	3.27	2.57	3.27
2.6 Major Utility Transmission Corridors (e.g. railroads, hydro, gas, oil)			0.70				
	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to major utility transmission corridors.	No / Low / Medium / High Effects	0.70	0.33	0.33	0.33	0.33
		Weighted Score		0.23	0.23	0.23	0.23
2.7 Contaminated Property and Waste Management (e.g. landfills, hazardous waste sites, "brownfield" areas, other known contaminated sites, and high-risk contamination areas)			0.70				
	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to contaminated property and waste management.	No / Low / Medium / High Effects	0.70	0.67	0.67	0.67	0.67
		Weighted Score		0.47	0.47	0.47	0.47
2.8 Landscape Composition			2.10				
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).	No / Low / Medium / High Effects	2.10	0.67	0.67	0.67	0.67
2.8.2 Sensitive Viewer Groups	Potential and significance of change to vistas/outlooks for sensitive viewer groups.	No / Low / Medium / High Effects					
2.8.3 Scenic Value of Views/Vistas from the transportation facility	Potential and significance of views/vistas from the transportation facility.	No / Low / Medium / High Effects					
		Weighted Score		1.41	1.41	1.41	1.41
2.9 Air Quality			5.25				
2.9.2 Sensitive receptors to air pollutants and greenhouse gas emissions	Presence and potential for impacts to sensitive receptors to air pollutants and greenhouse gas emissions, including consideration of number of sensitive receptors immediately adjacent to the highway.	No / Low / Medium / High Effects	5.25	0.33	0.33	0.33	0.33
		Weighted Score		1.73	1.73	1.73	1.73
		Factored Score	**35.00**	**19.32**	**14.71**	**14.75**	**15.45**

ALTERNATIVE DESCRIPTIONS

1: D1: 15-16-20-24-25-26
2: D2: 15-16-18-21-24-25-26
3: D3: 15-16-18-22-25-26
4: D4: 15-16-18-23-26

SUMMARY WEIGHTING TABLE - SEGMENT D: EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7/8 CORRIDOR

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative 1	2	3	4
3.0 CULTURAL ENVIRONMENT			20.00				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes			16.00				
3.1.1 Buildings or "Standing" Sites of Architectural or Heritage Significance or Ontario Heritage Foundation Easement Properties	Potential and significance of encroachment, severance, displacement, property acquisition, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, change to facilities / utilities/ service to buildings or "standing" sites of extreme local, provincial or national interest or Ontario Heritage Foundation easements properties.	No / Low / Medium / High Effects	8.00	0.33	0.00	0.00	0.00
3.1.2 Heritage Bridges	Potential for destruction or significant alteration of heritage bridges.	No / Low / Medium / High Effects					
3.1.3 Areas of Historic 19th Century Settlement	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, change to facilities / utilities/ service to areas of historic 19th century settlement.	No / Low / Medium / High Effects	3.00	0.67	0.67	0.67	0.67
3.1.4 Cultural Heritage Landscapes (collection of individual manmade features modifying pristine landscape)	Potential and significance of change to composition of cultural landscapes.	No / Low / Medium / High Effects	2.00	1.00	1.00	1.00	1.00
3.1.5 First Nations' Burial Sites	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, to First Nations' burial sites.	No / Low / Medium / High Effects	0.00	1.00	1.00	1.00	1.00
3.1.6 Cemeteries	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, change to facilities / utilities/ service to cemeteries.	No / Low / Medium / High Effects	3.00	0.67	0.33	0.33	0.33
		Weighted Score		8.66	5.00	5.00	5.00
3.2 Cultural Heritage - Archaeology			4.00				
3.2.1 Pre-Historic and Historic First Nations Sites	Potential for destruction or disturbance of prehistoric and historic First Nations archaeological sites of extreme local, provincial or national interest	No / Low / Medium / High Effects	4.00	0.33	0.33	0.33	0.33
3.2.2 Historic EuorCanadian Archaeological Sites	Potential for destruction or disturbance of historic EuroCanadian archaeological sites of extreme local, provincial or national interest	No / Low / Medium / High Effects					
		Weighted Score		1.32	1.32	1.32	1.32
		Factored Score	**20.00**	**9.98**	**6.32**	**6.32**	**6.32**

ALTERNATIVE DESCRIPTIONS
1: D1: 15-16-20-24-25-26
2: D2: 15-16-18-21-24-25-26
3: D3: 15-16-18-22-25-26
4: D4: 15-16-18-23-26

SUMMARY WEIGHTING TABLE - SEGMENT D: EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7/8 CORRIDOR

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative 1	Alternative 2	Alternative 3	Alternative 4
5.0 TRANSPORTATION			25.00				
5.1 Area Transportation System Capacity and Efficiency			3.75				
5.1.2 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	No / Low / Medium / High Effects	1.88	1.00	1.00	1.00	1.00
5.1.3 Efficient movement of goods	Potential to support the efficient movement of goods between communities and regions based on Level of Service (LOS) and volume to capacity (v/c) on a network, screenline and critical link basis	No / Low / Medium / High Effects	1.88	1.00	1.00	1.00	1.00
		Weighted Score		3.75	3.75	3.75	3.75
5.2 Area Transportation System Reliability / Redundancy			3.75				
	Potential to support system reliability and redundancy for travel (people and goods) between regions and communities during adverse conditions.	No / Low / Medium / High Effects	3.75	1.00	0.33	1.00	1.00
		Weighted Score		3.75	1.24	3.75	3.75
5.3 Safety			6.25				
5.3.1 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	No / Low / Medium / High Effects	2.50	1.00	1.00	1.00	1.00
5.3.2 Emergency Access	Potential to support emergency access to/from existing and/or new provincial facilities	No / Low / Medium / High Effects	1.25	1.00	1.00	1.00	1.00
5.3.3 Pedestrian, Cyclist and Snowmobile Safety within the highway right-of-way	Potential and significance of change to ease and safety of movement across the highway and within the right-of-way.	No / Low / Medium / High Effects	2.50	1.00	0.67	1.00	1.00
		Weighted Score		6.25	5.43	6.25	6.25
5.4 Mobility and Accessibility			2.50				
5.4.1 Modal integration, balance and efficiency	Potential to improve modal choice and increase mode split for person trips between communities, regions and major transit station areas based on connection to concentrations of population, travel performance indicators (LOS, v/c, travel speed) at critical screenlines and on potential to provide higher order transit service.	No / Low / Medium / High Effects	0.25	0.67	0.67	0.67	0.67
5.4.2 Linkages to Population and Employment Centres	Potential to improve linkages to population and employment centres for people and goods movement.	No / Low / Medium / High Effects	0.75	1.00	1.00	1.00	1.00
5.4.3 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)	No / Low / Medium / High Effects	0.75	1.00	1.00	1.00	1.00
5.4.4 Accommodate mobility of pedestrians, cyclists and snowmobiles	Potential to accommodate mobility of pedestrians, cyclists within critical travel corridors in urbanized areas and snowmobiles in recognized rural trails.	No / Low / Medium / High Effects	0.75	1.00	0.67	1.00	1.00
		Weighted Score		2.42	2.17	2.42	2.42
5.5 Network Compatibility			1.25				
5.5.1 Network Connectivity	Potential to improve transportation system connectivity within and to/from the analysis area.	No / Low / Medium / High Effects	1.00	1.00	1.00	1.00	1.00
5.5.2 Flexibility for Future Expansion	Potential to address future transportation needs beyond the forecasted planning horizons.	No / Low / Medium / High Effects	0.25	1.00	0.67	1.00	1.00
		Weighted Score		1.25	1.17	1.25	1.25
5.6 Engineering			2.50				
5.6.1 Constructability	Potential ease of implementation considering feasibility/difficulty of physical, property or environmental constraints.	No / Low / Medium / High Effects	2.00	0.33	0.33	0.33	0.33
5.6.2 Compliance with Design Criteria	Conformity to applicable provincial safety and design standards.	No / Low / Medium / High Effects	0.50	1.00	1.00	1.00	1.00
		Weighted Score		1.16	1.16	1.16	1.16
5.7 Traffic Operations			3.75				
	Potential for negative impact on traffic operations due to factors such as design features, private access, and transportation network connections.	No / Low / Medium / High Effects	3.75	0.67	0.33	0.67	0.67
		Weighted Score		2.51	1.24	2.51	2.51
5.8 Construction Cost (excludes property costs and engineering costs)			1.25				
	Relative road construction cost, excluding property and engineering costs.	No / Low / Medium / High Effects	1.25	0.33	0.33	0.33	0.33
		Weighted Score		1.24	1.24	1.24	1.24
		Factored Score	**25.00**	**22.33**	**17.39**	**22.33**	**22.33**

ALTERNATIVE DESCRIPTIONS

1: D1: 15-16-20-24-25-26
2: D2: 15-16-18-21-24-25-26
3: D3: 15-16-18-22-25-26
4: D4: 15-16-18-23-26

SUMMARY WEIGHTING TABLE - SEGMENT D: EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7/8 CORRIDOR
SUMMARY OF SENSITIVITY ANALYSIS - RANKING OF ALTERNATIVES

FACTORS	RATING	WEIGHT	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Evaluation Team	Initial Weights		1	4	3	2
SENSITIVITY ANALYSIS						
Natural Environment	High	50%	1	4	3	2
	Low	10%	1	4	3	2
Land Use / Socio-Economic Environment	High	85%	1	4	3	2
	Low	10%	1	4	3	2
Cultural Environment	High	50%	1	4	3	2
	Low	10%	1	4	3	2
Transportation	High	70%	1	4	3	2
	Low	10%	1	4	3	2
Overall Ranking			1	4	3	2

ALTERNATIVE DESCRIPTIONS

1: D1: 15-16-20-24-25-26
2: D2: 15-16-18-21-24-25-26
3: D3: 15-16-18-22-25-26
4: D4: 15-16-18-23-26

SEGMENT D - EAST OF STRATFORD, CONNECTING TO EXISTING HIGHWAY 7/8 CORRIDOR

FACTORS ~~Highway 7/8 Transportation Corridor~~ Planning and Class EA Study	Weighting	Alternative 1	2	3	4
1.0 NATURAL ENVIRONMENT	**20.00**				
1.1 Fisheries and Aquatic Ecosystems	8.00				
Weighted Score		2.64	0.00	0.00	0.00
1.2 Terrestrial Ecosystems	5.00				
Weighted Score		2.42	3.35	2.67	2.93
1.3 Groundwater	5.00				
Weighted Score		3.34	2.67	2.67	2.67
1.4 Surface Water	2.00				
Weighted Score		0.66	0.66	0.66	0.66
Factored Score	**20.00**	**9.06**	**6.68**	**6.00**	**6.26**
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	**35.00**				
2.1 Land Use Planning Policies, Goals, Objectives	3.50				
Weighted Score		2.17	2.36	2.17	2.17
2.2 Land Use / Community	7.00				
Weighted Score		5.37	5.03	5.03	5.03
2.3 Noise Sensitive Areas	5.25				
Weighted Score		3.52	0.00	0.00	0.00
2.4 Agriculture	7.00				
Weighted Score		1.16	0.23	1.16	1.16
2.5 Land Use / Resources	3.50				
Weighted Score		3.27	3.27	2.57	3.27
2.6 Major Utility Transmission Corridors	0.70				
Weighted Score		0.23	0.23	0.23	0.23
2.7 Contaminated Property and Waste Management	0.70				
Weighted Score		0.47	0.47	0.47	0.47
2.8 Landscape Composition	2.10				
Weighted Score		1.41	1.41	1.41	1.41
2.9 Air Quality	5.25				
Weighted Score		1.73	1.73	1.73	1.73
Factored Score	**35.00**	**19.32**	**14.71**	**14.75**	**15.45**
3.0 CULTURAL ENVIRONMENT	**20.00**				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	16.00				
Weighted Score		8.66	5.00	5.00	5.00
3.2 Archaeology	4.00				
Weighted Score		1.32	1.32	1.32	1.32
Factored Score	**20.00**	**9.98**	**6.32**	**6.32**	**6.32**
5.0 TRANSPORTATION	**25.00**				
5.1 Area Transportation System Capacity and Efficiency	3.75				
Weighted Score		3.75	3.75	3.75	3.75
5.2 Area Transportation System Reliability / Redundancy	3.75				
Weighted Score		3.75	1.24	3.75	3.75
5.3 Safety	6.25				
Weighted Score		6.25	5.43	6.25	6.25
5.4 Mobility and Accessibility	2.50				
Weighted Score		2.42	2.17	2.42	2.42
5.5 Network Compatibility	1.25				
Weighted Score		1.25	1.17	1.25	1.25
5.6 Engineering	2.50				
Weighted Score		1.16	1.16	1.16	1.16
5.7 Traffic Operations	3.75				
Weighted Score		2.51	1.24	2.51	2.51
5.8 Construction Cost	1.25				
Weighted Score		1.24	1.24	1.24	1.24
Factored Score	**25.00**	**22.33**	**17.39**	**22.33**	**22.33**
	100.00				
Total Alternative Score		**60.68**	**45.09**	**49.40**	**50.36**

Natural 50%

Weighting	Alternative 1	2	3	4
50.00				
20.00				
	6.60	0.00	0.00	0.00
12.50				
	6.04	8.38	6.68	7.31
12.50				
	8.35	6.68	6.68	6.68
5.00				
	1.65	1.65	1.65	1.65
50.00	**22.64**	**16.70**	**15.00**	**15.64**
22.00				
2.20				
	1.36	1.47	1.36	1.36
4.40				
	3.38	3.16	3.16	3.16
3.30				
	2.21	0.00	0.00	0.00
4.40				
	0.73	0.15	0.73	0.73
2.20				
	2.05	2.05	1.61	2.05
0.44				
	0.15	0.15	0.15	0.15
0.44				
	0.29	0.29	0.29	0.29
1.32				
	0.88	0.88	0.88	0.88
3.30				
	1.09	1.09	1.09	1.09
22.00	**12.14**	**9.24**	**9.27**	**9.71**
12.50				
10.00				
	5.41	3.13	3.13	3.13
2.50				
	0.83	0.83	0.83	0.83
12.50	**6.24**	**3.95**	**3.95**	**3.95**
15.50				
2.33				
	2.33	2.33	2.33	2.33
2.33				
	2.33	0.77	2.33	2.33
3.88				
	3.88	3.36	3.88	3.88
1.55				
	1.50	1.35	1.50	1.50
0.78				
	0.78	0.72	0.78	0.78
1.55				
	0.72	0.72	0.72	0.72
2.33				
	1.56	0.77	1.56	1.56
0.78				
	0.77	0.77	0.77	0.77
15.50	**13.84**	**10.78**	**13.84**	**13.84**
100.00	**54.86**	**40.67**	**42.07**	**43.14**

Natural 10%

	Weighting	Alternative 1	2	3	4	
2.5	**10.00**					0.5
	4.00					
		1.32	0.00	0.00	0.00	
	2.50					
		1.21	1.68	1.34	1.46	
	2.50					
		1.67	1.34	1.34	1.34	
	1.00					
		0.33	0.33	0.33	0.33	
	10.00	**4.53**	**3.34**	**3.00**	**3.13**	
0.63	**39.50**					1.13
	3.95					
		2.45	2.65	2.45	2.45	
	7.90					
		6.06	5.67	5.67	5.67	
	5.93					
		3.97	0.00	0.00	0.00	
	7.90					
		1.30	0.26	1.30	1.30	
	3.95					
		3.69	3.69	2.90	3.69	
	0.79					
		0.26	0.26	0.26	0.26	
	0.79					
		0.53	0.53	0.53	0.53	
	2.37					
		1.59	1.59	1.59	1.59	
	5.93					
		1.96	1.96	1.96	1.96	
	39.50	**21.80**	**16.60**	**16.65**	**17.44**	
0.63	**22.50**					1.13
	18.00					
		9.74	5.63	5.63	5.63	
	4.50					
		1.49	1.49	1.49	1.49	
	22.50	**11.23**	**7.11**	**7.11**	**7.11**	
0.62	**28.00**					1.12
	4.20					
		4.20	4.20	4.20	4.20	
	4.20					
		4.20	1.39	4.20	4.20	
	7.00					
		7.00	6.08	7.00	7.00	
	2.80					
		2.71	2.43	2.71	2.71	
	1.40					
		1.40	1.31	1.40	1.40	
	2.80					
		1.30	1.30	1.30	1.30	
	4.20					
		2.81	1.39	2.81	2.81	
	1.40					
		1.39	1.39	1.39	1.39	
	28.00	**25.01**	**19.47**	**25.01**	**25.01**	
	100.00	**62.56**	**46.52**	**51.77**	**52.69**	

ALTERNATIVE DESCRIPTIONS
1: D1: 15-16-20-24-25-26
2: D2: 15-16-18-21-24-25-26
3: D3: 15-16-18-22-25-26
4: D4: 15-16-18-23-26

SEGMENT D - EAST OF STRATFORD, CONNECT

Land Use / Socio-Economic 85%

FACTORS	Weighting	Alternative 1	2	3	4
1.0 NATURAL ENVIRONMENT	**5.00**				
1.1 Fisheries and Aquatic Ecosystems	2.00				
Weighted Score		0.66	0.00	0.00	0.00
1.2 Terrestrial Ecosystems	1.25				
Weighted Score		0.60	0.84	0.67	0.73
1.3 Groundwater	1.25				
Weighted Score		0.84	0.67	0.67	0.67
1.4 Surface Water	0.50				
Weighted Score		0.17	0.17	0.17	0.17
Factored Score	**5.00**	**2.26**	**1.67**	**1.50**	**1.56**
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	**85.00**				
2.1 Land Use Planning Policies, Goals, Objectives	8.50				
Weighted Score		5.27	5.70	5.27	5.27
2.2 Land Use / Community	17.00				
Weighted Score		13.05	12.21	12.21	12.21
2.3 Noise Sensitive Areas	12.75				
Weighted Score		8.54	0.00	0.00	0.00
2.4 Agriculture	17.00				
Weighted Score		2.81	0.56	2.81	2.81
2.5 Land Use / Resources	8.50				
Weighted Score		7.93	7.93	6.23	7.93
2.6 Major Utility Transmission Corridors	1.70				
Weighted Score		0.56	0.56	0.56	0.56
2.7 Contaminated Property and Waste Management	1.70				
Weighted Score		1.14	1.14	1.14	1.14
2.8 Landscape Composition	5.10				
Weighted Score		3.42	3.42	3.42	3.42
2.9 Air Quality	12.75				
Weighted Score		4.21	4.21	4.21	4.21
Factored Score	**85.00**	**46.92**	**35.72**	**35.83**	**37.53**
3.0 CULTURAL ENVIRONMENT	**5.00**				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	4.00				
Weighted Score		2.17	1.25	1.25	1.25
3.2 Archaeology	1.00				
Weighted Score		0.33	0.33	0.33	0.33
Factored Score	**5.00**	**2.50**	**1.58**	**1.58**	**1.58**
5.0 TRANSPORTATION	**5.00**				
5.1 Area Transportation System Capacity and Efficiency	0.75				
Weighted Score		0.75	0.75	0.75	0.75
5.2 Area Transportation System Reliability / Redundancy	0.75				
Weighted Score		0.75	0.25	0.75	0.75
5.3 Safety	1.25				
Weighted Score		1.25	1.09	1.25	1.25
5.4 Mobility and Accessibility	0.50				
Weighted Score		0.48	0.43	0.48	0.48
5.5 Network Compatibility	0.25				
Weighted Score		0.25	0.23	0.25	0.25
5.6 Engineering	0.50				
Weighted Score		0.23	0.23	0.23	0.23
5.7 Traffic Operations	0.75				
Weighted Score		0.50	0.25	0.50	0.50
5.8 Construction Cost	0.25				
Weighted Score		0.25	0.25	0.25	0.25
Factored Score	**5.00**	**4.47**	**3.48**	**4.47**	**4.47**
Total Alternative Score	**100.00**	**56.14**	**42.44**	**43.38**	**45.14**

Land Use / Socio-Economic 10%

	Weighting	Alternative 1	2	3	4
0.25	**28.00**				
	11.20				
		3.70	0.00	0.00	0.00
	7.00				
		3.38	4.69	3.74	4.10
	7.00				
		4.68	3.74	3.74	3.74
	2.80				
		0.92	0.92	0.92	0.92
	28.00	**12.68**	**9.35**	**8.40**	**8.76**
2.43	**10.00**				
	1.00				
		0.62	0.67	0.62	0.62
	2.00				
		1.54	1.44	1.44	1.44
	1.50				
		1.01	0.00	0.00	0.00
	2.00				
		0.33	0.07	0.33	0.33
	1.00				
		0.93	0.93	0.73	0.93
	0.20				
		0.07	0.07	0.07	0.07
	0.20				
		0.13	0.13	0.13	0.13
	0.60				
		0.40	0.40	0.40	0.40
	1.50				
		0.50	0.50	0.50	0.50
	10.00	**5.52**	**4.20**	**4.22**	**4.42**
0.25	**28.00**				
	22.40				
		12.12	7.00	7.00	7.00
	5.60				
		1.85	1.85	1.85	1.85
	28.00	**13.97**	**8.85**	**8.85**	**8.85**
0.2	**34.00**				
	5.10				
		5.10	5.10	5.10	5.10
	5.10				
		5.10	1.68	5.10	5.10
	8.50				
		8.50	7.38	8.50	8.50
	3.40				
		3.29	2.95	3.29	3.29
	1.70				
		1.70	1.59	1.70	1.70
	3.40				
		1.58	1.58	1.58	1.58
	5.10				
		3.42	1.68	3.42	3.42
	1.70				
		1.68	1.68	1.68	1.68
	34.00	**30.37**	**23.64**	**30.37**	**30.37**
	100.00	**62.53**	**46.05**	**51.83**	**52.39**

Cultural 50%

	Weighting	Alternative 1	2	3	4	
1.4	**12.50**					0.625
	5.00					
		1.65	0.00	0.00	0.00	
	3.13					
		1.51	2.09	1.67	1.83	
	3.13					
		2.09	1.67	1.67	1.67	
	1.25					
		0.41	0.41	0.41	0.41	
	12.50	**5.66**	**4.18**	**3.75**	**3.91**	
0.29	**22.00**					0.63
	2.20					
		1.36	1.47	1.36	1.36	
	4.40					
		3.38	3.16	3.16	3.16	
	3.30					
		2.21	0.00	0.00	0.00	
	4.40					
		0.73	0.15	0.73	0.73	
	2.20					
		2.05	2.05	1.61	2.05	
	0.44					
		0.15	0.15	0.15	0.15	
	0.44					
		0.29	0.29	0.29	0.29	
	1.32					
		0.88	0.88	0.88	0.88	
	3.30					
		1.09	1.09	1.09	1.09	
	22.00	**12.14**	**9.24**	**9.27**	**9.71**	
1.40	**50.00**					2.50
	40.00					
		21.65	12.50	12.50	12.50	
	10.00					
		3.30	3.30	3.30	3.30	
	50.00	**24.95**	**15.80**	**15.80**	**15.80**	
1.36	**15.50**					0.62
	2.33					
		2.33	2.33	2.33	2.33	
	2.33					
		2.33	0.77	2.33	2.33	
	3.88					
		3.88	3.36	3.88	3.88	
	1.55					
		1.50	1.35	1.50	1.50	
	0.78					
		0.78	0.72	0.78	0.78	
	1.55					
		0.72	0.72	0.72	0.72	
	2.33					
		1.56	0.77	1.56	1.56	
	0.78					
		0.77	0.77	0.77	0.77	
	15.50	**13.84**	**10.78**	**13.84**	**13.84**	
	100.00	**56.60**	**40.00**	**42.67**	**43.27**	

ALTERNATIVE DESCRIPTIONS

1: D1: 15-16-20-24-25-26
2: D2: 15-16-18-21-24-25-26
3: D3: 15-16-18-22-25-26
4: D4: 15-16-18-23-26

SEGMENT D - EAST OF STRATFORD, CONNECT

Cultural 10% | Transportation 70% | Transportation 10%

Highway 7/8 Transportation Corridor Planning and Class EA Study

FACTORS	Weighting	Alternative 1	2	3	4		Weighting	Alternative 1	2	3	4		Weighting	Alternative 1	2	3	4	
1.0 NATURAL ENVIRONMENT	**22.50**					1.125	**8.00**					0.4	**24.00**					1.2
1.1 Fisheries and Aquatic Ecosystems	9.00						3.20						9.60					
Weighted Score		2.97	0.00	0.00	0.00			1.06	0.00	0.00	0.00			3.17	0.00	0.00	0.00	
1.2 Terrestrial Ecosystems	5.63						2.00						6.00					
Weighted Score		2.72	3.77	3.00	3.29			0.97	1.34	1.07	1.17			2.90	4.02	3.20	3.51	
1.3 Groundwater	5.63						2.00						6.00					
Weighted Score		3.76	3.00	3.00	3.00			1.34	1.07	1.07	1.07			4.01	3.20	3.20	3.20	
1.4 Surface Water	2.25						0.80						2.40					
Weighted Score		0.74	0.74	0.74	0.74			0.26	0.26	0.26	0.26			0.79	0.79	0.79	0.79	
Factored Score	**22.50**	**10.19**	**7.52**	**6.75**	**7.04**		**8.00**	**3.62**	**2.67**	**2.40**	**2.50**		**24.00**	**10.87**	**8.02**	**7.20**	**7.51**	
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	**39.50**					1.13	**14.00**					0.40	**42.00**					1.20
2.1 Land Use Planning Policies, Goals, Objectives	3.95						1.40						4.20					
Weighted Score		2.45	2.65	2.45	2.45			0.87	0.94	0.87	0.87			2.60	2.81	2.60	2.60	
2.2 Land Use / Community	7.90						2.80						8.40					
Weighted Score		6.06	5.67	5.67	5.67			2.15	2.01	2.01	2.01			6.45	6.03	6.03	6.03	
2.3 Noise Sensitive Areas	5.93						2.10						6.30					
Weighted Score		3.97	0.00	0.00	0.00			1.41	0.00	0.00	0.00			4.22	0.00	0.00	0.00	
2.4 Agriculture	7.90						2.80						8.40					
Weighted Score		1.30	0.26	1.30	1.30			0.46	0.09	0.46	0.46			1.39	0.28	1.39	1.39	
2.5 Land Use / Resources	3.95						1.40						4.20					
Weighted Score		3.69	3.69	2.90	3.69			1.31	1.31	1.03	1.31			3.92	3.92	3.08	3.92	
2.6 Major Utility Transmission Corridors	0.79						0.28						0.84					
Weighted Score		0.26	0.26	0.26	0.26			0.09	0.09	0.09	0.09			0.28	0.28	0.28	0.28	
2.7 Contaminated Property and Waste Management	0.79						0.28						0.84					
Weighted Score		0.53	0.53	0.53	0.53			0.19	0.19	0.19	0.19			0.56	0.56	0.56	0.56	
2.8 Landscape Composition	2.37						0.84						2.52					
Weighted Score		1.59	1.59	1.59	1.59			0.56	0.56	0.56	0.56			1.69	1.69	1.69	1.69	
2.9 Air Quality	5.93						2.10						6.30					
Weighted Score		1.96	1.96	1.96	1.96			0.69	0.69	0.69	0.69			2.08	2.08	2.08	2.08	
Factored Score	**39.50**	**21.80**	**16.60**	**16.65**	**17.44**		**14.00**	**7.73**	**5.88**	**5.90**	**6.18**		**42.00**	**23.18**	**17.65**	**17.71**	**18.55**	
3.0 CULTURAL ENVIRONMENT	**10.00**					0.50	**8.00**					0.40	**24.00**					1.20
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	8.00						6.40						19.20					
Weighted Score		4.33	2.50	2.50	2.50			3.46	2.00	2.00	2.00			10.39	6.00	6.00	6.00	
3.2 Archaeology	2.00						1.60						4.80					
Weighted Score		0.66	0.66	0.66	0.66			0.53	0.53	0.53	0.53			1.58	1.58	1.58	1.58	
Factored Score	**10.00**	**4.99**	**3.16**	**3.16**	**3.16**		**8.00**	**3.99**	**2.53**	**2.53**	**2.53**		**24.00**	**11.98**	**7.58**	**7.58**	**7.58**	
5.0 TRANSPORTATION	**28.00**					1.12	**70.00**					2.8	**10.00**					0.4
5.1 Area Transportation System Capacity and Efficiency	4.20						10.50						1.50					
Weighted Score		4.20	4.20	4.20	4.20			10.50	10.50	10.50	10.50			1.50	1.50	1.50	1.50	
5.2 Area Transportation System Reliability / Redundancy	4.20						10.50						1.50					
Weighted Score		4.20	1.39	4.20	4.20			10.50	3.47	10.50	10.50			1.50	0.50	1.50	1.50	
5.3 Safety	7.00						17.50						2.50					
Weighted Score		7.00	6.08	7.00	7.00			17.50	15.19	17.50	17.50			2.50	2.17	2.50	2.50	
5.4 Mobility and Accessibility	2.80						7.00						1.00					
Weighted Score		2.71	2.43	2.71	2.71			6.77	6.08	6.77	6.77			0.97	0.87	0.97	0.97	
5.5 Network Compatibility	1.40						3.50						0.50					
Weighted Score		1.40	1.31	1.40	1.40			3.50	3.27	3.50	3.50			0.50	0.47	0.50	0.50	
5.6 Engineering	2.80						7.00						1.00					
Weighted Score		1.30	1.30	1.30	1.30			3.25	3.25	3.25	3.25			0.46	0.46	0.46	0.46	
5.7 Traffic Operations	4.20						10.50						1.50					
Weighted Score		2.81	1.39	2.81	2.81			7.04	3.47	7.04	7.04			1.01	0.50	1.01	1.01	
5.8 Construction Cost	1.40						3.50						0.50					
Weighted Score		1.39	1.39	1.39	1.39			3.47	3.47	3.47	3.47			0.50	0.50	0.50	0.50	
Factored Score	**28.00**	**25.01**	**19.47**	**25.01**	**25.01**		**70.00**	**62.52**	**48.68**	**62.52**	**62.52**		**10.00**	**8.93**	**6.95**	**8.93**	**8.93**	
Total Alternative Score	**100.00**	**61.99**	**46.74**	**51.57**	**52.64**		**100.00**	**77.86**	**59.76**	**73.35**	**73.73**		**100.00**	**54.95**	**40.20**	**41.42**	**42.57**	

ALTERNATIVE DESCRIPTIONS

1: D1: I5-16-20-24-25-26
2: D2: I5-16-18-21-24-25-26
3: D3: I5-16-18-22-25-26
4: D4: I5-16-18-23-26

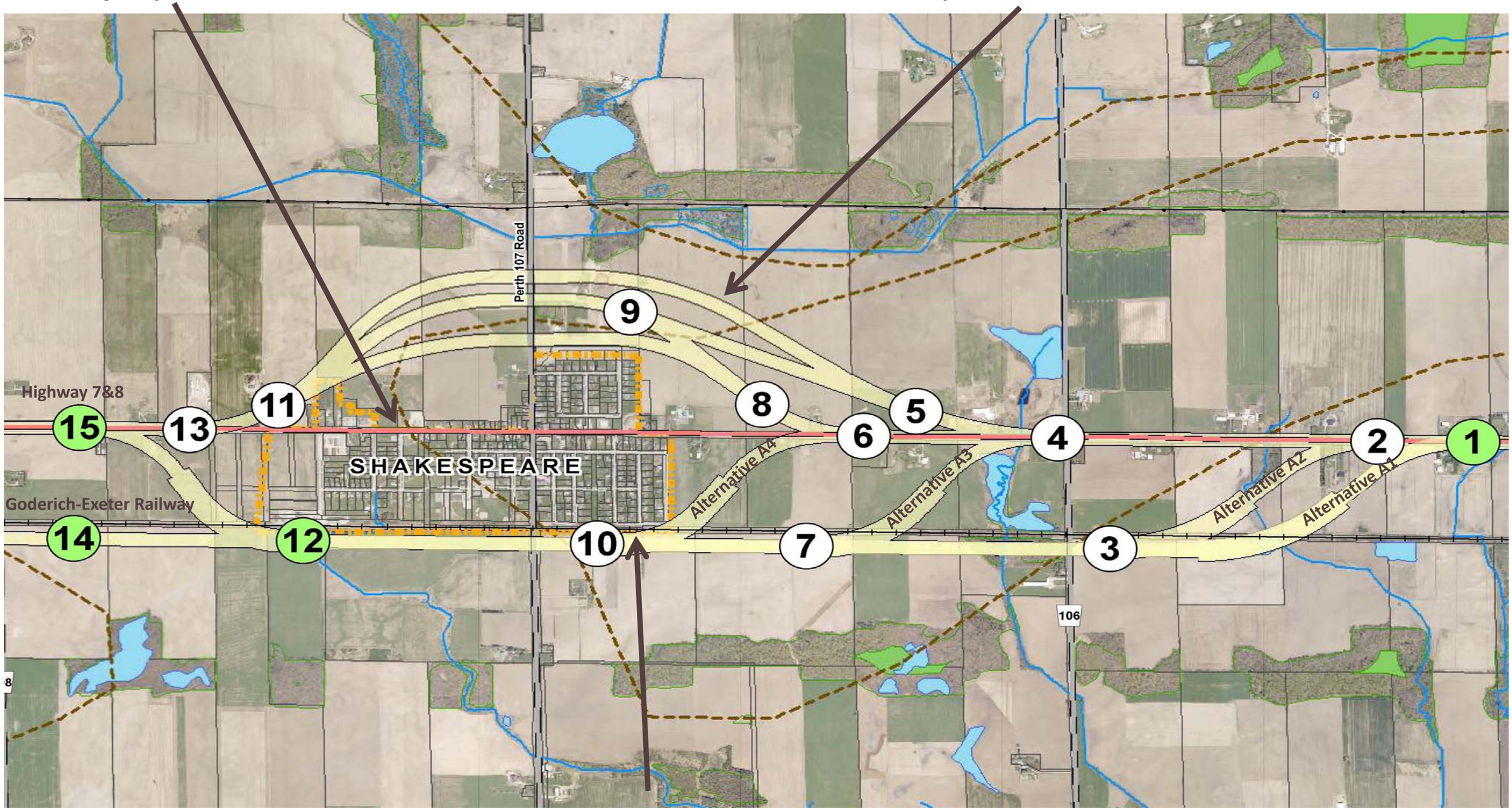
APPENDIX B

ASSESSMENT AND EVALUATION TABLES FOR SHAKESPEARE AREA ROUTE ALTERNATIVES

Shakespeare Area Route Alternatives

Existing Hwy 7&8 Alternative

North By-Pass Alternatives



South By-Pass Alternatives

Segment A: Shakespeare Area Southern Bypasses

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT A – SHAKESPEARE AREA SOUTHERN BYPASSES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			A1 1-3-7-10-12	A2 1-2-3-7-10-12	A3 1-2-4-7-10-12	A4 1-2-4-6-10-12
1. NATURAL ENVIRONMENTAL FACTORS						
1.1 Fisheries and Aquatic Ecosystems						
	1.1.1 Fish Habitat 1.1.2 Fish Community	1.1.1: Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • critical fish habitat features • riparian areas • habitat rehabilitation goals 1.1.2: Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • fish species at risk (vulnerable, threatened or endangered fish species) • fish movement/migration • critical fish life stage processes (spawning, rearing, nursery, feeding) • long-term fish community management goals	**Low** potential to affect fish and fish habitat • 2 permanent warmwater and 1 permanent coolwater crossings of Horner Creek containing low to moderate quality habitat supporting warmwater fish species • I permanent coolwater crossing of the North Woodstock River containing low to moderate quality fish habitat. • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Fish movements are likely localized between feeding and spawning areas which are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route alternative. • There are no SAR within the route alternative • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated.	**Low** potential to affect fish and fish habitat • 2 permanent warmwater and 1 permanent coolwater crossings of Horner Creek containing low to moderate quality habitat supporting warmwater fish species • I permanent coolwater crossing of the North Woodstock River containing low to moderate quality fish habitat. • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Fish movements are likely localized between feeding and spawning areas which are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route alternative. • There are no SAR within the route alternative • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated.	**Low** potential to affect fish and fish habitat • 2 permanent warmwater and 1 permanent coolwater crossings of Horner Creek containing low to moderate quality habitat supporting warmwater fish species • I permanent coolwater crossing of the North Woodstock River containing low to moderate quality fish habitat. • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Fish movements are likely localized between feeding and spawning areas which are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route alternative. • There are no SAR within the route alternative • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated.	**Low** potential to affect fish and fish habitat • 2 permanent warmwater and 1 permanent coolwater crossings of Horner Creek containing low to moderate quality habitat supporting warmwater fish species • I permanent coolwater crossing of the North Woodstock River containing low to moderate quality fish habitat. • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Fish movements are likely localized between feeding and spawning areas which are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route alternative. • There are no SAR within the route alternative • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated.
1.2 Terrestrial Ecosystems						
	1.2.1 Wildlife	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • wildlife species at risk (vulnerable, threatened or endangered wildlife species) • wildlife of local and regional importance	**Medium** potential to affect wildlife and their habitat • No special concern, endangered or threatened wildlife species • No provincially rare species (S1 – S3) • 2 area sensitive bird species recorded in study area	**Medium** potential to affect wildlife and their habitat • No special concern, endangered or threatened wildlife species • No provincially rare species (S1 – S3) • 2 area sensitive bird species recorded in study area	**Low** potential to affect wildlife and their habitat • No special concern, endangered or threatened wildlife species • No provincially rare species (S1 – S3) • 1 area sensitive bird species recorded in study area	**Low** potential to affect wildlife and their habitat • No special concern, endangered or threatened wildlife species • No provincially rare species (S1 – S3) • 1 area sensitive bird species recorded in study area

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study

EVALUATION OF ROUTE ALTERNATIVES

Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT A – SHAKESPEARE AREA SOUTHERN BYPASSES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			A1 **1-3-7-10-12**	**A2** **1-2-3-7-10-12**	**A3** **1-2-4-7-10-12**	**A4** **1-2-4-6-10-12**
		• migratory birds • critical wildlife habitat features • ecologically functional areas such as connective corridors or travel ways for movement/migration • important wildlife areas such as deeryards, heronries, waterfowl areas, important bird areas • wildlife management, rehabilitation/research program sites • interference with critical wildlife life stage processes (eg mating/rearing) etc	• 2 frog species were recorded within the route alternative, potential to disrupt habitat for these species • No critical wildlife habitat or habitat supporting species of concern present within the route alternative	• 1 frog species were recorded within the route alternative, potential to disrupt habitat for these species • No critical wildlife habitat or habitat supporting species of concern present within the route alternative	• No critical wildlife habitat or habitat supporting species of concern present within the route alternative	• No critical wildlife habitat or habitat supporting species of concern present within the route alternative
	1.2.2 Wetlands	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • provincially significant wetlands, their buffer areas, and their wetland function • evaluated and un-evaluated wetlands, their wetland buffer areas, and their wetland function • wetland management, research and/or wetland conservation programs/areas	**Medium** potential to affect wetlands • No PSW or LSW are present within the route alternative • 3 unevaluated high quality wetlands such as treed swamp and swamp thicket are found within the route alternative	**Medium** potential to affect wetlands • No PSW or LSW are present within the route alternative • 2 unevaluated high quality wetlands such as treed swamp and swamp thicket are found within the route alternative	**Low** potential to affect wetlands • No PSW or LSW are present within the route alternative • 3 unevaluated low quality wetlands such as meadow marsh are found within the route alternative	**Low** potential to affect wetlands • No PSW or LSW are present within the route alternative • 2 unevaluated low quality wetlands such as meadow marsh are found within the route alternative
	1.2.3 Forests	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • significant woodlands/valley lands • forest management / research program areas	**Medium** potential to affect significant or established woodlands or forests • Route alternative will require a significant removal of vegetation from 1 woodland • Impacts to woodland include severance and edge effects	**Medium** potential to affect significant or established woodlands or forests • Route alternative will require a significant removal of vegetation from 3 woodlands. • 2 woodlands are cultural plantations • Impacts to woodlands include severance and edge effects	**Low** potential to affect significant or established woodlands or forests • Route alternative will require a minimal removal of vegetation from 3 woodlands • Impacts to woodlands limited to encroachment to edge of forests	**Low** potential to affect significant or established woodlands or forests • Route alternative will require a minimal removal of vegetation from 2 woodlands • Impacts to woodlands limited to encroachment to edge of forests
	1.2.4 Vegetation	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • populations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant regional/local flora/communities • areas/corridors supporting known populations of vegetation species at risk	**Medium** potential to affect vegetation • Route alternative is predominantly agricultural field • 2 regionally rare plant species were found within or adjacent to unevaluated wetlands within the route alternative • Impacts include severance and displacement of high quality wetland habitat	**Medium** potential to affect vegetation • Route alternative is predominantly agricultural field • 2 regionally rare plant species were found within or adjacent to unevaluated wetlands within the route alternative • Impacts include severance and displacement of high quality wetland habitat	**Low** potential to affect vegetation • Route alternative is predominantly agricultural field and existing roadway • Impacts include encroachment into low quality wetland habitat	**Low** potential to affect vegetation • Route alternative is predominantly agricultural field and existing roadway • Impacts include encroachment into low quality wetland habitat

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT A – SHAKESPEARE AREA SOUTHERN BYPASSES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			A1 **1-3-7-10-12**	**A2** **1-2-3-7-10-12**	**A3** **1-2-4-7-10-12**	**A4** **1-2-4-6-10-12**
		(vulnerable, threatened or endangered species), species of conservation concern and significant flora/communities • vegetation management, rehabilitation/research program sites				
	1.2.5 Designated/ Special Areas	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to designated/special areas.	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI
1.3 Groundwater						
	1.3.1 Areas of Groundwater 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	**Low** potential to adversely affect volume of groundwater at recharge and discharge areas • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings, higher infiltration can be expected. • No temporary or long-term change to groundwater recharge or discharge is anticipated due to the small surface area affected by highway construction for route alternative.	**Low** potential to adversely affect volume of groundwater at recharge and discharge areas • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings, higher infiltration can be expected. • No temporary or long-term change to groundwater recharge or discharge is anticipated due to the small surface area affected by highway construction for route alternative.	**Low** potential to adversely affect volume of groundwater at recharge and discharge areas • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings, higher infiltration can be expected. • No temporary or long-term change to groundwater recharge or discharge is anticipated due to the small surface area affected by highway construction for route alternative.	**Low** potential to adversely affect volume of groundwater at recharge and discharge areas • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings, higher infiltration can be expected. • No temporary or long-term change to groundwater recharge or discharge is anticipated due to the small surface area affected by highway construction for route alternative.
	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	**Low** potential to adversely affect groundwater wellhead protection area. • The route alternative is upgradient of the delineated wellhead protection area for the town of Tavistock. • The route alternative is located outside of the 25 year capture zone (recharge area) for the municipal well, which is located approximately 6 km to the south of the route	**Low** potential to adversely affect groundwater wellhead protection area. • The route alternative is upgradient of the delineated wellhead protection area for the town of Tavistock. • The route alternative is located outside of the 25 year capture zone (recharge area) for the municipal well, which is located approximately 6 km to the south of the route	**Low** potential to adversely affect groundwater wellhead protection area. • The route alternative is upgradient of the delineated wellhead protection area for the town of Tavistock. • The route alternative is located outside of the 25 year capture zone (recharge area) for the municipal well, which is located approximately 6 km to the south of the route	**Low** potential to adversely affect groundwater wellhead protection area. • The route alternative is upgradient of the delineated wellhead protection area for the town of Tavistock. • The route alternative is located outside of the 25 year capture zone (recharge area) for the municipal well, which is located approximately 6 km to the south of the route

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT A – SHAKESPEARE AREA SOUTHERN BYPASSES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			A1 **1-3-7-10-12**	**A2** **1-2-3-7-10-12**	**A3** **1-2-4-7-10-12**	**A4** **1-2-4-6-10-12**
			alternative. • The municipal well is screened within the bedrock aquifer, which is confined above by low permeability Silty Till and Glaciolacustrine deposits.	alternative. • The municipal well is screened within the bedrock aquifer, which is confined above by low permeability Silty Till and Glaciolacustrine deposits.	alternative. • The municipal well is screened within the bedrock aquifer, which is confined above by low permeability Silty Till and Glaciolacustrine deposits.	alternative. • The municipal well is screened within the bedrock aquifer, which is confined above by low permeability Silty Till and Glaciolacustrine deposits.
	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	**Low** potential to adversely affect large volume wells. • The route alternative is upgradient of the delineated wellhead protection area for the town of Tavistock. • The proposed route is located outside of the 25 year capture zone (recharge area) for the municipal well, which is located approximately 6 km to the south of the proposed corridor. • No other large production wells were identified along the route	**Low** potential to adversely affect large volume wells. • The route alternative is upgradient of the delineated wellhead protection area for the town of Tavistock. • The proposed route is located outside of the 25 year capture zone (recharge area) for the municipal well, which is located approximately 6 km to the south of the proposed corridor. • No other large production wells were identified along the route	**Low** potential to adversely affect large volume wells. • The route alternative is upgradient of the delineated wellhead protection area for the town of Tavistock. • The proposed route is located outside of the 25 year capture zone (recharge area) for the municipal well, which is located approximately 6 km to the south of the proposed corridor. • No other large production wells were identified along the route	**Low** potential to adversely affect large volume wells. • The route alternative is upgradient of the delineated wellhead protection area for the town of Tavistock. • The proposed route is located outside of the 25 year capture zone (recharge area) for the municipal well, which is located approximately 6 km to the south of the proposed corridor. • No other large production wells were identified along the route
	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	**Low** potential to adversely affect private wells • The proposed route is in close proximity (<150 m) to 3 shallow dug wells completed within surficial sand deposits. These wells are located immediately to the west of Road 105 and immediately to the south along Road 106, along the existing Hwy 7/8 Route. • These wells are sensitive to surface contamination (i.e. road salt). The potential exists for long-term and short-term effects to these wells due to their close proximity to the route. • Mitigation measures to prevent adverse impact to these wells due to highway construction should be implemented, such as a road salt management plan. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer and	**Low** potential to adversely affect private wells • The proposed route is in close proximity (<150 m) to 3 shallow dug wells completed within surficial sand deposits. These wells are located immediately to the west of Road 105 and immediately to the south along Road 106, along the existing Hwy 7/8 Route. • These wells are sensitive to surface contamination (i.e. road salt). The potential exists for long-term and short-term effects to these wells due to their close proximity to the route. • Mitigation measures to prevent adverse impact to these wells due to highway construction should be implemented, such as a road salt management plan. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer and	**Low** potential to adversely affect private wells • The proposed route is in close proximity (<150 m) to 3 shallow dug wells completed within surficial sand deposits. These wells are located immediately to the west of Road 105 and immediately to the south along Road 106, along the existing Hwy 7/8 Route. • These wells are sensitive to surface contamination (i.e. road salt). The potential exists for long-term and short-term effects to these wells due to their close proximity to the route. • Mitigation measures to prevent adverse impact to these wells due to highway construction should be implemented, such as a road salt management plan. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer and	**Low** potential to adversely affect private wells • The proposed route is in close proximity (<150 m) to 3 shallow dug wells completed within surficial sand deposits. These wells are located immediately to the west of Road 105 and immediately to the south along Road 106, along the existing Hwy 7/8 Route. • These wells are sensitive to surface contamination (i.e. road salt). The potential exists for long-term and short-term effects to these wells due to their close proximity to the route. • Mitigation measures to prevent adverse impact to these wells due to highway construction should be implemented, such as a road salt management plan. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer and

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MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
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SEGMENT A – SHAKESPEARE AREA SOUTHERN BYPASSES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			A1 **1-3-7-10-12**	**A2** **1-2-3-7-10-12**	**A3** **1-2-4-7-10-12**	**A4** **1-2-4-6-10-12**
			are therefore not at risk.	are therefore not at risk.	are therefore not at risk.	are therefore not at risk.
	1.3.5 Groundwater-Dependent Commercial Enterprises (e.g. water bottling operations)	Potential and significance of alteration to groundwater use by groundwater-dependent commercial enterprises due to physical intrusion, or groundwater interception, draw-down, impoundment, obstruction and by soil compaction	**No** potential to adversely affect groundwater dependent commercial enterprises • No groundwater dependent commercial enterprises have been identified along this route.	**No** potential to adversely affect groundwater dependent commercial enterprises • No groundwater dependent commercial enterprises have been identified along this route.	**No** potential to adversely affect groundwater dependent commercial enterprises • No groundwater dependent commercial enterprises have been identified along this route.	**No** potential to adversely affect groundwater dependent commercial enterprises • No groundwater dependent commercial enterprises have been identified along this route.
	1.3.6 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	**Low** potential to adversely affect groundwater sensitive ecosystems • Three (3) new crossings of potentially groundwater fed streams. • Potential long-term adverse effect to groundwater quality due to increased road salt use and road run-off. • Potential temporary adverse effects to groundwater quantity exist if construction dewatering is required.	**Low** potential to adversely affect groundwater sensitive ecosystems • Three (3) new crossings of potentially groundwater fed streams. • Potential long-term adverse effect to groundwater quality due to increased road salt use and road run-off. • Potential temporary adverse effects to groundwater quantity exist if construction dewatering is required	**Low** potential to adversely affect groundwater sensitive ecosystems • One (1) new crossing of a potentially groundwater fed stream. • Possible encroachment on an unevaluated wetland (i.e. not identified as provincially or locally significant). • Potential long-term adverse effect to groundwater quality due to increased road salt use and road run-off. • Potential temporary adverse effects to groundwater quantity exist if construction dewatering is required	**Low** potential to adversely affect groundwater sensitive ecosystems • One (1) new crossing of a potentially groundwater fed stream. • Possible encroachment on an unevaluated wetland (i.e. not identified as provincially or locally significant). • Potential long-term adverse effect to groundwater quality due to increased road salt use and road run-off. • Potential temporary adverse effects to groundwater quantity exist if construction dewatering is required
1.4 Surface Water						
	1.4.1 Watershed / Sub-Watershed Drainage Features/Patterns	Potential and significance of: • encroachment, severance, displacement; • long-term alteration/ disruption. as applicable to the following: • watercourse crossings (permanent, intermittent and ephemeral) • floodplain or meander belts • riparian areas • sensitive headwater areas • watershed and subwatershed management plans	**Low** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 4 watercourses	**Low** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 4 watercourses	**Low** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 4 watercourses	**Low** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 4 watercourses
	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 Potential and significance of impacts on hydrology due to changes in ground permeability, modifications to surface drainage patterns and alterations of water bodies				

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SEGMENT A – SHAKESPEARE AREA SOUTHERN BYPASSES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
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2. LAND USE / SOCIO-ECONOMIC FACTORS						
2.1 Land Use Planning Policies, Goals, Objectives						
	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	**Low** potential to displace areas where there are outstanding First Nations lands claims. • 5 First Nations land claims have been filed in the study area	**Low** potential to displace areas where there are outstanding First Nations lands claims. • 5 First Nations land claims have been filed in the study area	**Low** potential to displace areas where there are outstanding First Nations lands claims. • 5 First Nations land claims have been filed in the study area	**Low** potential to displace areas where there are outstanding First Nations lands claims. • 5 First Nations land claims have been filed in the study area
	2.1.2 Provincial/ Federal land use planning policies/ goals/objectives	Degree of compatibility with federal/provincial land use policies/goals/objectives NOTES: PPS Policy 1.6.6.4 stipulates that when planning for corridors for significant transportation facilities, consideration will be given to significant natural heritage, water, agricultural, mineral, cultural heritage and archaeological resources. PPS Policy 2.3 requires prime agricultural areas be protected for long-term use. Prime agricultural areas include specialty crop areas and Classes 1, 2, and 3 soils in this order of priority.	**Low** compatibility with federal/ provincial land use policies/goals • Route predominantly on new alignment which results in increased impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area	**Low** compatibility with federal/ provincial land use policies/goals • Route predominantly on new alignment which results in increased impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area	**Medium** compatibility with federal/ provincial land use policies/goals • Portion of route is on new alignment; remainder uses the existing corridor which results in reduced impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area	**Medium** compatibility with federal/ provincial land use policies/goals • Portion of route is on new alignment; remainder uses the existing corridor which results in reduced impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area
	2.1.3 Municipal (regional and local) land use planning policies/goals/ objectives (Official Plans)	Degree of compatibility with municipal Official Plans	**Medium** compatibility with municipal Official Plans. • The route impacts agricultural designated lands in County of Perth OP. Perth OP Agriculture designation for all sections	**Medium** compatibility with municipal Official Plans. • The route impacts agricultural designated lands in County of Perth OP. Perth OP Agriculture designation for all sections	**Medium** compatibility with municipal Official Plans. • The route impacts agricultural designated lands in County of Perth OP. Perth OP Agriculture designation for all sections	**Medium** compatibility with municipal Official Plans. • The route impacts agricultural designated lands in County of Perth OP. Perth OP Agriculture designation for all sections
	2.1.4 Development Objectives of Private Property Owners	Potential to isolate property from current/future urban envelope Impact on future land use	**Low** potential to impact future land use • Route alternative does not limit the potential for future development	**Low** potential to impact future land use • Route alternative does not limit the potential for future development	**Low** potential to impact future land use • Route alternative does not limit the potential for future development	**Low** potential to impact future land use • Route alternative does not limit the potential for future development
2.2 Land Use / Community						
	2.2.1 First Nation Reserves	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time. to First Nation Reserves	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area

LEGEND

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SEGMENT A – SHAKESPEARE AREA SOUTHERN BYPASSES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			A1 **1-3-7-10-12**	**A2** **1-2-3-7-10-12**	**A3** **1-2-4-7-10-12**	**A4** **1-2-4-6-10-12**
	2.2.2 First Nations' Sacred Grounds	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time. to First Nations' sacred grounds	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area
	2.2.3 Urban and Rural Residential	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption (e.g. loss of parking area); • change in area character / aesthetics (e.g. loss of trees/garden area); • nuisance impacts (e.g. intrusion of highway into current residential envelope); • change to access / travel time; • change to facilities / utilities / services; • interference with residential community cohesion; • change to highway operational impacts (e.g. snow storage and highway access visibility). to urban and rural residential areas (residents [owners/tenants] and community groups).	**Low** potential for impacts to urban and rural residential areas • Loss of some frontage to one residential property (A) east of Road 106. Loss of some mature trees. No long term alteration/disruption to residence or farm buildings. Likely nuisance impacts to this property. • Encroachment on one residential/farm property west of Road 106. No long term alteration/disruption to residence or farm buildings. Likely nuisance impacts to this property. • Some nuisance impacts likely to residential area. Area is already bounded by railway tracks; route is south of this boundary so no impact on community cohesion anticipated. • Loss (acquisition) of some residential/farm properties along entire route. • Field observation identified no change to facilities / utilities / services.	**Low** potential for impacts to urban and rural residential areas • Loss of some frontage to one residential property (B) east of Road 106. Likely loss of farm-related small sheds. Likely nuisance impacts to this property. • Encroachment of one residential/farm property west of Road 106. No long term alteration/disruption to residence or farm buildings. Likely nuisance impacts to this property. • Some nuisance impacts likely to residential area. Area is already bounded by railway tracks; route is south of this boundary so no impact on community cohesion anticipated. • Loss (acquisition) of some residential/farm properties along entire route. • Field observation identified no change to facilities / utilities / services.	**Low** potential for impacts to urban and rural residential areas • Loss of some frontage to residential/farm properties along existing right of way in vicinity of Road 106 and easterly. • Some nuisance impacts likely to residential area. Area is already bounded by railway tracks; route is south of this boundary so no impact on community cohesion anticipated. • Loss (acquisition) of some residential/farm properties along entire route. • Field observation identified no change to facilities / utilities / services.	**Medium** potential for impacts to urban and rural residential areas • Loss of entire residence (E) immediately east of Shakespeare (displacement of residence). • Loss of some residential/farm properties along existing right of way east and west of Road 106 (frontage) • Some encroachment to residential area of Shakespeare. Some nuisance impacts likely to residential area. Area is already bounded by railway tracks; route is south of this boundary so no impact on community cohesion anticipated. • Loss (acquisition) of some residential/farm properties along entire route. • Field observation identified no change to facilities / utilities / services.
	2.2.4 Commercial / Industrial	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services; • interference with commercial community cohesion;	**Low** potential for impacts to commercial and industrial areas • Possible encroachment to industrial area at west end of Shakespeare. • No long term alteration /disruption • No nuisance impacts anticipated given existing industrial development • Field observation identified no change to facilities/utilities/services	**Low** potential for impacts to commercial and industrial areas • Possible encroachment to industrial area at west end of Shakespeare. • No long term alteration /disruption • No nuisance impacts anticipated given existing industrial development • Field observation identified no change to facilities/utilities/services	**Low** potential for impacts to commercial and industrial areas • Possible encroachment to industrial area at west end of Shakespeare. • No long term alteration /disruption • No nuisance impacts anticipated given existing industrial development • Field observation identified no change to facilities/utilities/services	**Low** potential for impacts to commercial and industrial areas • Possible encroachment to industrial area at west end of Shakespeare. • No long term alteration /disruption • No nuisance impacts anticipated given existing industrial development • Field observation identified no change to facilities/utilities/services

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study

EVALUATION OF ROUTE ALTERNATIVES

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SEGMENT A – SHAKESPEARE AREA SOUTHERN BYPASSES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			A1 1-3-7-10-12	**A2 1-2-3-7-10-12**	**A3 1-2-4-7-10-12**	**A4 1-2-4-6-10-12**
		• change to highway operation impacts (e.g. customer parking, cargo loading/off-loading). to commercial and industrial areas (business owners/tenants and customers).	• No interference with commercial community cohesion • No change to commercial and industrial areas (business owners/tenants and customers).	• No interference with commercial community cohesion • No change to commercial and industrial areas (business owners/tenants and customers).	• No interference with commercial community cohesion • No change to commercial and industrial areas (business owners/tenants and customers).	• No interference with commercial community cohesion • No change 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: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services; • loss of "critical mass" in number of signature business attractions (e.g. number of antique shops). to tourist areas and attractions.	**Low** potential for impacts to tourist areas and attractions • No change or impacts to tourist areas and attractions in terms of any property encroachment or acquisition. • No nuisance impacts anticipated given absence of any tourist attractions or areas along this alternative. • No signature business attractions (none along this alternative) • Bypass of the village reduces drive-by exposure of tourist attractions (e.g. shops and boutiques) for potential out-of-town customers, but makes the tourist experience in the village more attractive, and does not impact parking opportunities. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages. • Field observation identified no change to facilities / utilities / services.	**Low** potential for impacts to tourist areas and attractions • No change or impacts to tourist areas and attractions in terms of any property encroachment or acquisition. • No nuisance impacts anticipated given absence of any tourist attractions or areas along this alternative. • No signature business attractions (none along this alternative) • Bypass of the village reduces drive-by exposure of tourist attractions (e.g. shops and boutiques) for potential out-of-town customers, but makes the tourist experience in the village more attractive, and does not impact parking opportunities. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages. • Field observation identified no change to facilities / utilities / services.	**Low** potential for impacts to tourist areas and attractions • No change or impacts to tourist areas and attractions in terms of any property encroachment or acquisition. • No nuisance impacts anticipated given absence of any tourist attractions or areas along this alternative. • No signature business attractions (none along this alternative) • Bypass of the village reduces drive-by exposure of tourist attractions (e.g. shops and boutiques) for potential out-of-town customers, but makes the tourist experience in the village more attractive, and does not impact parking opportunities. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages. • Field observation identified no change to facilities / utilities / services.	**Low** potential for impacts to tourist areas and attractions • No change or impacts to tourist areas and attractions in terms of any property encroachment or acquisition. • No nuisance impacts anticipated given absence of any tourist attractions or areas along this alternative. • No signature business attractions (none along this alternative) • Bypass of the village reduces drive-by exposure of tourist attractions (e.g. shops and boutiques) for potential out-of-town customers, but makes the tourist experience in the village more attractive, and does not impact parking opportunities. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages. • Field observation identified no change to facilities / utilities / services.
	2.2.6 Community Facilities / Institutions (e.g. hospitals, schools, places of worship, unique community features)	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services • change to ease and safety of pedestrian movements across the highway and within the highway right-of-way;	**Low** potential for impacts to community facilities and institutions • Segment south of Shakespeare will bring new roadway closer to Optimist Hall and Sprucedale Public School/Community Center playing fields. Area is already bounded by railway tracks so impact to area character/aesthetics is not likely to be significant. • No encroachment or impacts to	**Low** potential for impacts to community facilities and institutions • Segment south of Shakespeare will bring new roadway closer to Optimist Hall and Sprucedale Public School/Community Center playing fields. Area is already bounded by railway tracks so impact to area character/aesthetics is not likely to be significant. • No encroachment or impacts to	**Low** potential for impacts to community facilities and institutions • Segment south of Shakespeare will bring new roadway closer to Optimist Hall and Sprucedale Public School/Community Center playing fields. Area is already bounded by railway tracks so impact to area character/aesthetics of this area is not likely to be significant. • Field observation identified no	**Low** potential for impacts to community facilities and institutions • Segment south of Shakespeare will bring new roadway closer to Optimist Hall and Sprucedale Public School/Community Center playing fields. Area is already bounded by railway tracks so impact to area character/aesthetics of this area is not likely to be significant. • Field observation identified no

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SEGMENT A – SHAKESPEARE AREA SOUTHERN BYPASSES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative A1 1-3-7-10-12	Route Alternative A2 1-2-3-7-10-12	Route Alternative A3 1-2-4-7-10-12 (Selected Corridor)	Route Alternative A4 1-2-4-6-10-12
		• change to highway operation impacts to current use (e.g. highway noise and vibration interfering with church services). to community facilities and institutions.	property boundaries of community facilities and no long-term alteration/disruption likely. • Field observation identified no change to facilities / utilities / services. • Some potential for nuisance impacts at the hall and playing fields.	property boundaries of community facilities and no long-term alteration/disruption likely. • Field observation identified no change to facilities / utilities / services. • Some potential for nuisance impacts at the hall and playing fields.	change to facilities / utilities / services. • Some potential for nuisance impacts at the hall and playing fields.	change to facilities / utilities / services. • Some potential for nuisance impacts at the hall and playing fields.
	2.2.7 Municipal Infrastructure and Public Service Facilities (e.g. sewage and water services, police/emergency services, local utilities)	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. to municipal infrastructure and public service facilities.	**No** potential for impacts to municipal infrastructure / public service facilities • Bypass of village would not lengthen response times to locations outside the village unless Hwy 7&8 direct access is not retained at the east and west village limits. • From field observations, no impacts to municipal infrastructure and public service facilities.	**No** potential for impacts to municipal infrastructure / public service facilities • Bypass of village would not lengthen response times to locations outside the village unless Hwy 7&8 direct access is not retained at the east and west village limits. • From field observations, no impacts to municipal infrastructure and public service facilities.	**No** potential for impacts to municipal infrastructure / public service facilities • Bypass of village would not lengthen response times to locations outside the village unless Hwy 7&8 direct access is not retained at the east and west village limits. • From field observations, no impacts to municipal infrastructure and public service facilities.	**No** potential for impacts to municipal infrastructure / public service facilities • Bypass of village would not lengthen response times to locations outside the village unless Hwy 7&8 direct access is not retained at the east and west village limits. • From field observations, no impacts to municipal infrastructure and public service facilities.
	2.2.8 Downtown Historic Crossroads Function	Potential and significance of interference by long-distance through-traffic on: • "main street" function and structure; • character/aesthetics; • change to ease and safety of pedestrian movements across the highway and within the highway right-of-way; • change to on-street parking in the historic downtown area	**Low** potential for interference in the historic downtown area • Bypass of the village reduces long distance traffic through the village and provides the opportunity to improve the shopping/socializing experience in the village, and does not impact parking opportunities	**Low** potential for interference in the historic downtown area • Bypass of the village reduces long distance traffic through the village and provides the opportunity to improve the shopping/socializing experience in the village, and does not impact parking opportunities	**Low** potential for interference in the historic downtown area • Bypass of the village reduces long distance traffic through the village and provides the opportunity to improve the shopping/socializing experience in the village, and does not impact parking opportunities	**Low** potential for interference in the historic downtown area • Bypass of the village reduces long distance traffic through the village and provides the opportunity to improve the shopping/socializing experience in the village, and does not impact parking opportunities
2.3 Noise Sensitive Areas (NSAs) (residential areas and sensitive institutional uses)						
	2.3.1 Highway Noise	Potential for significant traffic noise increases in NSAs and for noise-sensitive receivers immediately adjacent to the highway.	**Medium** potential for significant noise increases • Potential noise impacts of 65 dBA or a 5 dB increase are expected for about 110 NSAs within the area of influence. • Potential noise impacts to 1 school (Sprucedale Public School) are expected. • A decrease of noise impacts by 5 dB or more is expected for about 60 NSAs due to reduced traffic on the roadway that is currently Hwy 7/8. • The rail line along the south edge of	**Medium** potential for significant noise increases • Potential noise impacts of 65 dBA or a 5 dB increase are expected for about 110 NSAs within the area of influence. • Potential noise impacts to 1 school (Sprucedale Public School) are expected. • A decrease of noise impacts by 5 dB or more is expected for about 60 NSAs due to reduced traffic on the roadway that is currently Hwy 7/8. • The rail line along the south edge of	**Medium** potential for significant noise increases • Potential noise impacts of 65 dBA or a 5 dB increase are expected for about 105 NSAs within the area of influence. • Potential noise impacts to 1 school (Sprucedale Public School) are expected. • A decrease of noise impacts by 5 dB or more is expected for about 60 NSAs due to reduced traffic on the roadway that is currently Hwy 7/8. • The rail line along the south edge of	**High** potential for significant noise increases • Potential noise impacts of 65 dBA or a 5 dB increase are expected for about 115 NSAs within the area of influence. • Potential noise impacts to 1 school (Sprucedale Public School) are expected. • A decrease of noise impacts by 5 dB or more is expected for about 50 NSAs due to reduced traffic on the roadway that is currently Hwy 7/8. • Higher impacts are expected for

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Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			A1 **1-3-7-10-12**	**A2** **1-2-3-7-10-12**	**A3** **1-2-4-7-10-12**	**A4** **1-2-4-6-10-12**
			Shakespeare causes daily short duration noise impacts for NSAs that would be influenced by this alternative. • The elevated rail line is not expected to be high enough to form an effective noise barrier for road noise. Mitigation would therefore be more challenging.	Shakespeare causes daily short duration noise impacts for NSAs that would be influenced by this alternative. • The elevated rail line is not expected to be high enough to form an effective noise barrier for road noise. Mitigation would therefore be more challenging.	Shakespeare causes daily short duration noise impacts for NSAs that would be influenced by this alternative. • The elevated rail line is not expected to be high enough to form an effective noise barrier for road noise. Mitigation would therefore be more challenging.	NSAs at southeast corner of Shakespeare if an elevated roadway overpass of the rail line is used. Mitigation of the elevated roadway would be more challenging. • The rail line along the south edge of Shakespeare causes daily short duration noise impacts for NSAs that would be influenced by this alternative. • The elevated rail line is not expected to be high enough to form an effective noise barrier for road noise. Mitigation would therefore be more challenging.
	2.3.2 Construction Noise	To considered during Preliminary Design phase				
2.4 Agriculture						
	2.4.1 Agriculture - Canada Land Inventory Class 1,2,3 Land	Potential and significance of encroachment, severance of Canada Land Inventory Classes 1, 2 and 3 soils	**High** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 30 hectares of Class 1 / 2 soil	**High** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 29 hectares of Class 1 / 2 soil	**Medium** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 25 hectares of Class 1 / 2 soil	**Medium** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 22 hectares of Class 1 / 2 soil
	2.4.2 Agriculture – Farm Infrastructure	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • nuisance impacts; to farm infrastructure (field tile drainage systems/outlets, irrigation systems, barns / silos/ structures, etc.)	**Medium** potential impacts on farm infrastructure • 1 minor encroachment on farm infrastructure west of Road 104 • 2 encroachments on farm infrastructure, 1 between Road 104 and Road 106 and 1 on Road 106, south of the railway • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified and mitigation concepts for these impacts will be developed during preliminary design	**Medium** potential impacts on farm infrastructure • 1 minor encroachment on farm infrastructure between Road 104 and Road 106 • 1 encroachment on farm infrastructure on Road 106, south of the railway • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified and mitigation concepts for these impacts will be developed during preliminary design	**Low** potential impacts on farm infrastructure • 1 encroachment on farm infrastructure west of Road 106 • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified and mitigation concepts for these impacts will be developed during preliminary design	**Medium** potential impacts on farm infrastructure • Displaces homestead on 1 livestock and cash crop operation west of Road 106 • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified and mitigation concepts for these impacts will be developed during preliminary design
	2.4.3 Agriculture – Operations on Individual Farms	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption;	**High** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established	**High** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established	**Medium** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established	**Medium** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study

EVALUATION OF ROUTE ALTERNATIVES

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SEGMENT A – SHAKESPEARE AREA SOUTHERN BYPASSES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			A1 **1-3-7-10-12**	**A2** **1-2-3-7-10-12**	**A3** **1-2-4-7-10-12**	**A4** **1-2-4-6-10-12**
		• nuisance impacts; to in-farm field operations (planting, harvesting, grazing, nutrient management, etc.) as applicable to the following: • Specialty crops/cropland • Diary/livestock operations • Field crop operations • High investment agricultural operations • Established agricultural farm communities	agricultural community including: - Minor frontage impacts and encroachment on lands of 1 cash crop operation west of Road 104 - Severs 1 parcel between Road 104 and Road 106 - Very minor encroachment on lands in the corner of 2 parcels associated with a cash crop and livestock operation between Road 104 and Road 106 - Significant encroachment on portions of land abutting the railway on 5 parcels which are associated with 4 different cash crop and livestock operations in the area - Displaces portions of land abutting the railway on 2 parcels - 4 parcels where nutrient management has been reported by the farmer are impacted significantly - 2 parcels where nutrient management has been reported by the farmer are impacted slightly - 2 parcels where nutrient management is assumed to occur in association with livestock operations are significantly impacted - Additional nutrient management operations may still be identified by potentially impacted farmers	agricultural community including: - Minor frontage impacts and encroachment on lands on 1 cash crop operation west of Road 104 - Minor frontage impacts and encroachment on lands on 1 livestock and cash crop operation between Road 104 and Road 106 - Severs 1 parcel between Road 104 and Road 106 - Very minor encroachment on lands in the corner of 2 parcels associated with 2 different cash crop and livestock operation between Road 104 and Road 106 - Significant encroachment on portions of land abutting the railway on 4 parcels which are associated with 4 different cash crop and livestock operations in the area - Displaces portions of land abutting the railway on 2 parcels - 4 parcels where nutrient management has been reported by the farmer are impacted significantly - 2 parcels where nutrient management has been reported by the farmer are impacted slightly - 2 parcels where nutrient management is assumed to occur in association with livestock operations are significantly impacted - Additional nutrient management operations may still be identified by potentially impacted farmers	agricultural community including: - Minor frontage impacts and encroachment on lands on 1 livestock and cash crop operation west of Road 106 - Severs 1 parcel west of Road 106 - Minor encroachment on lands in the corner of 1 parcel west of Road 106 and south of the railway corridor - Significant encroachment on lands abutting the railway on 3 parcels associated with 2 livestock and cash crop operations - 2 parcels where nutrient management has been reported by the farmer are significantly impacted - 2 parcels where nutrient management is assumed to occur in association with livestock operations are impacted slightly - Additional nutrient management operations may still be identified by potentially impacted farmers	agricultural community including: - Minor frontage impacts and encroachment on lands on 1 livestock and cash crop operation west of Road 106 - Severs 1 parcel associated with a livestock and cash crop operation which is adjacent to the Shakespeare village - Significant encroachment on portions of land abutting the railway on 2 parcels which are associated with 2 different cash crop and livestock operations in the area - 2 parcels where nutrient management has been reported by the farmer are significantly impacted - 2 parcels where nutrient management is assumed to occur in association with livestock operations are significantly impacted - Additional nutrient management operations may still be identified by potentially impacted farmers

LEGEND

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SEGMENT A – SHAKESPEARE AREA SOUTHERN BYPASSES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			A1 **1-3-7-10-12**	**A2** **1-2-3-7-10-12**	**A3** **1-2-4-7-10-12**	**A4** **1-2-4-6-10-12**
	2.4.4 Agriculture – Transportation Linkages between Integrated Agricultural Business Units (IABUs)	Potential to sever/disrupt transportation linkages between integrated agricultural business units (movement between integrated agricultural business units of equipment, materials, workers, etc.)	**Medium** potential to sever / disrupt transportation linkages • Route passes between parcels of land associated with 2 IABU's as identified to the study team by the farming community	**Medium** potential to sever / disrupt transportation linkages • Route passes between parcels of land associated with 2 IABU's as identified to the study team by the farming community	**Medium** potential to sever / disrupt transportation linkages • Route passes between parcels of land associated with 2 IABU's as identified to the study team by the farming community	**Medium** potential to sever / disrupt transportation linkages • Route passes between parcels of land associated with 2 IABU's as identified to the study team by the farming community
2.5 Land Use / Resources						
	2.5.1 First Nations' 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: • encroachment, severance, displacement; • long-term alteration / disruption; • nuisance impacts; • change to access / travel time. to First Nations' treaty rights or use of land and resources for traditional purposes	**Medium** potential to affect First Nation Treaty Rights or use of land and resources for traditional purposes • Route alternative predominantly on new corridor components	**Medium** potential to affect First Nation Treaty Rights or use of land and resources for traditional purposes • Route alternative predominantly on new corridor components	**Medium** potential to affect First Nation Treaty Rights or use of land and resources for traditional purposes • Route alternative has both existing highway and new corridor components	**Medium** potential to affect First Nation Treaty Rights or use of land and resources for traditional purposes • Route alternative has both existing highway and new corridor components
	2.5.2 Parks and Recreational Areas (e.g. national/ provincial parks, conservation areas, municipal parks, public spaces, golf courses, trails, greenways and open space linkages)	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to parks and recreational areas.	**Low** potential for impacts to parks and recreational areas • Segment east of Road 108 will bring new roadway closer to park near Optimist Hall and Sprucedale Public School/Community Center playing fields. Area is already bounded by railway tracks so impact to area character/aesthetics is not likely to be significant. • No encroachment or impacts to property boundaries of parks and recreational facilities and no long-term alteration/disruption likely. • Field observation identified no change to facilities / utilities / services. • Some potential for nuisance impacts at the park and playing fields.	**Low** potential for impacts to parks and recreational areas • Segment easy of Road 108 will bring new roadway closer to park near Optimist Hall and Sprucedale Public School/Community Center playing fields. Area is already bounded by railway tracks so impact to area character/aesthetics is not likely to be significant. • No encroachment or impacts to property boundaries of parks and recreational facilities and no long-term alteration/disruption likely. • Field observation identified no change to facilities / utilities / services. • Some potential for nuisance impacts at the park and playing fields.	**Low** potential for impacts to parks and recreational areas • Segment east of Road 108 will bring new roadway closer to park near Optimist Hall and Sprucedale Public School/Community Center playing fields. Area is already bounded by railway tracks so impact to area character/aesthetics is not likely to be significant. • No encroachment or impacts to property boundaries of parks and recreational facilities and no long-term alteration/disruption likely. • Field observation identified no change to facilities / utilities / services. • Some potential for nuisance impacts at the park and playing fields.	**Low** potential for impacts to parks and recreational areas • Segment east of Road 108 will bring new roadway closer to park near Optimist Hall and Sprucedale Public School/Community Center playing fields. Area is already bounded by railway tracks so impact to area character/aesthetics is not likely to be significant. • No encroachment or impacts to property boundaries of parks and recreational facilities and no long-term alteration/disruption likely. • Field observation identified no change to facilities / utilities / services. • Some potential for nuisance impacts at the park and playing fields.
	2.5.3 Aggregates, Mineral-Resources	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services.	**No** potential for impacts to current/future aggregate/mineral resources • No impacts to mineral-aggregate resources	**No** potential for impacts to current/future aggregate/mineral resources • No impacts to mineral-aggregate resources	**No** potential for impacts to current/future aggregate/mineral resources • No impacts to mineral-aggregate resources	**No** potential for impacts to current/future aggregate/mineral resources • No impacts to mineral-aggregate resources

LEGEND

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Factor / Sub-Factor	Criteria	Indicator for Route Selection	A1 1-3-7-10-12	A2 1-2-3-7-10-12	A3 1-2-4-7-10-12	A4 1-2-4-6-10-12
		to current/future extraction of aggregate and mineral resources.				
2.6 Major Utility Transmission Corridors (e.g. railroads, hydro, gas, oil)						
		Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. To major utility transmission corridors.	**Low** potential for impacts to major utility transmission corridors • One new railway crossing • No major hydro transmission corridor crossings • No major gas / oil corridor crossings	**Low** potential for impacts to major utility transmission corridors • One new railway crossing • No major hydro transmission corridor crossings • No major gas / oil corridor crossings	**Low** potential for impacts to major utility transmission corridors • One new railway crossing • No major hydro transmission corridor crossings • No major gas / oil corridor crossings	**Low** potential for impacts to major utility transmission corridors • One new railway crossing • No major hydro transmission corridor crossings • No major gas / oil corridor crossings
2.7 Contaminated Property and Waste Management (e.g. Landfills, Hazardous Waste Sites, "Brownfield" Areas, other known contaminated sites, and high-risk contamination areas)						
		Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. to contaminated property and waste management.	**Medium** potential for impacts to contaminated property and waste • Two vehicle fuel and repair facilities were identified in Shakespeare along Highway 7/8. Both sites, an Esso Service Station at Patrick Street and Patriot Gas east of Road 107, are at least 400 m north of proposed alignment at the west end of the alignment. Regional groundwater flow direction is anticipated to be flowing in a southerly direction. • The distance of the service stations from the proposed realignment indicates that potential environmental concerns related to the service stations are minimal; however, consideration should be given to implementing a scoped subsurface investigation south of the service stations at the northern extent of the proposed road alignment to confirm soil and groundwater conditions.	**Medium** potential for impacts to contaminated property and waste • Two vehicle fuel and repair facilities were identified in Shakespeare along Highway 7/8. Both sites, an Esso Service Station at Patrick Street and Patriot Gas east of Road 107, are at least 400 m north of proposed alignment at the west end of the alignment. Regional groundwater flow direction is anticipated to be flowing in a southerly direction. • The distance of the service stations from the proposed realignment indicates that potential environmental concerns related to the service stations are minimal; however, consideration should be given to implementing a scoped subsurface investigation south of the service stations at the northern extent of the proposed road alignment to confirm soil and groundwater conditions.	**Medium** potential for impacts to contaminated property and waste • Two vehicle fuel and repair facilities were identified in Shakespeare along Highway 7/8. Both sites, an Esso Service Station at Patrick Street and Patriot Gas east of Road 107, are at least 400 m north of proposed alignment at the west end of the alignment. Regional groundwater flow direction is anticipated to be flowing in a southerly direction. • The distance of the service stations from the proposed realignment indicates that potential environmental concerns related to the service stations are minimal; however, consideration should be given to implementing a scoped subsurface investigation south of the service stations at the northern extent of the proposed road alignment to confirm soil and groundwater conditions.	**Medium** potential for impacts to contaminated property and waste • Two vehicle fuel and repair facilities were identified in Shakespeare along Highway 7/8. Both sites, an Esso Service Station at Patrick Street and Patriot Gas east of Road 107, are at least 400 m north of proposed alignment at the west end of the alignment. Regional groundwater flow direction is anticipated to be flowing in a southerly direction. • The distance of the service stations from the proposed realignment indicates that potential environmental concerns related to the service stations are minimal; however, consideration should be given to implementing a scoped subsurface investigation south of the service stations at the northern extent of the proposed road alignment to confirm soil and groundwater conditions.

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study

EVALUATION OF ROUTE ALTERNATIVES

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SEGMENT A – SHAKESPEARE AREA SOUTHERN BYPASSES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			A1 **1-3-7-10-12**	**A2** **1-2-3-7-10-12**	**A3** **1-2-4-7-10-12**	**A4** **1-2-4-6-10-12**
2.8 Landscape Composition						
	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).	**Medium** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative • low/moderate negative impacts on urban community due to existing railroad, and existing hedge buffer • high negative impacts on affected farmhouses on east entry, and south of proposed roadway • moderate/high negative impact due to potential loss of vegetation • moderate visual interest through agricultural fields, and hedgerow • moderate/high visual interest of southern woodlot across fields • moderate/high visual interest of riparian areas and associated vegetation • moderate visual interest of hedge buffer of railroad tracks	**Medium** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative • low/moderate negative impacts on urban community due to existing railroad, and existing hedge buffer • high negative impacts on affected farmhouse on east entry, and south of proposed roadway • moderate/high negative impact on adjacent properties on existing footprint due to the loss of frontage and associated potential loss of vegetation • moderate visual interest through agricultural fields, and hedgerow • moderate/high visual interest of southern woodlot across fields • high visual interest of riparian areas and associated vegetation • moderate visual interest of hedge buffer of railroad tracks	**Medium** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative • low/moderate negative impacts on urban community due to existing railroad, and existing hedge buffer • moderate negative impact on affected farmhouse on east entry, and south of proposed roadway • moderate/high negative impact on adjacent properties on existing footprint due to the loss of frontage and associated potential loss of vegetation • moderate visual interest through agricultural fields • high visual interest of southern woodlot across fields • high visual interest of riparian areas and associated vegetation • moderate visual interest of hedge buffer of railroad tracks	**High** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative • low/moderate negative impacts on urban community on southern portion due to existing railroad, and existing hedge buffer • high negative impact on affected farmhouse on east entry, and south of proposed roadway • high negative impact on urban community on the eastern edge due to close proximity of proposed highway • moderate/high negative impact on adjacent properties on existing footprint due to the loss of frontage and associated potential loss of vegetation • moderate visual interest through agricultural fields • moderate visual interest of southern woodlot across fields • moderate visual interest of hedge buffer of railroad tracks
	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	To be considered during Preliminary Design phase				
2.9 Air Quality						
	2.9.1 Local and Regional Air Quality (Total contaminant and greenhouse gas emissions)	Previously addressed during Needs Assessment Phase				
	2.9.2 Sensitive receptors to air pollutants and greenhouse gas emissions	Presence and potential for impacts to sensitive receptors to air pollutants and greenhouse gas emissions, including consideration of number of sensitive receptors immediately adjacent to the highway.	**Low** potential impact to sensitive receptors adjacent to the highway • 0 sensitive receptors within 20m of the edge of the Right of Way.	**Low** potential impact to sensitive receptors adjacent to the highway • 0 sensitive receptors within 20m of the edge of the Right of Way.	**Low** potential impact to sensitive receptors adjacent to the highway • 1 sensitive receptor within 20m of the edge of the Right of Way.	**Low** potential impact to sensitive receptors adjacent to the highway • 3 sensitive receptors within 20m of the edge of the Right of Way.

LEGEND

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SEGMENT A – SHAKESPEARE AREA SOUTHERN BYPASSES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
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3. CULTURAL ENVIRONMENTAL FACTORS						
3.1 Cultural Heritage – Built Heritage and Cultural Landscapes						
	3.1.1 Buildings or "Standing" Sites of Architectural or Heritage Significance or Ontario Heritage Foundation Easement Properties	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to buildings or "standing" sites of extreme local, provincial or national interest or Ontario Heritage Foundation easements properties.	**Low** potential for impacts to sites of heritage significance and Heritage Foundation Easement Properties • There are no built heritage resources within the route • There are two in close proximity to the extreme east end of the route (1825 Highway 7/8 – George Kleinknecht Farmstead and 1834 Highway 7/8 – outbuilding); these may be encroached but not likely physically impacted • Setting may change somewhat	**High** potential for impacts to sites of heritage significance and Heritage Foundation Easement Properties • Encroaches on and severs Fryfogel Tavern property which is an Ontario Heritage Foundation Easement property • There are two in close proximity to the extreme east end of the route (1825 Highway 7/8 – George Kleinknecht Farmstead and 1834 Highway 7/8 – outbuilding); these may be encroached but not likely physically impacted • Setting may change somewhat	**Medium** potential for impacts to sites of heritage significance and Heritage Foundation Easement Properties • There are 8 built heritage resources within or in immediate proximity to the route • There are two in close proximity to the extreme east end of the route (1825 Highway 7/8 – George Kleinknecht Farmstead and 1834 Highway 7/8 – outbuilding); these may be encroached but not likely physically impacted • Setting may change somewhat. • Six within the route and are generally in close proximity to the road; setting will be heavily altered and some buildings may be displaced. These six buildings are the John McTavish Farmstead (2026 Highway 7/8), the Andrew Riddell Junior Farmstead (2053 Highway 7/8), the Andrew Riddell Farmstead (2007 Highway 7/8), Dr. Flynn's House (1971 Hwy 7/8), Sebastian Fryfogel Farmstead (1899 Highway 7/8), and the Fryfogel Tavern/Inn (1931 Highway 7/8).	**Medium** potential for impacts to sites of heritage significance and Heritage Foundation Easement Properties • There are 8 built heritage resources within or in immediate proximity to the route • There are two in close proximity to the extreme east end of the route (1825 Highway 7/8 – George Kleinknecht Farmstead and 1834 Highway 7/8 – outbuilding); these may be encroached but not likely physically impacted • Setting may change somewhat. • Six within the route and are generally in close proximity to the road; setting will be heavily altered and some buildings may be displaced. These six buildings are the John McTavish Farmstead (2026 Highway 7/8), the Andrew Riddell Junior Farmstead (2053 Highway 7/8), the Andrew Riddell Farmstead (2007 Highway 7/8), Dr. Flynn's House (1971 Hwy 7/8), Sebastian Fryfogel Farmstead (1899 Highway 7/8), and the Fryfogel Tavern/Inn (1931 Highway 7/8).
	3.1.2 Heritage Bridges	Potential for destruction or significant alteration of heritage bridges				
	3.1.3 Areas of Historic 19th Century Settlement	Potential and significance of: • encroachment, severance, displacement; • longterm alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to areas of historic 19th century settlement.	**Low** potential for impacts to areas of historic settlement • The route crosses a portion of Highway 7/8, an early transportation route but no major, concentrated centres of 19th Century settlement	**Low** potential for impacts to areas of historic settlement • The route crosses a portion of Highway 7/8, an early transportation route but no major, concentrated centres of 19th Century settlement	**Low** potential for impacts to areas of historic settlement • The route crosses a portion of Highway 7/8, an early transportation route but no major, concentrated centres of 19th Century settlement	**Low** potential for impacts to areas of historic settlement • The route crosses a portion of Highway 7/8, an early transportation route but no major, concentrated centres of 19th Century settlement
	3.1.4 Cultural Heritage Landscapes (collection of	Potential and significance of change to composition of cultural landscapes.	**Medium** potential for impacts to cultural heritage landscapes • Dilse identified one large, continuous cultural heritage	**Medium** potential for impacts to cultural heritage landscapes • Dilse identified one large, continuous cultural heritage	**Medium** potential for impacts to cultural heritage landscapes • Dilse identified one large, continuous cultural heritage	**Medium** potential for impacts to cultural heritage landscapes • Dilse identified one large, continuous cultural heritage

LEGEND

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SEGMENT A – SHAKESPEARE AREA SOUTHERN BYPASSES

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	individual manmade features modifying pristine landscape)		landscape that crosses the east end of this route (from Lingelbach Cemetery west to west of Road 106); only the extreme east end of the route is affected	landscape that crosses the east end of this route (from Lingelbach Cemetery west to west of Road 106); only the extreme east end of the route is affected	landscape that crosses the east end of this route (from Lingelbach Cemetery west to west of Road 106); only the east end of the route is affected	landscape that crosses the east end of this route (from Lingelbach Cemetery west to west of Road 106); only the east end of the route is affected
	3.1.5 First Nations' Burial Sites	Potential and significance of: • encroachment, severance, displacement; • longterm alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time. to First Nations' burial sites.	**No** potential for impacts to First Nations burial sites • There are no known/reported First Nations' burial sites within this route	**No** potential for impacts to First Nations burial sites • There are no known/reported First Nations' burial sites within this route	**No** potential for impacts to First Nations burial sites • There are no known/reported First Nations' burial sites within this route	**No** potential for impacts to First Nations burial sites • There are no known/reported First Nations' burial sites within this route
	3.1.6 Cemeteries	Potential and significance of: • encroachment, severance, displacement; • longterm alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to cemeteries.	**Low** potential for impacts to cemeteries • There are no known cemeteries within this route	**High** potential for impacts to cemeteries • There is one cemetery (Fryfogel) within this route; boundaries are poorly known	**Low** potential for impacts to cemeteries • There is one cemetery (Fryfogel) adjacent to this route; boundaries are poorly known	**Low** potential for impacts to cemeteries • There is one cemetery (Fryfogel) adjacent to this route; boundaries are poorly known
3.2 Cultural Heritage – Archaeology						
	3.2.1 PreHistoric and Historic First Nations Sites	Potential for destruction or disturbance of prehistoric and historic First Nations archaeological sites of extreme local, provincial or national interest	**Low** potential for destruction or disturbance of archaeological sites • There are no registered sites within this route • There is potential for previously undocumented archaeological sites	**Medium** potential for destruction or disturbance of archaeological sites • There are two known registered sites within this route (Fryfogel, Fryfogel Inn); both have portions likely present • There is potential for previously undocumented archaeological sites	**Medium** potential for destruction or disturbance of archaeological sites • There are four known registered sites within this route (Riddell 1, Riddell 2, Fryfogel, Fryfogel Inn); all have portions likely present • There is potential for previously undocumented archaeological sites	**Medium** potential for destruction or disturbance of archaeological sites • There are four known registered sites within this route (Riddell 1, Riddell 2, Fryfogel, Fryfogel Inn); all have portions likely present • There is potential for previously undocumented archaeological sites
	3.2.2 Historic EuroCanadian Archaeological Sites	Potential for destruction or disturbance of historic EuroCanadian archaeological sites of extreme local, provincial or national interest				
4. AREA ECONOMY – Previously addressed during Needs Assessment Phase						
5. TRANSPORTATION FACTORS						
5.1 Area Transportation System Capacity and Efficiency						
	5.1.1 Federal/ Provincial/Municipal transportation planning policies/goals/ objectives	Previously addressed during Needs Assessment Phase.				

LEGEND

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Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			A1 **1-3-7-10-12**	**A2** **1-2-3-7-10-12**	**A3** **1-2-4-7-10-12**	**A4** **1-2-4-6-10-12**
	5.1.2 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	**High** potential to support efficient movement of people. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Shakespeare to route	**High** potential to support efficient movement of people. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Shakespeare to route	**High** potential to support efficient movement of people. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Shakespeare to route	**High** potential to support efficient movement of people. • Route segment through Shakespeare is on new alignment, resulting in high level of service due to few intersections and reduced number of driveways • Direct route • Some out-of-way travel for local access from Shakespeare to route
	5.1.3 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)	**High** potential to support efficient movement of goods. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Shakespeare to route	**High** potential to support efficient movement of goods. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Shakespeare to route	**High** potential to support efficient movement of goods. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Shakespeare to route	**High** potential to support efficient movement of goods. • Route segment through Shakespeare is on new alignment, resulting in high level of service due to few intersections and reduced number of driveways • and few driveways • Direct route • Some out-of-way travel for local access from Shakespeare to route
5.2 Area Transportation System Reliability / Redundancy						
		Potential to support system reliability and redundancy for travel (people and goods) between regions and communities during adverse conditions	**High** potential to support system reliability and redundancy • Route is predominantly on new alignment, which provides a new connection in the Shakespeare area to accommodate travel during adverse conditions (i.e. provides an alternate route)	**High** potential to support system reliability and redundancy • Route is predominantly on new alignment, which provides a new connection in the Shakespeare area to accommodate travel during adverse conditions (i.e. provides an alternate route)	**High** potential to support system reliability and redundancy • Route is predominantly on new alignment, which provides a new connection in the Shakespeare area to accommodate travel during adverse conditions (i.e. provides an alternate route)	**High** potential to support system reliability and redundancy • Route segment through Shakespeare is on new alignment, which provides a new connection in the Shakespeare area to accommodate travel during adverse conditions (i.e. provides an alternate route)
5.3 Safety						
	5.3.1 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	**High** potential to improve traffic safety • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances • A four/five lane cross section provides for good passing opportunity, provides a wider	**High** potential to improve traffic safety • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances • A four/five lane cross section provides for good passing opportunity, provides a wider	**High** potential to improve traffic safety • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances • A four/five lane cross section provides for good passing opportunity, provides a wider	**High** potential to improve traffic safety • Route segment through Shakespeare is on new alignment, resulting in limited number of access points at intersection locations and reduced number of access points associated with private entrances • A four/five lane cross section

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study EVALUATION OF ROUTE ALTERNATIVES Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.						
SEGMENT A – SHAKESPEARE AREA SOUTHERN BYPASSES						
Factor / Sub-Factor	**Criteria**	**Indicator for Route Selection**	**Route Alternative**			
			A1 1-3-7-10-12	**A2 1-2-3-7-10-12**	**A3 1-2-4-7-10-12**	**A4 1-2-4-6-10-12**
			platform to accommodate evasive moves during potential accidents, and a centre left turn lane would accommodate safer left turns along the highway at intersection and driveway locations	platform to accommodate evasive moves during potential accidents, and a centre left turn lane would accommodate safer left turns along the highway at intersection and driveway locations	platform to accommodate evasive moves during potential accidents, and a centre left turn lane would accommodate safer left turns along the highway at intersection and driveway locations	provides for good passing opportunity, provides a wider platform to accommodate evasive moves during potential accidents, and a centre left turn lane would accommodate safer left turns along the highway at intersection and driveway locations
	5.3.2 Emergency Access	Potential to support emergency access to/from existing and/or new provincial facilities.	**High** potential to support emergency access to/from route • Full moves connection will be provided at Perth Road 107 • Opportunity to provide connections to existing Highway 7&8 at east and west ends of Shakespeare • Direct access from existing fire hall east of Perth Road 107 to existing Highway 7&8 will be maintained	**High** potential to support emergency access to/from route • Full moves connection will be provided at Perth Road 107 • Opportunity to provide connections to existing Highway 7&8 at east and west ends of Shakespeare • Direct access from existing fire hall east of Perth Road 107 to existing Highway 7&8 will be maintained	**High** potential to support emergency access to/from route • Full moves connection will be provided at Perth Road 107 • Opportunity to provide connections to existing Highway 7&8 at east and west ends of Shakespeare • Direct access from existing fire hall east of Perth Road 107 to existing Highway 7&8 will be maintained	**High** potential to support emergency access to/from route • Full moves connection will be provided at Perth Road 107 • Opportunity to provide connections to existing Highway 7&8 at east and west ends of Shakespeare • Direct access from existing fire hall east of Perth Road 107 to existing Highway 7&8 will be maintained
	5.3.3 Pedestrian, Cyclist and Snowmobile Safety within the highway rightofway	Potential and significance of change to ease and safety of movement across the highway and within the rightofway.	**High** potential to improve pedestrian, cyclist and snowmobile safety • Route situated south of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area where pedestrian / cyclist movements predominately occur • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**High** potential to improve pedestrian, cyclist and snowmobile safety • Route situated south of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area where pedestrian / cyclist movements predominately occur • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**High** potential to improve pedestrian, cyclist and snowmobile safety • Route situated south of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area where pedestrian / cyclist movements predominately occur • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**High** potential to improve pedestrian, cyclist and snowmobile safety • Route situated south of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area where pedestrian / cyclist movements predominately occur • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations
5.4 Mobility and Accessibility						
	5.4.1 Modal integration, balance and efficiency	Potential to improve modal choice and increase mode split for person trips between communities, regions and major transit station areas based on connection to concentrations of population, travel performance indicators (LOS, v/c, travel speed) at critical screenlines and on potential to provide higher order transit	**Medium** potential to improve modal integration, balance and efficiency. • Transit service is potentially constrained by the bypass of the community of Shakespeare, but is supported by the direct connection to development along	**Medium** potential to improve modal integration, balance and efficiency. • Transit service is potentially constrained by the bypass of the community of Shakespeare, but is supported by the direct connection to development along	**Medium** potential to improve modal integration, balance and efficiency. • Transit service is potentially constrained by the bypass of the community of Shakespeare, but is supported by the direct connection to development along	**Medium** potential to improve modal integration, balance and efficiency. • Transit service is potentially constrained by the bypass of the community of Shakespeare, but is supported by the direct connection to development along

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT A – SHAKESPEARE AREA SOUTHERN BYPASSES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative A1 1-3-7-10-12	Route Alternative A2 1-2-3-7-10-12	Route Alternative A3 1-2-4-7-10-12 (Selected Corridor)	Route Alternative A4 1-2-4-6-10-12
		service.	Highway 7&8 both east and west of Shakespeare. • Use of existing Highway 7&8 would constrain transit travel performance. • Opportunity to support interface between rail transit service and highway	Highway 7&8 both east and west of Shakespeare. • Use of existing Highway 7&8 would constrain transit travel performance. • Opportunity to support interface between rail transit service and highway	Highway 7&8 both east and west of Shakespeare. • Use of existing Highway 7&8 would constrain transit travel performance. • Opportunity to support interface between rail transit service and highway	Highway 7&8 both east and west of Shakespeare. • Use of existing Highway 7&8 would constrain transit travel performance. • Opportunity to support interface between rail transit service and highway
	5.4.2 Linkages to Population and Employment Centres	Potential to improve linkages to population and employment centres for people and goods movement	**Medium** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved • Linkages to Shakespeare may be reduced because of limitations imposed by intersection design requirements at potential tie-in points between the bypass and the current highway	**Medium** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved • Linkages to Shakespeare may be reduced because of limitations imposed by intersection design requirements at potential tie-in points between the bypass and the current highway	**Medium** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved • Linkages to Shakespeare may be reduced because of limitations imposed by intersection design requirements at potential tie-in points between the bypass and the current highway	**Medium** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved • Linkages to Shakespeare may be reduced because of limitations imposed by intersection design requirements at potential tie-in points between the bypass and the current highway
	5.4.3 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)	**Medium** potential to support recreation and tourism travel • Shakespeare tourist area is bypassed, but tourist travel through the analysis area is facilitated	**Medium** potential to support recreation and tourism travel • Shakespeare tourist area is bypassed, but tourist travel through the analysis area is facilitated	**Medium** potential to support recreation and tourism travel • Shakespeare tourist area is bypassed, but tourist travel through the analysis area is facilitated	**Medium** potential to support recreation and tourism travel • Shakespeare tourist area is bypassed, but tourist travel through the analysis area is facilitated
	5.4.4 Accommodate mobility of pedestrians, cyclists and snowmobiles	Potential to accommodate mobility of pedestrians, cyclists within critical travel corridors in urbanized areas and snowmobiles in recognized rural trails	**High** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route situated south of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area provides opportunity to improve mobility of pedestrian / cyclist movements within developed area • Existing snowmobile trail crossings east and west of Shakespeare can be maintained	**High** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route situated south of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area provides opportunity to improve mobility of pedestrian / cyclist movements within developed area • Existing snowmobile trail crossings east and west of Shakespeare can be maintained	**High** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route situated south of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area provides opportunity to improve mobility of pedestrian / cyclist movements within developed area • Existing snowmobile trail crossings east and west of Shakespeare can be maintained	**High** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route situated south of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area provides opportunity to improve mobility of pedestrian / cyclist movements within developed area • Existing snowmobile trail crossings east and west of Shakespeare can be maintained
5.5 Network Compatibility						
	5.5.1 Network Connectivity	Potential to improve transportation system connectivity within and to/from the analysis	**High** potential to improve transportation system connectivity	**High** potential to improve transportation system connectivity	**High** potential to improve transportation system connectivity	**High** potential to improve transportation system connectivity

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study EVALUATION OF ROUTE ALTERNATIVES Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.						
SEGMENT A – SHAKESPEARE AREA SOUTHERN BYPASSES						
Factor / Sub-Factor	**Criteria**	**Indicator for Route Selection**	**Route Alternative**			
			A1 1-3-7-10-12	**A2 1-2-3-7-10-12**	**A3 1-2-4-7-10-12**	**A4 1-2-4-6-10-12**
		area.	• Provides improved linkage between Stratford and New Hamburg	• Provides improved linkage between Stratford and New Hamburg	• Provides improved linkage between Stratford and New Hamburg	• Provides improved linkage between Stratford and New Hamburg
	5.5.2 Flexibility for Future Expansion	Potential to address future transportation needs beyond the forecasted planning horizons.	**High** potential for future expansion. • Route is outside Shakespeare urban boundary, and since it is predominantly on new alignment, the majority of the right-of-way could accommodate future expansion	**High** potential for future expansion. • Route is outside Shakespeare urban boundary, and since it is predominantly on new alignment, the majority of the right-of-way could accommodate future expansion	**High** potential for future expansion. • Route is outside Shakespeare urban boundary; majority of the right-of-way could accommodate future expansion	**Medium** potential for future expansion. • Route is situated in close proximity to Shakespeare urban boundary, limiting potential for future expansion
5.6 Engineering						
	5.6.1 Constructability	Potential ease of implementation considering feasibility/difficulty of physical, property or environmental constraints	**Medium** potential for constructability issues • Utilizes segment of existing Highway 7&8 corridor • Situated in close proximity to developed area of Shakespeare • One railway crossing • Two new watercourse crossings	**Medium** potential for constructability issues • Utilizes segment of existing Highway 7&8 corridor • One railway crossing • Two new watercourse crossings	**Medium** potential for constructability issues • Utilizes segment of existing Highway 7&8 corridor • One railway crossing • Two new watercourse crossings	**Medium** potential for constructability issues • Utilizes segment of existing Highway 7&8 corridor • One railway crossing • Two new watercourse crossings
	5.6.2 Compliance with Design Criteria	Conformity to applicable provincial safety and design standards.	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths
5.7 Traffic Operations						
		Potential for negative impact on traffic operations due to factors such as design features, private access, and transportation network connections	**Low** potential for negative impact on traffic operations • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances. • Can accommodate full moves connection at Perth Road 107 • Can accommodate partial connections to existing Highway 7&8 at east and west ends of Shakespeare	**Low** potential for negative impact on traffic operations • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances. • Can accommodate full moves connection at Perth Road 107 • Can accommodate partial connections to existing Highway 7&8 at east and west ends of Shakespeare	**Low** potential for negative impact on traffic operations • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances. • Can accommodate full moves connection at Perth Road 107 • Can accommodate partial connections to existing Highway 7&8 at east and west ends of Shakespeare	**Low** potential for negative impact on traffic operations • Route segment through Shakespeare is on new alignment, resulting in limited number of access points at intersection locations and reduced number of access points associated with private entrances. • Can accommodate full moves connection at Perth Road 107 • Can accommodate partial connections to existing Highway 7&8 at east and west ends of Shakespeare

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT A – SHAKESPEARE AREA SOUTHERN BYPASSES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			A1 **1-3-7-10-12**	**A2** **1-2-3-7-10-12**	**A3** **1-2-4-7-10-12**	**A4** **1-2-4-6-10-12**
5.8 Construction Cost (excludes property costs and engineering costs)						
	Relative road construction cost, excluding property and engineering costs		**High** cost $12 M	**High** cost $12 M	**Medium** Cost $10 M	**Medium** Cost $10 M

SUMMARY OF EVALUATION

Summary of Natural Environment
Route Alternatives A3 and A4 are preferred from a natural environment perspective as they have lower potential impacts to terrestrial ecosystems, including wildlife, wetlands, forests and vegetation.

Summary of Land Use / Socio-Economic Environment
Route Alternative A3 is preferred from a land use / socio-economic environment perspective as it has lower potential impacts to urban and rural residential areas and agriculture,

Summary of Cultural Environment
Route Alternatives A3 and A4 do not encroach on the Fryfogel Tavern site but do have the potential for moderate impacts to built heritage and archaeological sites. Route Alternative A2 encroaches on and severs the Fryfogel Taverrn site. Therefore, Route Alternative A1 is preferred from a cultural environment perspective as it avoids the Fryfogel Tavern site and has low potential impacts to cemeteries and archaeological sites.

Summary of Transportation
All route alternatives are comparable in their ability to support transportation criteria for most transportation factors. However, Route Alternative A3 is preferred because it has a lower relative construction cost than Alternatives A1 and A2 and has the potential to better accommodate future transportation needs relative to Alternative A4.

Conclusion
Based upon the above, Route Alternative A3 is the preferred southern by-pass alternative east of Shakespeare.

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

SEGMENT A - SHAKESPEARE AREA SOUTHERN BY-PASSES

FACTORS	Weighting	Alternative 1	2	3	4
1.0 NATURAL ENVIRONMENT	**20.00**				
1.1 Fisheries and Aquatic Ecosystems	8.00				
Weighted Score		5.36	5.36	5.36	5.36
1.2 Terrestrial Ecosystems	5.00				
Weighted Score		1.99	1.99	3.35	3.35
1.3 Groundwater	5.00				
Weighted Score		3.68	3.68	3.68	3.68
1.4 Surface Water	2.00				
Weighted Score		1.34	1.34	1.34	1.34
Factor Score	**20.00**	**12.37**	**12.37**	**13.73**	**13.73**
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	**35.00**				
2.1 Land Use Planning Policies, Goals, Objectives	3.50				
Weighted Score		2.17	2.17	2.35	2.35
2.2 Land Use / Community	7.00				
Weighted Score		4.92	4.92	4.92	4.56
2.3 Noise Sensitive Areas	5.25				
Weighted Score		1.73	1.73	1.73	0.00
2.4 Agriculture	7.00				
Weighted Score		1.16	1.16	3.26	2.31
2.5 Land Use / Resources	3.50				
Weighted Score		2.46	2.46	2.46	2.46
2.6 Major Utility Transmission Corridors	0.70				
Weighted Score		0.47	0.47	0.47	0.47
2.7 Contaminated Property and Waste Management	0.70				
Weighted Score		0.23	0.23	0.23	0.23
2.8 Landscape Composition	2.10				
Weighted Score		0.69	0.69	0.69	0.00
2.9 Air Quality	5.25				
Weighted Score		3.52	3.52	3.52	3.52
Factored Score	**35.00**	**17.34**	**17.34**	**19.63**	**15.89**
3.0 CULTURAL ENVIRONMENT	**20.00**				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	16.00				
Weighted Score		10.04	2.67	7.32	7.32
3.2 Archaeology	4.00				
Weighted Score		2.68	1.32	1.32	1.32
Factored Score	**20.00**	**12.72**	**3.99**	**8.64**	**8.64**
5.0 TRANSPORTATION	**25.00**				
5.1 Area Transportation System Capacity and Efficiency	3.75				
Weighted Score		3.75	3.75	3.75	3.75
5.2 Area Transportation System Reliability / Redundancy	3.75				
Weighted Score		3.75	3.75	3.75	3.75
5.3 Safety	6.25				
Weighted Score		6.25	6.25	6.25	6.25
5.4 Mobility and Accessibility	2.50				
Weighted Score		1.92	1.92	1.92	1.92
5.5 Network Compatibility	1.25				
Weighted Score		1.25	1.25	1.25	1.17
5.6 Engineering	2.50				
Weighted Score		1.16	1.16	1.16	1.16
5.7 Traffic Operations	3.75				
Weighted Score		2.51	2.51	2.51	2.51
5.8 Construction Cost	1.25				
Weighted Score		0.00	0.00	1.24	1.24
Factored Score	**25.00**	**20.60**	**20.60**	**21.83**	**21.75**
	100.00				
Total Alternative Score		**63.03**	**54.30**	**63.83**	**60.01**

ALTERNATIVE DESCRIPTIONS
1: A1: 1-3-7-10-12
2: A2: 1-2-3-7-10-12
3: A3: 1-2-4-7-10-12
4: A4: 1-2-4-6-10-12

NATURAL ENVIRONMENT WEIGHTING TABLE - SEGMENT A: SHAKESPEARE AREA SOUTHERN BY-PASSES

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative			
				1	2	3	4
1.0 NATURAL ENVIRONMENT			**20.00**				
1.1 Fisheries and Aquatic Ecosystems			8.00				
1.1.1 Fish Habitat	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: critical fish habitat features, riparian areas and habitat rehabilitation goals.	No / Low / Medium / High Effects	8.00	0.67	0.67	0.67	0.67
1.1.2 Fish Community	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: fish species at risk (vulnerable, threatened or endangered fish species), fish movement/migration, critical fish life stage processes (spawning, rearing, nursery, feeding) and long-term fish community management goals.						
		Weighted Score		5.36	5.36	5.36	5.36
1.2 Terrestrial Ecosystems			5.00				
1.2.1 Wildlife	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: wildlife species at risk (vulnerable, threatened or endangered wildlife species); wildlife of local and regional importance; migratory birds; critical wildlife habitat features; ecologically functional areas such as connective corridors or travel ways for movement/migration; important wildlife areas such as deeryards, heronries, waterfowl areas, important bird areas; wildlife management, rehabilitation/research program sites; and interference with critical wildlife life stage processes (eg mating/rearing, etc.).	No / Low / Medium / High Effects	0.75	0.33	0.33	0.67	0.67
1.2.2 Wetlands	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: provincially significant wetlands, their buffer areas, and their wetland function; evaluated and un-evaluated wetlands, their wetland buffer areas, and their wetland function; and wetland management, research and/or wetland conservation programs/areas.	No / Low / Medium / High Effects	1.25	0.33	0.33	0.67	0.67
1.2.3 Forests	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: significant woodlands/valley lands; and forest management/research program areas.	No / Low / Medium / High Effects	1.25	0.33	0.33	0.67	0.67
1.2.4 Vegetation	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: subpopulations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant regional/local flora/communities; areas/corridors supporting known populations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant flora/communities; and vegetation management, rehabilitation/research program sites.	No / Low / Medium / High Effects	0.75	0.33	0.33	0.67	0.67
1.2.5 Designated/Special Areas	Potential and significance of: encroachment, severance, displacement, long-term alteration/disruption, change in area character/aesthetics, nuisance impacts, change to access/travel time, and change to facilities/utilities/services to designated/special areas.	No / Low / Medium / High Effects	1.00	0.67	0.67	0.67	0.67
		Weighted Score		1.99	1.99	3.35	3.35
1.3 Groundwater			5.00				
1.3.1 Areas of Groundwater Recharge and Discharge	Potential and significance of alteration to areas of groundwater recharge and discharge due to physical intrusion or groundwater inception, draw-down, impoundment, obstruction, or soil compaction impacting groundwater base-flow and quality.	No / Low / Medium / High Effects	0.50	0.67	0.67	0.67	0.67
1.3.2 Groundwater Source Areas and Wellhead Protection Areas	Potential and significance of alteration to areas of groundwater resource areas and wellhead protection areas due to physical intrusion, or groundwater interception, draw-down, impoundment, obstruction and by soil compaction.	No / Low / Medium / High Effects	1.00	0.67	0.67	0.67	0.67
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.	No / Low / Medium / High Effects	0.50	0.67	0.67	0.67	0.67

NATURAL ENVIRONMENT WEIGHTING TABLE - SEGMENT A: SHAKESPEARE AREA SOUTHERN BY-PASSES

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative			
				1	2	3	4
1.0 NATURAL ENVIRONMENT			**20.00**				
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.	No / Low / Medium / High Effects	1.00	0.67	0.67	0.67	0.67
1.3.5 Groundwater-Dependent Commercial Enterprises (e.g. water bottling operations)	Potential and significance of alteration to groundwater use by groundwater-dependent commercial enterprises due to physical intrusion, or groundwater interception, draw-down, impoundment, obstruction and by soil compaction.	No / Low / Medium / High Effects	1.00	1.00	1.00	1.00	1.00
1.3.6 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.	No / Low / Medium / High Effects	1.00	0.67	0.67	0.67	0.67
		Weighted Score		3.68	3.68	3.68	3.68
1.4 Surface Water			2.00				
1.4.1 Watershed / Sub-Watershed Drainage Features / Patterns	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: watercourse crossings (permanent, intermittent and ephemeral); floodplain or meander belts; riparian areas; sensitive headwater areas; and watershed and sub watershed management plans.	No / Low / Medium / High Effects	2.00	0.67	0.67	0.67	0.67
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. Potential and significance of impacts on hydrology due to changes in ground permeability, modifications to surface drainage patterns and alterations of waterbodies.	No / Low / Medium / High Effects					
		Weighted Score		1.34	1.34	1.34	1.34
		Factored Score	**20.00**	**12.37**	**12.37**	**13.73**	**13.73**

ALTERNATIVE DESCRIPTIONS

1: A1: 1-3-7-10-12
2: A2: 1-2-3-7-10-12
3: A3: 1-2-4-7-10-12
4: A4: 1-2-4-6-10-12

SUMMARY WEIGHTING TABLE - SEGMENT A: SHAKESPEARE AREA SOUTHERN BY-PASSES

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative 1	Alternative 2	Alternative 3	Alternative 4
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT			35.00				
2.0 Land Use Planning Policies, Goals and Objectives			3.50				
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	No / Low / Medium / High Effects	0.18	0.67	0.67	0.67	0.67
2.1.2 Provincial/Federal land use planning policies/goals/objectives	Degree of compatibility with federal/provincial land use policies/goals/objectives	No / Low / Medium / High Effects	0.52	0.33	0.33	0.67	0.67
2.1.3 Municipal (regional and local land use planning policies/goals/ objectives (Official Plans)	Degree of compatibility with municipal Official Plans	No / Low / Medium / High Effects	2.28	0.67	0.67	0.67	0.67
2.1.4 Development Objectives of Private Property Owners	Potential to isolate property from current/future urban envelope. Impact on future land use.	No / Low / Medium / High Effects	0.52	0.67	0.67	0.67	0.67
		Weighted Score		2.17	2.17	2.35	2.35
2.2 Land Use / Community			7.00				
2.2.1 First Nation Reserves	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts and change to access / travel time to First Nation Reserves.	No / Low / Medium / High Effects	0.35	1.00	1.00	1.00	1.00
2.2.2 First Nations' Sacred Grounds	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts and change to access / travel time to First Nations' sacred grounds.	No / Low / Medium / High Effects	0.35	0.67	0.67	0.67	0.67
2.2.3 Urban and Rural Residential	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption (e.g. loss of parking area); change in area character / aesthetics (e.g. loss of trees/garden area); nuisance impacts (e.g. intrusion of highway into current residential envelope); change to access / travel time; change to facilities / utilities / services; interference with residential community cohesion; change to highway operational impacts (e.g. snow storage and highway access visibility) to urban and rural residential areas (residents (owners/tenants) and community groups).	No / Low / Medium / High Effects	1.05	0.67	0.67	0.67	0.33
2.2.4 Commercial/Industrial	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/aesthetics; nuisance impacts; change to travel access/travel time; change to facilities/utilities/services; interference with commercial community cohesion; change to highway operation impacts (e.g. customer parking, cargo loading/off-loading); to commercial and industrial areas (business owners/tenants and customers).	No / Low / Medium / High Effects	1.05	0.67	0.67	0.67	0.67
2.2.5 Tourist Areas and Attractions (e.g. museums, theatres, etc.)	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/aesthetics; nuisance impacts; change to travel access/travel time; change to facilities/utilities/services; loss of "critical mass" in number of signature business attractions (e.g. number of antique shops); to tourist areas and attractions.	No / Low / Medium / High Effects	1.05	0.67	0.67	0.67	0.67
2.2.6 Community Facilities/Institutions (e.g. hospitals, schools, places of worship, unique community features)	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/aesthetics; nuisance impacts; change to travel access/travel time; change to facilities/utilities/services; change to ease and safety of pedestrian movements across the highway and within the highway right-of-way; change to highway operation impacts to current use (e.g. highway noise and vibration interfering with church services); to community facilities and institutions.	No / Low / Medium / High Effects	1.05	0.67	0.67	0.67	0.67
2.2.7 Municipal Infrastructure and Public Service Facilities (e.g. sewage and water services, police/emergency services, local utilities)	Potential and significance of: encroachment, severance, displacement; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to municipal infrastructure and public service facilities.	No / Low / Medium / High Effects	0.35	1.00	1.00	1.00	1.00
2.2.8 Downtown Historic Crossroads Function	Potential and significance of interference by long-distance through-traffic on: "main street" function and structure; character/aesthetics; change to ease and safety of pedestrian movements across the highway and within the highway right-of-way; change to on-street parking; in historic downtown area.	No / Low / Medium / High Effects	1.75	0.67	0.67	0.67	0.67
		Weighted Score		4.92	4.92	4.92	4.56
2.3 Noise Sensitive Areas (NSAs) (residential areas and sensitive institutional uses)			5.25				
2.3.1 Highway Noise	Potential for significant traffic noise increases in NSAs and for noise-sensitive receivers immediately adjacent to the highway	No / Low / Medium / High Effects	5.25	0.33	0.33	0.33	0.00
		Weighted Score		1.73	1.73	1.73	0.00

SUMMARY WEIGHTING TABLE - SEGMENT A: SHAKESPEARE AREA SOUTHERN BY-PASSES

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative			
				1	2	3	4
2.4 Agriculture			7.00				
2.4.1 Agriculture - Canada Land Inventory Class 1, 2, 3 Land	Potential and significance of encroachment, severance of Canada Land inventory Classes 1, 2 and 3 soils	No / Low / Medium / High Effects	0.70	0.00	0.00	0.33	0.33
2.4.2 Agriculture - Farm Infrastructure	Potential and significance of: encroachment, severance, displacement; long-term alteration/disruption; nuisance impacts; to farm infrastructure (field tile drainage systems/outlets, irrigation systems, barns/silos/structures, etc.).	No / Low / Medium / High Effects	2.80	0.33	0.33	0.67	0.33
2.4.3 Agriculture - Operations on Individual Farms	Potential and significance of: encroachment, severance, displacement; long-term alteration/disruption; nuisance impacts; to in-farm field operations (planting, harvesting, grazing, nutrient management, etc.) as applicable to the following: specialty crops/cropland; diary/livestock operations; field crop operations; high investment agricultural operations; established agricultural farm communities.	No / Low / Medium / High Effects	2.80	0.00	0.00	0.33	0.33
2.4.4 Agriculture - Transportation Linkages between Integrated Agricultural Business Units	Potential to sever/disrupt transportation linkages between integrated agricultural business units (movement between integrated agricultural business units of equipment, materials, workers, etc.)	No / Low / Medium / High Effects	0.70	0.33	0.33	0.33	0.33
		Weighted Score		1.16	1.16	3.26	2.31
2.5 Land Use / Resources			3.50				
2.5.1 First Nations' 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: encroachment, severance, displacement; long-term alteration/disruption; nuisance impacts: change to access/travel time; to First Nations' treaty rights or use of land and resources for traditional purposes.	No / Low / Medium / High Effects	0.35	0.33	0.33	0.33	0.33
2.5.2 Parks and Recreational Areas (e.g. national/provincial parks, conservation areas, municipal parks, public spaces, golf courses, trails, greenways and open space linkages)	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/ aesthetics; nuisance impacts; change to access/travel time; change to facilities/utilities/services; to parks and recreational areas.	No / Low / Medium / High Effects	2.45	0.67	0.67	0.67	0.67
2.5.3 Aggregates, Mineral-Resources	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to current/future extraction of aggregate and mineral resources.	No / Low / Medium / High Effects	0.70	1.00	1.00	1.00	1.00
		Weighted Score		2.46	2.46	2.46	2.46
2.6 Major Utility Transmission Corridors (e.g. railroads, hydro, gas, oil)			0.70				
	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to major utility transmission corridors.	No / Low / Medium / High Effects	0.70	0.67	0.67	0.67	0.67
		Weighted Score		0.47	0.47	0.47	0.47
2.7 Contaminated Property and Waste Management (e.g. landfills, hazardous waste sites, "brownfield" areas, other known contaminated sites, and high-risk contamination areas)			0.70				
	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to contaminated property and waste management.	No / Low / Medium / High Effects	0.70	0.33	0.33	0.33	0.33
		Weighted Score		0.23	0.23	0.23	0.23
2.8 Landscape Composition			2.10				
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).	No / Low / Medium / High Effects	2.10	0.33	0.33	0.33	0.00
2.8.2 Sensitive Viewer Groups	Potential and significance of change to vistas/outlooks for sensitive viewer groups.	No / Low / Medium / High Effects					
2.8.3 Scenic Value of Views/Vistas from the transportation facility	Potential and significance of views/vistas from the transportation facility.	No / Low / Medium / High Effects					
		Weighted Score		0.69	0.69	0.69	0.00
2.9 Air Quality			5.25				
2.9.2 Sensitive receptors to air pollutants and greenhouse gas emissions	Presence and potential for impacts to sensitive receptors to air pollutants and greenhouse gas emissions, including consideration of number of sensitive receptors immediately adjacent to the highway.	No / Low / Medium / High Effects	5.25	0.67	0.67	0.67	0.67
		Weighted Score		3.52	3.52	3.52	3.52
		Factored Score	**35.00**	**17.34**	**17.34**	**19.63**	**15.89**

ALTERNATIVE DESCRIPTIONS

1: A1: 1-3-7-10-12
2: A2: 1-2-3-7-10-12
3: A3: 1-2-4-7-10-12
4: A4: 1-2-4-6-10-12

SUMMARY WEIGHTING TABLE - SEGMENT A: SHAKESPEARE AREA SOUTHERN BY-PASSES

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative 1	Alternative 2	Alternative 3	Alternative 4
3.0 CULTURAL ENVIRONMENT			20.00				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes			16.00				
3.1.1 Buildings or "Standing" Sites of Architectural or Heritage Significance or Ontario Heritage Foundation Easement Properties	Potential and significance of encroachment, severance, displacement, property acquisition, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, change to facilities / utilities/ service to buildings or "standing" sites of extreme local, provincial or national interest or Ontario Heritage Foundation easements properties.	No / Low / Medium / High Effects	8.00	0.67	0.00	0.33	0.33
3.1.2 Heritage Bridges	Potential for destruction or significant alteration of heritage bridges.	No / Low / Medium / High Effects					
3.1.3 Areas of Historic 19th Century Settlement	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, change to facilities / utilities/ service to areas of historic 19th century settlement.	No / Low / Medium / High Effects	3.00	0.67	0.67	0.67	0.67
3.1.4 Cultural Heritage Landscapes (collection of individual manmade features modifying pristine landscape)	Potential and significance of change to composition of cultural landscapes.	No / Low / Medium / High Effects	2.00	0.33	0.33	0.33	0.33
3.1.5 First Nations' Burial Sites	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, to First Nations' burial sites.	No / Low / Medium / High Effects	0.00	1.00	1.00	1.00	1.00
3.1.6 Cemeteries	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, change to facilities / utilities/ service to cemeteries.	No / Low / Medium / High Effects	3.00	0.67	0.00	0.67	0.67
		Weighted Score		10.04	2.67	7.32	7.32
3.2 Cultural Heritage - Archaeology			4.00				
3.2.1 Pre-Historic and Historic First Nations Sites	Potential for destruction or disturbance of prehistoric and historic First Nations archaeological sites of extreme local, provincial or national interest	No / Low / Medium / High Effects	4.00	0.67	0.33	0.33	0.33
3.2.2 Historic EuorCanadian Archaeological Sites	Potential for destruction or disturbance of historic EuroCanadian archaeological sites of extreme local, provincial or national interest	No / Low / Medium / High Effects					
		Weighted Score		2.68	1.32	1.32	1.32
		Factored Score	**20.00**	**12.72**	**3.99**	**8.64**	**8.64**

ALTERNATIVE DESCRIPTIONS

1: A1: 1-3-7-10-12
2: A2: 1-2-3-7-10-12
3: A3: 1-2-4-7-10-12
4: A4: 1-2-4-6-10-12

SUMMARY WEIGHTING TABLE - SEGMENT A: SHAKESPEARE AREA SOUTHERN BY-PASSES

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative 1	Alternative 2	Alternative 3	Alternative 4
5.0 TRANSPORTATION			25.00				
5.1 Area Transportation System Capacity and Efficiency			3.75				
5.1.2 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	No / Low / Medium / High Effects	1.88	1.00	1.00	1.00	1.00
5.1.3 Efficient movement of goods	Potential to support the efficient movement of goods between communities and regions based on Level of Service (LOS) and volume to capacity (v/c) on a network, screenline and critical link basis	No / Low / Medium / High Effects	1.88	1.00	1.00	1.00	1.00
		Weighted Score		3.75	3.75	3.75	3.75
5.2 Area Transportation System Reliability / Redundancy			3.75				
	Potential to support system reliability and redundancy for travel (people and goods) between regions and communities during adverse conditions.	No / Low / Medium / High Effects	3.75	1.00	1.00	1.00	1.00
		Weighted Score		3.75	3.75	3.75	3.75
5.3 Safety			6.25				
5.3.1 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	No / Low / Medium / High Effects	2.50	1.00	1.00	1.00	1.00
5.3.2 Emergency Access	Potential to support emergency access to/from existing and/or new provincial facilities	No / Low / Medium / High Effects	1.25	1.00	1.00	1.00	1.00
5.3.3 Pedestrian, Cyclist and Snowmobile Safety within the highway right-of-way	Potential and significance of change to ease and safety of movement across the highway and within the right-of-way.	No / Low / Medium / High Effects	2.50	1.00	1.00	1.00	1.00
		Weighted Score		6.25	6.25	6.25	6.25
5.4 Mobility and Accessibility			2.50				
5.4.1 Modal integration, balance and efficiency	Potential to improve modal choice and increase mode split for person trips between communities, regions and major transit station areas based on connection to concentrations of population, travel performance indicators (LOS, v/c, travel speed) at critical screenlines and on potential to provide higher order transit service.	No / Low / Medium / High Effects	0.25	0.67	0.67	0.67	0.67
5.4.2 Linkages to Population and Employment Centres	Potential to improve linkages to population and employment centres for people and goods movement.	No / Low / Medium / High Effects	0.75	0.67	0.67	0.67	0.67
5.4.3 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)	No / Low / Medium / High Effects	0.75	0.67	0.67	0.67	0.67
5.4.4 Accommodate mobility of pedestrians, cyclists and snowmobiles	Potential to accommodate mobility of pedestrians, cyclists within critical travel corridors in urbanized areas and snowmobiles in recognized rural trails.	No / Low / Medium / High Effects	0.75	1.00	1.00	1.00	1.00
		Weighted Score		1.92	1.92	1.92	1.92
5.5 Network Compatibility			1.25				
5.5.1 Network Connectivity	Potential to improve transportation system connectivity within and to/from the analysis area.	No / Low / Medium / High Effects	1.00	1.00	1.00	1.00	1.00
5.5.2 Flexibility for Future Expansion	Potential to address future transportation needs beyond the forecasted planning horizons.	No / Low / Medium / High Effects	0.25	1.00	1.00	1.00	0.67
		Weighted Score		1.25	1.25	1.25	1.17
5.6 Engineering			2.50				
5.6.1 Constructability	Potential ease of implementation considering feasibility/difficulty of physical, property or environmental constraints.	No / Low / Medium / High Effects	2.00	0.33	0.33	0.33	0.33
5.6.2 Compliance with Design Criteria	Conformity to applicable provincial safety and design standards.	No / Low / Medium / High Effects	0.50	1.00	1.00	1.00	1.00
		Weighted Score		1.16	1.16	1.16	1.16
5.7 Traffic Operations			3.75				
	Potential for negative impact on traffic operations due to factors such as design features, private access, and transportation network connections.	No / Low / Medium / High Effects	3.75	0.67	0.67	0.67	0.67
		Weighted Score		2.51	2.51	2.51	2.51
5.8 Construction Cost (excludes property costs and engineering costs)			1.25				
	Relative road construction cost, excluding property and engineering costs.	No / Low / Medium / High Effects	1.25	0.00	0.00	0.33	0.33
		Weighted Score		0.00	0.00	1.24	1.24
		Factored Score	**25.00**	**20.60**	**20.60**	**21.83**	**21.75**

ALTERNATIVE DESCRIPTIONS

1: A1: 1-3-7-10-12
2: A2: 1-2-3-7-10-12
3: A3: 1-2-4-7-10-12
4: A4: 1-2-4-6-10-12

SUMMARY WEIGHTING TABLE - SEGMENT A: SHAKESPEARE AREA SOUTHERN BY-PASSES
SUMMARY OF SENSITIVITY ANALYSIS - RANKING OF ALTERNATIVES

FACTORS	RATING	WEIGHT	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Evaluation Team	Initial Weights		2	4	1	3
SENSITIVITY ANALYSIS						
Natural Environment	High	50%	3	4	1	2
	Low	10%	2	4	1	3
Land Use / Socio-Economic Environment	High	85%	2	3	1	4
	Low	10%	1	4	2	3
Cultural Environment	High	50%	1	4	2	3
	Low	10%	2	4	1	3
Transportation	High	70%	3	4	1	2
	Low	10%	1	4	2	3
Stakeholder Input (SARA)	SARA Weights		2	4	1	3
Overall Ranking			2	4	1	3

ALTERNATIVE DESCRIPTIONS

1: A1: 1-3-7-10-12
2: A2: 1-2-3-7-10-12
3: A3: 1-2-4-7-10-12
4: A4: 1-2-4-6-10-12

SEGMENT A - SHAKESPEARE AREA SOUTHERN BY-PASSES

FACTORS	Weighting	Alternative 1	2	3	4
1.0 NATURAL ENVIRONMENT	**20.00**				
1.1 Fisheries and Aquatic Ecosystems	8.00				
Weighted Score		5.36	5.36	5.36	5.36
1.2 Terrestrial Ecosystems	5.00				
Weighted Score		1.99	1.99	3.35	3.35
1.3 Groundwater	5.00				
Weighted Score		3.68	3.68	3.68	3.68
1.4 Surface Water	2.00				
Weighted Score		1.34	1.34	1.34	1.34
Factored Score	**20.00**	**12.37**	**12.37**	**13.73**	**13.73**
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	**35.00**				
2.1 Land Use Planning Policies, Goals, Objectives	3.50				
Weighted Score		2.17	2.17	2.35	2.35
2.2 Land Use / Community	7.00				
Weighted Score		4.92	4.92	4.92	4.56
2.3 Noise Sensitive Areas	5.25				
Weighted Score		1.73	1.73	1.73	0.00
2.4 Agriculture	7.00				
Weighted Score		1.16	1.16	3.26	2.31
2.5 Land Use / Resources	3.50				
Weighted Score		2.46	2.46	2.46	2.46
2.6 Major Utility Transmission Corridors	0.70				
Weighted Score		0.47	0.47	0.47	0.47
2.7 Contaminated Property and Waste Management	0.70				
Weighted Score		0.23	0.23	0.23	0.23
2.8 Landscape Composition	2.10				
Weighted Score		0.69	0.69	0.69	0.00
2.9 Air Quality	5.25				
Weighted Score		3.52	3.52	3.52	3.52
Factored Score	**35.00**	**17.34**	**17.34**	**19.63**	**15.89**
3.0 CULTURAL ENVIRONMENT	**20.00**				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	16.00				
Weighted Score		10.04	2.67	7.32	7.32
3.2 Archaeology	4.00				
Weighted Score		2.68	1.32	1.32	1.32
Factored Score	**20.00**	**12.72**	**3.99**	**8.64**	**8.64**
5.0 TRANSPORTATION	**25.00**				
5.1 Area Transportation System Capacity and Efficiency	3.75				
Weighted Score		3.75	3.75	3.75	3.75
5.2 Area Transportation System Reliability / Redundancy	3.75				
Weighted Score		3.75	3.75	3.75	3.75
5.3 Safety	6.25				
Weighted Score		6.25	6.25	6.25	6.25
5.4 Mobility and Accessibility	2.50				
Weighted Score		1.92	1.92	1.92	1.92
5.5 Network Compatibility	1.25				
Weighted Score		1.25	1.25	1.25	1.17
5.6 Engineering	2.50				
Weighted Score		1.16	1.16	1.16	1.16
5.7 Traffic Operations	3.75				
Weighted Score		2.51	2.51	2.51	2.51
5.8 Construction Cost	1.25				
Weighted Score		0.00	0.00	1.24	1.24
Factored Score	**25.00**	**20.60**	**20.60**	**21.83**	**21.75**
	100.00				
Total Alternative Score		**63.03**	**54.30**	**63.83**	**60.01**

Natural 50%

Weighting	Alternative 1	2	3	4
50.00				
20.00	13.40	13.40	13.40	13.40
12.50	4.98	4.98	8.38	8.38
12.50	9.20	9.20	9.20	9.20
5.00	3.35	3.35	3.35	3.35
50.00	**30.93**	**30.93**	**34.33**	**34.33**
22.00				
2.20	1.36	1.36	1.47	1.47
4.40	3.09	3.09	3.09	2.87
3.30	1.09	1.09	1.09	0.00
4.40	0.73	0.73	2.06	1.45
2.20	1.54	1.54	1.54	1.54
0.44	0.29	0.29	0.29	0.29
0.44	0.15	0.15	0.15	0.15
1.32	0.44	0.44	0.44	0.00
3.30	2.21	2.21	2.21	2.21
22.00	**10.90**	**10.90**	**12.34**	**9.99**
12.50				
10.00	6.28	1.67	4.58	4.58
2.50	1.68	0.83	0.83	0.83
12.50	**7.95**	**2.49**	**5.40**	**5.40**
15.50				
2.33	2.33	2.33	2.33	2.33
2.33	2.33	2.33	2.33	2.33
3.88	3.88	3.88	3.88	3.88
1.55	1.19	1.19	1.19	1.19
0.78	0.78	0.78	0.78	0.72
1.55	0.72	0.72	0.72	0.72
2.33	1.56	1.56	1.56	1.56
0.78	0.00	0.00	0.77	0.77
15.50	**12.77**	**12.77**	**13.54**	**13.49**
100.00	**62.55**	**57.09**	**65.60**	**63.20**

Natural 10%

	Weighting	Alternative 1	2	3	4	
2.5	**10.00**					0.5
	4.00	2.68	2.68	2.68	2.68	
	2.50	1.00	1.00	1.68	1.68	
	2.50	1.84	1.84	1.84	1.84	
	1.00	0.67	0.67	0.67	0.67	
	10.00	**6.19**	**6.19**	**6.87**	**6.87**	
0.63	**39.50**					1.13
	3.95	2.45	2.45	2.65	2.65	
	7.90	5.55	5.55	5.55	5.15	
	5.93	1.96	1.96	1.96	0.00	
	7.90	1.30	1.30	3.68	2.61	
	3.95	2.77	2.77	2.77	2.77	
	0.79	0.53	0.53	0.53	0.53	
	0.79	0.26	0.26	0.26	0.26	
	2.37	0.78	0.78	0.78	0.00	
	5.93	3.97	3.97	3.97	3.97	
	39.50	**19.57**	**19.57**	**22.15**	**17.94**	
0.63	**22.50**					1.13
	18.00	11.30	3.00	8.24	8.24	
	4.50	3.02	1.49	1.49	1.49	
	22.50	**14.31**	**4.49**	**9.72**	**9.72**	
0.62	**28.00**					1.12
	4.20	4.20	4.20	4.20	4.20	
	4.20	4.20	4.20	4.20	4.20	
	7.00	7.00	7.00	7.00	7.00	
	2.80	2.15	2.15	2.15	2.15	
	1.40	1.40	1.40	1.40	1.31	
	2.80	1.30	1.30	1.30	1.30	
	4.20	2.81	2.81	2.81	2.81	
	1.40	0.00	0.00	1.39	1.39	
	28.00	**23.07**	**23.07**	**24.45**	**24.36**	
	100.00	**63.14**	**53.31**	**63.19**	**58.88**	

ALTERNATIVE DESCRIPTIONS

1. A1: 1-3-7-10-12
2. A2: 1-2-3-7-10-12
3. A3: 1-2-4-7-10-12
4. A4: 1-2-4-6-10-12

SEGMENT A - SHAKESPEARE A

FACTORS	Weighting	Alternative 1	2	3	4
1.0 NATURAL ENVIRONMENT	5.00				
1.1 Fisheries and Aquatic Ecosystems	2.00				
Weighted Score		1.34	1.34	1.34	1.34
1.2 Terrestrial Ecosystems	1.25				
Weighted Score		0.50	0.50	0.84	0.84
1.3 Groundwater	1.25				
Weighted Score		0.92	0.92	0.92	0.92
1.4 Surface Water	0.50				
Weighted Score		0.34	0.34	0.34	0.34
Factored Score	5.00	3.09	3.09	3.43	3.43
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	85.00				
2.1 Land Use Planning Policies, Goals, Objectives	8.50				
Weighted Score		5.27	5.27	5.70	5.70
2.2 Land Use / Community	17.00				
Weighted Score		11.95	11.95	11.95	11.08
2.3 Noise Sensitive Areas	12.75				
Weighted Score		4.21	4.21	4.21	0.00
2.4 Agriculture	17.00				
Weighted Score		2.81	2.81	7.02	5.61
2.5 Land Use / Resources	8.50				
Weighted Score		5.97	5.97	5.97	5.97
2.6 Major Utility Transmission Corridors	1.70				
Weighted Score		1.14	1.14	1.14	1.14
2.7 Contaminated Property and Waste Management	1.70				
Weighted Score		0.56	0.56	0.56	0.56
2.8 Landscape Composition	5.10				
Weighted Score		1.68	1.68	1.68	0.00
2.9 Air Quality	12.75				
Weighted Score		8.54	8.54	8.54	8.54
Factored Score	85.00	42.12	42.12	47.67	38.60
3.0 CULTURAL ENVIRONMENT	5.00				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	4.00				
Weighted Score		2.51	0.67	1.83	1.83
3.2 Archaeology	1.00				
Weighted Score		0.67	0.33	0.33	0.33
Factored Score	5.00	3.18	1.00	2.16	2.16
5.0 TRANSPORTATION	5.00				
5.1 Area Transportation System Capacity and Efficiency	0.75				
Weighted Score		0.75	0.75	0.75	0.75
5.2 Area Transportation System Reliability / Redundancy	0.75				
Weighted Score		0.75	0.75	0.75	0.75
5.3 Safety	1.25				
Weighted Score		1.25	1.25	1.25	1.25
5.4 Mobility and Accessibility	0.50				
Weighted Score		0.38	0.38	0.38	0.38
5.5 Network Compatibility	0.25				
Weighted Score		0.25	0.25	0.25	0.23
5.6 Engineering	0.50				
Weighted Score		0.23	0.23	0.23	0.23
5.7 Traffic Operations	0.75				
Weighted Score		0.50	0.50	0.50	0.50
5.8 Construction Cost	0.25				
Weighted Score		0.00	0.00	0.25	0.25
Factored Score	5.00	4.12	4.12	4.37	4.35
Total Alternative Score	100.00	52.51	50.33	57.63	48.54

Land Use / Socio-Economic 85%

	Weighting	Alternative 1	2	3	4
0.25	28.00				
	11.20				
		7.50	7.50	7.50	7.50
	7.00				
		2.79	2.79	4.09	4.09
	7.00				
		5.15	5.15	5.15	5.15
	2.80				
		1.88	1.88	1.88	1.88
	28.00	17.32	17.32	19.22	19.22
2.43	10.00				
	1.00				
		0.62	0.62	0.67	0.67
	2.00				
		1.41	1.41	1.41	1.30
	1.50				
		0.50	0.50	0.50	0.00
	2.00				
		0.33	0.33	0.93	0.66
	1.00				
		0.70	0.70	0.70	0.70
	0.20				
		0.13	0.13	0.13	0.13
	0.20				
		0.07	0.07	0.07	0.07
	0.60				
		0.20	0.20	0.20	0.00
	1.50				
		1.01	1.01	1.01	1.01
	10.00	4.96	4.96	5.61	4.54
0.25	28.00				
	22.40				
		14.06	3.74	10.25	10.25
	5.60				
		3.75	1.85	1.85	1.85
	28.00	17.81	5.59	12.10	12.10
0.2	34.00				
	5.10				
		5.10	5.10	5.10	5.10
	5.10				
		5.10	5.10	5.10	5.10
	8.50				
		8.50	8.50	8.50	8.50
	3.40				
		2.61	2.61	2.61	2.61
	1.70				
		1.70	1.70	1.70	1.59
	3.40				
		1.58	1.58	1.58	1.58
	5.10				
		3.42	3.42	3.42	3.42
	1.70				
		0.00	0.00	1.68	1.68
	34.00	28.01	28.01	29.69	29.58
	100.00	68.09	55.87	66.62	65.44

Cultural 50%

	Weighting	Alternative 1	2	3	4	
1.4	12.50					0.625
	5.00					
		3.35	3.35	3.35	3.35	
	3.13					
		1.24	1.24	2.09	2.09	
	3.13					
		2.30	2.30	2.30	2.30	
	1.25					
		0.84	0.84	0.84	0.84	
	12.50	7.73	7.73	8.58	8.58	
0.29	22.00					0.63
	2.20					
		1.36	1.36	1.47	1.47	
	4.40					
		3.09	3.09	3.09	2.87	
	3.30					
		1.09	1.09	1.09	0.00	
	4.40					
		0.73	0.73	2.05	1.45	
	2.20					
		1.54	1.54	1.54	1.54	
	0.44					
		0.29	0.29	0.29	0.29	
	0.44					
		0.15	0.15	0.15	0.15	
	1.32					
		0.44	0.44	0.44	0.00	
	3.30					
		2.21	2.21	2.21	2.21	
	22.00	10.90	10.90	12.34	9.99	
1.40	50.00					2.50
	40.00					
		25.10	8.68	18.30	18.30	
	10.00					
		6.70	3.30	3.30	3.30	
	50.00	31.80	9.98	21.60	21.60	
1.36	15.50					0.62
	2.33					
		2.33	2.33	2.33	2.33	
	2.33					
		2.33	2.33	2.33	2.33	
	3.88					
		3.88	3.88	3.88	3.88	
	1.55					
		1.19	1.19	1.19	1.19	
	0.78					
		0.78	0.78	0.78	0.72	
	1.55					
		0.72	0.72	0.72	0.72	
	2.33					
		1.56	1.56	1.56	1.56	
	0.78					
		0.00	0.00	0.77	0.77	
	15.50	12.77	12.77	13.54	13.49	
	100.00	63.20	41.38	56.06	53.66	

ALTERNATIVE DESCRIPTIONS

1. A1: 1-3-7-10-12
2. A2: 1-2-3-7-10-12
3. A3: 1-2-4-7-10-12
4. A4: 1-2-4-6-10-12

SEGMENT A - SHAKESPEARE A Cultural 10%

FACTORS	Weighting	Alternative 1	2	3	4
1.0 NATURAL ENVIRONMENT	**22.50**				
1.1 Fisheries and Aquatic Ecosystems	9.00				
Weighted Score		6.03	6.03	6.03	6.03
1.2 Terrestrial Ecosystems	5.63				
Weighted Score		2.24	2.24	3.77	3.77
1.3 Groundwater	5.63				
Weighted Score		4.14	4.14	4.14	4.14
1.4 Surface Water	2.25				
Weighted Score		1.51	1.51	1.51	1.51
Factored Score	**22.50**	**13.92**	**13.92**	**15.45**	**15.45**
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	**39.50**				
2.1 Land Use Planning Policies, Goals, Objectives	3.95				
Weighted Score		2.45	2.45	2.65	2.65
2.2 Land Use / Community	7.90				
Weighted Score		5.55	5.55	5.55	5.15
2.3 Noise Sensitive Areas	5.93				
Weighted Score		1.98	1.98	1.98	0.00
2.4 Agriculture	7.90				
Weighted Score		1.30	1.30	3.69	2.61
2.5 Land Use / Resources	3.95				
Weighted Score		2.77	2.77	2.77	2.77
2.6 Major Utility Transmission Corridors	0.79				
Weighted Score		0.53	0.53	0.53	0.53
2.7 Contaminated Property and Waste Management	0.79				
Weighted Score		0.26	0.26	0.26	0.26
2.8 Landscape Composition	2.37				
Weighted Score		0.78	0.78	0.78	0.00
2.9 Air Quality	5.93				
Weighted Score		3.97	3.97	3.97	3.97
Factored Score	**39.50**	**19.57**	**19.57**	**22.15**	**17.94**
3.0 CULTURAL ENVIRONMENT	**10.00**				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	8.00				
Weighted Score		5.02	1.34	3.66	3.66
3.2 Archaeology	2.00				
Weighted Score		1.34	0.66	0.66	0.66
Factored Score	**10.00**	**6.36**	**2.00**	**4.32**	**4.32**
5.0 TRANSPORTATION	**28.00**				
5.1 Area Transportation System Capacity and Efficiency	4.20				
Weighted Score		4.20	4.20	4.20	4.20
5.2 Area Transportation System Reliability / Redundancy	4.20				
Weighted Score		4.20	4.20	4.20	4.20
5.3 Safety	7.00				
Weighted Score		7.00	7.00	7.00	7.00
5.4 Mobility and Accessibility	2.80				
Weighted Score		2.15	2.15	2.15	2.15
5.5 Network Compatibility	1.40				
Weighted Score		1.40	1.40	1.40	1.31
5.6 Engineering	2.80				
Weighted Score		1.30	1.30	1.30	1.30
5.7 Traffic Operations	4.20				
Weighted Score		2.81	2.81	2.81	2.81
5.8 Construction Cost	1.40				
Weighted Score		0.00	0.00	1.39	1.39
Factored Score	**28.00**	**23.07**	**23.07**	**24.45**	**24.36**
Total Alternative Score	**100.00**	**62.92**	**58.55**	**66.37**	**62.06**

Transportation 20%

Weighting	Alternative 1	2	3	4
1.125 **8.00**				
3.20				
	2.14	2.14	2.14	2.14
2.00				
	0.80	0.80	1.34	1.34
2.00				
	1.47	1.47	1.47	1.47
0.80				
	0.54	0.54	0.54	0.54
8.00	**4.95**	**4.95**	**5.49**	**5.49**
1.12 **14.00**				
1.40				
	0.87	0.87	0.94	0.94
2.80				
	1.97	1.97	1.97	1.83
2.10				
	0.69	0.69	0.69	0.00
2.80				
	0.46	0.46	1.30	0.92
1.40				
	0.98	0.98	0.98	0.98
0.28				
	0.19	0.19	0.19	0.19
0.28				
	0.09	0.09	0.09	0.09
0.84				
	0.28	0.28	0.28	0.00
2.10				
	1.41	1.41	1.41	1.41
14.00	**6.94**	**6.94**	**7.85**	**6.36**
0.50 **8.00**				
6.40				
	4.02	1.07	2.93	2.93
1.60				
	1.07	0.53	0.53	0.53
8.00	**5.09**	**1.60**	**3.46**	**3.46**
1.12 **70.00**				
10.50				
	10.50	10.50	10.50	10.50
10.50				
	10.50	10.50	10.50	10.50
17.50				
	17.50	17.50	17.50	17.50
7.00				
	5.38	5.38	5.38	5.38
3.50				
	3.50	3.50	3.50	3.27
7.00				
	3.25	3.25	3.25	3.25
10.50				
	7.04	7.04	7.04	7.04
3.50				
	0.00	0.00	3.47	3.47
70.00	**57.67**	**57.67**	**61.13**	**60.90**
100.00	**74.64**	**71.15**	**77.93**	**76.21**

Transportation 10%

Weighting	Alternative 1	2	3	4
0.4 **24.00**				
9.60				
	6.43	6.43	6.43	6.43
6.00				
	2.38	2.38	4.02	4.02
6.00				
	4.42	4.42	4.42	4.42
2.40				
	1.61	1.61	1.61	1.61
24.00	**14.84**	**14.84**	**16.48**	**16.48**
0.40 **42.00**				
4.20				
	2.60	2.60	2.81	2.81
8.40				
	5.91	5.91	5.91	5.48
6.30				
	2.08	2.08	2.08	0.00
8.40				
	1.39	1.39	3.91	2.77
4.20				
	2.95	2.95	2.95	2.95
0.84				
	0.56	0.56	0.56	0.56
0.84				
	0.28	0.28	0.28	0.28
2.52				
6.30	0.83	0.83	0.83	0.00
	4.22	4.22	4.22	4.22
42.00	**20.81**	**20.81**	**23.55**	**19.07**
0.40 **24.00**				
19.20				
	12.05	3.20	8.78	8.78
4.80				
	3.22	1.58	1.58	1.58
24.00	**15.26**	**4.79**	**10.37**	**10.37**
2.8 **10.00**				
1.50				
	1.50	1.50	1.50	1.50
1.50				
	1.50	1.50	1.50	1.50
2.50				
	2.50	2.50	2.50	2.50
1.00				
	0.77	0.77	0.77	0.77
0.50				
	0.50	0.50	0.50	0.47
1.00				
	0.46	0.46	0.46	0.46
1.50				
	1.01	1.01	1.01	1.01
0.50				
	0.00	0.00	0.50	0.50
10.00	**8.24**	**8.24**	**8.73**	**8.70**
100.00	**59.16**	**48.68**	**59.13**	**54.62**

SARA

Weighting	Alternative 1	2	3	4
1.2 **10.00**				0.5
4.00				
	2.68	2.68	2.68	2.68
2.50				
	1.00	1.00	1.68	1.68
2.50				
	1.84	1.84	1.84	1.84
1.00				
	0.67	0.67	0.67	0.67
10.00	**6.19**	**6.19**	**6.87**	**6.87**
1.20 **20.00**				0.57
2.00				
	1.24	1.24	1.34	1.34
4.00				
	2.81	2.81	2.81	2.81
3.00				
	0.99	0.99	0.99	0.00
4.00				
	0.66	0.66	1.66	1.32
2.00				
	1.40	1.40	1.40	1.40
0.40				
	0.27	0.27	0.27	0.27
0.40				
	0.13	0.13	0.13	0.13
1.20				
	0.40	0.40	0.40	0.00
3.00				
	2.01	2.01	2.01	2.01
20.00	**9.91**	**9.91**	**11.22**	**9.08**
1.20 **20.00**				1.00
16.00				
	10.04	2.67	7.32	7.32
4.00				
	2.68	1.32	1.32	1.32
20.00	**12.72**	**3.99**	**8.64**	**8.64**
0.4 **50.00**				2
7.50				
	7.50	7.50	7.50	7.50
7.50				
	7.50	7.50	7.50	7.50
12.50				
	12.50	12.50	12.50	12.50
5.00				
	3.85	3.85	3.85	3.85
2.50				
	2.50	2.50	2.50	2.34
5.00				
	2.32	2.32	2.32	2.32
7.50				
	5.03	5.03	5.03	5.03
2.50				
	0.00	0.00	2.48	2.48
50.00	**41.19**	**41.19**	**43.67**	**43.50**
100.00	**70.01**	**61.28**	**70.39**	**68.09**

ALTERNATIVE DESCRIPTIONS
1: A1: 1-3-7-10-12
2: A2: 1-2-3-7-10-12
3: A3: 1-2-4-7-10-12
4: A4: 1-2-4-6-10-12

Segment B: Shakespeare Area Northern Bypasses

Highway 7&8 Transportation Corridor Planning and Class EA Study

EVALUATION OF ROUTE ALTERNATIVES

Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES

Factor / Sub Factor	Criteria	Indicator for Route Selection	Route Alternative			
			B1 **1-2-4-5-11-13-15**	**B2** **1-2-4-5-9-11-13-15**	**B3** **1-2-4-6-8-9-11-13-15**	**B4** **1-2-4-6-8-11-13-15**
1. NATURAL ENVIRONMENTAL FACTORS						
1.1 Fisheries and Aquatic Ecosystems						
	1.1.1 Fish Habitat	Potential and significance of: • encroachment, severance, displacement; • long term alteration / disruption as applicable to the following: • critical fish habitat features • riparian areas • habitat rehabilitation goals	**Low** potential to affect fish and fish habitat • 2 permanent warmwater and 1 permanent coolwater crossings of Horner Creek containing low to moderate quality habitat supporting warmwater fish species • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Fish movements are likely localized between feeding and spawning areas which are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route. • There are no SAR within the route • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated.	**Low** potential to affect fish and fish habitat • 2 permanent warmwater and 1 permanent coolwater crossings of Horner Creek containing low to moderate quality habitat supporting warmwater fish species • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Fish movements are likely localized between feeding and spawning areas which are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route. • There are no SAR within the route • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated.	**Low** potential to affect fish and fish habitat • 2 permanent warmwater and 1 permanent coolwater crossings of Horner Creek containing low to moderate quality habitat supporting warmwater fish species • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Fish movements are likely localized between feeding and spawning areas which are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route. • There are no SAR within the route • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated.	**Low** potential to affect fish and fish habitat • 2 permanent warmwater and 1 permanent coolwater crossings of Horner Creek containing low to moderate quality habitat supporting warmwater fish species • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Fish movements are likely localized between feeding and spawning areas which are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route. • There are no SAR within the route • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated.
	1.1.2 Fish Community	Potential and significance of: • encroachment, severance, displacement; • long term alteration / disruption as applicable to the following: • fish species at risk (vulnerable, threatened or endangered fish species) • fish movement/migration • critical fish life stage processes (spawning, rearing, nursery, feeding) • long term fish community management goals				
1.2 Terrestrial Ecosystems						
	1.2.1 Wildlife	Potential and significance of: • encroachment, severance, displacement; • long term alteration / disruption as applicable to the following: • wildlife species at risk (vulnerable, threatened or endangered wildlife species) • wildlife of local and regional importance • migratory birds • critical wildlife habitat features • ecologically functional areas such as connective corridors or travel ways for movement/migration	**Medium** potential to affect wildlife and their habitat • 1 threatened amphibian species was reported within or adjacent to the route • No provincially rare species (S1 – S3) • 1 area sensitive bird species recorded within route • Route has the potential to encroach on wetland habitat supporting a threatened species	**Medium** potential to affect wildlife and their habitat • 1 threatened amphibian species was reported within or adjacent to the route species (S1 – S3) • 1 area sensitive bird species recorded within route • Route has the potential to encroach on wetland habitat supporting a threatened species	**Medium** potential to affect wildlife and their habitat • 1 threatened amphibian species was reported within or adjacent to the route • No provincially rare species (S1 – S3) • 1 area sensitive bird species recorded within route • Route has the potential to encroach on wetland habitat supporting a threatened species	**Medium** potential to affect wildlife and their habitat • 1 threatened amphibian species was reported within or adjacent to the route • No provincially rare species (S1 – S3) • 1 area sensitive bird species recorded within route • Route has the potential to encroach on wetland habitat supporting a threatened species

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES

Factor / Sub Factor	Criteria	Indicator for Route Selection	Route Alternative			
			B1 **1-2-4-5-11-13-15**	**B2** **1-2-4-5-9-11-13-15**	**B3** **1-2-4-6-8-9-11-13-15**	**B4** **1-2-4-6-8-11-13-15**
		• important wildlife areas such as deeryards, heronries, waterfowl areas, important bird areas • wildlife management, rehabilitation/research program sites • interference with critical wildlife life stage processes (eg mating/rearing) etc				
	1.2.2 Wetlands	Potential and significance of: • encroachment, severance, displacement; • long term alteration / disruption as applicable to the following: • provincially significant wetlands, their buffer areas, and their wetland function • evaluated and unevaluated wetlands, their wetland buffer areas, and their wetland function • wetland management, research and/or wetland conservation programs/areas	**Low** potential to affect wetlands • No PSW or LSW are present within the route • 3 small unevaluated low quality wetlands such as meadow marsh are found within the route	**Low** potential to affect wetlands • No PSW or LSW are present within the route • 3 small unevaluated low quality wetlands such as meadow marsh are found within the route	**Low** potential to affect wetlands • No PSW or LSW are present within the route • 3 small unevaluated low quality wetlands such as meadow marsh are found within the route	**Low** potential to affect wetlands • No PSW or LSW are present within the route • 3 small unevaluated low quality wetlands such as meadow marsh are found within the route
	1.2.3 Forests	Potential and significance of: • encroachment, severance, displacement; • long term alteration / disruption as applicable to the following: • significant woodlands / valley lands • forest management / research program areas	**Low** potential to affect significant or established woodlands of forests • The route will require a minimal removal of vegetation from 2 woodlands • Impacts to woodlands limited to encroachment on forest edge	**Low** potential to affect significant or established woodlands of forests • The route will require a minimal removal of vegetation from 2 woodlands • Impacts to woodlands limited to encroachment on forest edge	**Low** potential to affect significant or established woodlands of forests • The route will require a minimal removal of vegetation from 2 woodlands • Impacts to woodlands limited to encroachment on forest edge	**Low** potential to affect significant or established woodlands of forests • The route will require a minimal removal of vegetation from 3 woodlands • 1 woodland is a plantation • Impacts to woodlands limited to encroachment on forest edge
	1.2.4 Vegetation	Potential and significance of: • encroachment, severance, displacement • long term alteration / disruption as applicable to the following: • populations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant regional/local flora/communities • areas/corridors supporting known populations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant flora/communities • vegetation management, rehabilitation/research program sites	**Low** potential to affect vegetation • Route is predominantly agricultural field and existing roadway • Impacts to vegetation associated with encroachment into low quality wetland habitat	**Low** potential to affect vegetation • Route is predominantly agricultural field and existing roadway • Impacts to vegetation associated with encroachment into low quality wetland habitat	**Low** potential to affect vegetation • Route is predominantly agricultural field and existing roadway • Impacts to vegetation associated with encroachment into low quality wetland habitat	**Low** potential to affect vegetation • Route is predominantly agricultural field and existing roadway • Impacts to vegetation associated with encroachment into low quality wetland habitat

LEGEND

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SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES

Factor / Sub Factor	Criteria	Indicator for Route Selection	Route Alternative			
			B1 1-2-4-5-11-13-15 (Selected Corridor)	**B2 1-2-4-5-9-11-13-15**	**B3 1-2-4-6-8-9-11-13-15**	**B4 1-2-4-6-8-11-13-15**
	1.2.5 Designated/ Special Areas	Potential and significance of: • encroachment, severance, displacement; • long term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to designated/special areas.	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI
1.3 Groundwater						
	1.3.1 Areas of Groundwater 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	(Most Preferred) **Low** potential to adversely affect groundwater recharge and discharge areas. • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings, higher infiltration can be expected. • Route intersects the 25 year capture zone (recharge area) for Shakespeare's Municipal well. • No temporary or long term change to groundwater recharge or discharge is anticipated due to the small surface area affected by the route.	(Most Preferred) **Low** potential to adversely affect groundwater recharge and discharge areas. • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings, higher infiltration can be expected. • Route intersects the 25 year capture zone (recharge area) for Shakespeare's Municipal well. • No temporary or long term change to groundwater recharge or discharge is anticipated due to the small surface area affected by the route.	(Most Preferred) **Low** potential to adversely affect groundwater recharge and discharge areas. • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings, higher infiltration can be expected. • Route intersects the 25 year capture zone (recharge area) for Shakespeare's Municipal well. • No temporary or long term change to groundwater recharge or discharge is anticipated due to the small surface area affected by the route.	(Moderately Preferred) **Medium** potential to adversely affect groundwater recharge and discharge areas. • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings, higher infiltration can be expected. • Route intersects the 10 year capture zone (recharge area) for Shakespeare's Municipal well. • No temporary or long term change to groundwater recharge or discharge is anticipated due to the small surface area affected by the route.
	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	(Moderately Preferred) **Medium** potential to adversely affect groundwater quality within wellhead protection area • The proposed route is located within the 25 year capture zone (recharge area) for the Shakespeare municipal well. • Runoff control and road salt use should be mitigated within this area.	(Moderately Preferred) **Medium** potential to adversely affect groundwater quality within wellhead protection area • The proposed route is located within the 25 year capture zone (recharge area) for the Shakespeare municipal well. • Runoff control and road salt use should be mitigated within this area.	(Moderately Preferred) **Medium** potential to adversely affect groundwater quality within wellhead protection area • The proposed route is located within the 25 year capture zone (recharge area) for the Shakespeare municipal well. • Runoff control and road salt use should be mitigated within this area.	(Least Preferred) **High** potential to adversely affect groundwater quality within wellhead protection area. • The proposed route is located within the 10 year capture zone (recharge area) for the Shakespeare municipal well. • Runoff control and road salt use should be mitigated within this area.
	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	(Moderately Preferred) **Medium** potential to adversely affect groundwater quality within wellhead protection area. • Route is located within the 25 year capture zone (recharge area) for the	(Moderately Preferred) **Medium** potential to adversely affect groundwater quality within wellhead protection area. • Route is located within the 25 year capture zone (recharge area) for the	(Moderately Preferred) **Medium** potential to adversely affect groundwater quality within wellhead protection area. • Route is located within the 25 year capture zone (recharge area) for the	(Least Preferred) **High** potential to adversely affect groundwater quality within wellhead protection area. • Route is located within the 10 year capture zone (recharge area) for the

LEGEND

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SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES						
Factor / Sub Factor	Criteria	Indicator for Route Selection	Route Alternative			
			B1 1-2-4-5-11-13-15	B2 1-2-4-5-9-11-13-15	B3 1-2-4-6-8-9-11-13-15	B4 1-2-4-6-8-11-13-15
			Shakespeare municipal well. • Runoff control and road salt use should be mitigated within this area.	Shakespeare municipal well. • Runoff control and road salt use should be mitigated within this area.	Shakespeare municipal well. • Runoff control and road salt use should be mitigated within this area.	Shakespeare municipal well. • Runoff control and road salt use should be mitigated within this area.
	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	**Low** potential to adversely affect private wells • Route is in close proximity to 3 shallow dug wells completed within surficial sand deposits. These wells are located immediately to the west of Road 105 and immediately to the south along Road 106, along the existing Hwy 7/8 Route. • These wells are sensitive to surface contamination (i.e. road salt). The potential exists for long term and short term adverse effects to these wells due to their close proximity to the route. • Mitigation measures to prevent or eliminate adverse impacts to these wells due to highway construction should be implemented. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer	**Low** potential to adversely affect private wells • Route is in close proximity to 3 shallow dug wells completed within surficial sand deposits. These wells are located immediately to the west of Road 105 and immediately to the south along Road 106, along the existing Hwy 7/8 Route. • These wells are sensitive to surface contamination (i.e. road salt). The potential exists for long term and short term adverse effects to these wells due to their close proximity to the route. • Mitigation measures to prevent or eliminate adverse impacts to these wells due to highway construction should be implemented. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer	**Low** potential to adversely affect private wells • Route is in close proximity to 3 shallow dug wells completed within surficial sand deposits. These wells are located immediately to the west of Road 105 and immediately to the south along Road 106, along the existing Hwy 7/8 Route. • These wells are sensitive to surface contamination (i.e. road salt). The potential exists for long term and short term adverse effects to these wells due to their close proximity to the route. • Mitigation measures to prevent or eliminate adverse impacts to these wells due to highway construction should be implemented. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer	**Low** potential to adversely affect private wells • Route is in close proximity to 3 shallow dug wells completed within surficial sand deposits. These wells are located immediately to the west of Road 105 and immediately to the south along Road 106, along the existing Hwy 7/8 Route. • These wells are sensitive to surface contamination (i.e. road salt). The potential exists for long term and short term adverse effects to these wells due to their close proximity to the route. • Mitigation measures to prevent or eliminate adverse impacts to these wells due to highway construction should be implemented. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer
	1.3.5 Groundwater Dependent Commercial Enterprises (e.g. water bottling operations)	Potential and significance of alteration to groundwater use by groundwater dependent commercial enterprises due to physical intrusion, or groundwater interception, draw down, impoundment, obstruction and by soil compaction	**No** potential to adversely affect groundwater dependent commercial enterprises • No groundwater dependent commercial enterprises have been identified along this route.	**No** potential to adversely affect groundwater dependent commercial enterprises • No groundwater dependent commercial enterprises have been identified along this route.	**No** potential to adversely affect groundwater dependent commercial enterprises • No groundwater dependent commercial enterprises have been identified along this route.	**No** potential to adversely affect groundwater dependent commercial enterprises • No groundwater dependent commercial enterprises have been identified along this route.
	1.3.6 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	**Low** potential to adversely affect groundwater sensitive ecosystems • Alteration to three (3) existing crossings of potentially groundwater fed streams. • Possible encroachment on an unevaluated wetland (i.e. not identified as provincially or locally significant). • Potential long term adverse effect to groundwater quality due to increased road salt use and road run off.	**Low** potential to adversely affect groundwater sensitive ecosystems • Alteration to three (3) existing crossings of potentially groundwater fed streams. • Potential long term adverse effect to groundwater quality due to increased road salt use and road run off. • Potential temporary effects to groundwater quantity are possible if construction dewatering is required.	**Low** potential to adversely affect groundwater sensitive ecosystems • Alteration to three (3) existing crossings of potentially groundwater fed streams. • Potential long term adverse effect to groundwater quality due to increased road salt use and road run off. • Potential temporary effects to groundwater quantity are possible if construction dewatering is required.	**Low** potential to adversely affect groundwater sensitive ecosystems • Alteration to three (3) existing crossings of potentially groundwater fed streams. • Potential long term adverse effect to groundwater quality due to increased road salt use and road run off. • Potential temporary effects to groundwater quantity are possible if construction dewatering is required.

LEGEND

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SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES

Factor / Sub Factor	Criteria	Indicator for Route Selection	Route Alternative			
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			• Potential temporary effects to groundwater quantity are possible if construction dewatering is required.			
1.4 Surface Water						
	1.4.1 Watershed / Sub Watershed Drainage Features/Patterns	Potential and significance of: • encroachment, severance, displacement; • long term alteration / disruption. as applicable to the following: • watercourse crossings (permanent, intermittent and ephemeral) • floodplain or meander belts • riparian areas • sensitive headwater areas • watershed and subwatershed management plans	**Medium** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 3 watercourses • Route encroaches on Easthope Moraine	**Medium** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 3 watercourses • Route encroaches on Easthope Moraine	**Medium** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 3 watercourses • Route encroaches on Easthope Moraine	**Medium** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 3 watercourses • Route encroaches on Easthope Moraine
	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 Potential and significance of impacts on hydrology due to changes in ground permeability, modifications to surface drainage patterns and alterations of water bodies				
2. LAND USE / SOCIO ECONOMIC FACTORS						
2.1 Land Use Planning Policies, Goals, Objectives						
	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	**Low** potential to displace areas where there are outstanding First Nations lands claims. • 5 First Nations land claims have been filed in the study area	**Low** potential to displace areas where there are outstanding First Nations lands claims. • 5 First Nations land claims have been filed in the study area	**Low** potential to displace areas where there are outstanding First Nations lands claims. • 5 First Nations land claims have been filed in the study area	**Low** potential to displace areas where there are outstanding First Nations lands claims. • 5 First Nations land claims have been filed in the study area
	2.1.2 Provincial/ Federal land use planning policies/ goals/objectives	Degree of compatibility with federal/provincial land use policies/goals/objectives NOTES: PPS Policy 1.6.6.4 stipulates that when planning for corridors for significant transportation facilities, consideration will be given to significant natural heritage, water, agricultural, mineral, cultural heritage and archaeological resources.	**Low** compatibility with federal/ provincial land use policies/goals • Route is predominantly on new alignment which results in increased impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area	**Low** compatibility with federal/ provincial land use policies/goals • Route is predominantly on new alignment which results in increased impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area	**Low** compatibility with federal/ provincial land use policies/goals • Route is predominantly on new alignment which results in increased impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area	**Low** compatibility with federal/ provincial land use policies/goals • Route is predominantly on new alignment which results in increased impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area

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SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES						
Factor / Sub Factor	**Criteria**	**Indicator for Route Selection**	**Route Alternative**			
			B1 **1-2-4-5-11-13-15**	**B2** **1-2-4-5-9-11-13-15**	**B3** **1-2-4-6-8-9-11-13-15**	**B4** **1-2-4-6-8-11-13-15**
		PPS Policy 2.3 requires prime agricultural areas be protected for long-term use. Prime agricultural areas include specialty crop areas and Classes 1, 2, and 3 soils in this order of priority.				
	2.1.3 Municipal (regional and local) land use planning policies/goals/ objectives (Official Plans)	Degree of compatibility with municipal Official Plans	**Medium** compatibility with municipal Official Plans. • The route impacts agricultural designated lands in County of Perth O.P. Although the route does not directly service the Village of Shakespeare settlement area, it is consistent with County of Perth 6.5.1 e) to preserve the natural setting and rural character of village/hamlet areas.	**Medium** compatibility with municipal Official Plans. • The route impacts agricultural designated lands in County of Perth O.P. Although the route does not directly service the Village of Shakespeare settlement area, it is consistent with County of Perth 6.5.1 e) to preserve the natural setting and rural character of village/hamlet areas.	**Medium** compatibility with municipal Official Plans. • The route impacts agricultural designated lands in County of Perth O.P. Although the route does not directly service the Village of Shakespeare settlement area, it is consistent with County of Perth 6.5.1 e) to preserve the natural setting and rural character of village/hamlet areas.	**Medium** compatibility with municipal Official Plans. • The route impacts agricultural designated lands in County of Perth O.P. Although the route does not directly service the Village of Shakespeare settlement area, it is consistent with County of Perth 6.5.1 e) to preserve the natural setting and rural character of village/hamlet areas.
	2.1.4 Development Objectives of Private Property Owners	Potential to isolate property from current/future urban envelope Impact on future land use	**Low** potential to impact future land use • Route alternative does not limit the potential for future development which is contiguous with the existing Shakespeare community.	**Low** potential to impact future land use • Route alternative does not limit the potential for future development which is contiguous with the existing Shakespeare community.	**Medium** potential to impact future land use • Route alternative limits the potential for future development which is contiguous with the existing Shakespeare community	**Medium** potential to impact future land use • Route alternative limits the potential for future development which is contiguous with the existing Shakespeare community
2.2 Land Use / Community						
	2.2.1 First Nation Reserves	Potential and significance of: • encroachment, severance, displacement; • long term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time. to First Nation Reserves	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area
	2.2.2 First Nations' Sacred Grounds	Potential and significance of: • encroachment, severance, displacement; • long term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time. to First Nations' sacred grounds	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area

LEGEND

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SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES

Factor / Sub Factor	Criteria	Indicator for Route Selection	Route Alternative			
			B1 **1-2-4-5-11-13-15**	**B2** **1-2-4-5-9-11-13-15**	**B3** **1-2-4-6-8-9-11-13-15**	**B4** **1-2-4-6-8-11-13-15**
	2.2.3 Urban and Rural Residential	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long term alteration / disruption (e.g. loss of parking area); • change in area character / aesthetics (e.g. loss of trees/garden area); • nuisance impacts (e.g. intrusion of highway into current residential envelope); • change to access / travel time; • change to facilities / utilities / services; • interference with residential community cohesion; • change to highway operational impacts (e.g. snow storage and highway access visibility). to urban and rural residential areas (residents [owners/tenants] and community groups).	**Low** potential for impacts to urban and rural residential areas • Loss of some residential frontage (property acquisition) along existing right of way between Roads 104 and 106. No long term alteration/disruption to residence or farm buildings. Likely nuisance impacts to this property. • Loss of some horse-training area (property acquisition and displacement of residence) at residence/business. • Loss of some residential/farm property (property acquisition) throughout • Loss of residential frontage (property acquisition) along existing right-of-way west of Shakespeare village (4 residences) • Loss/encroachment into residential envelope of some residential property on the north western residential portion of Shakespeare east of Road 108. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages, and does not reduce highway setback in the village with associated feeling of “highway intrusion” and reduces front yard aesthetics. • Field observation identified no change to facilities / utilities / services.	**Medium** potential for impacts to urban and rural residential areas • Loss of some residential frontage (property acquisition) along existing right-of-way between Roads 104 and 106. No long term alteration/disruption to residence or farm buildings. Likely nuisance impacts to this property. • Loss of some horse-training area (property acquisition and displacement of residence) at residence/business. • Loss of mature hedgerow and landscaped trees and property (acquisition) at residence on Perth Road 107. • Loss of some residential/farm property (property acquisition) throughout • Loss/encroachment into residential envelope of Shakespeare west of Perth Road 107. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages, and does not reduce highway setback in the village with associated feeling of “highway intrusion” and reduces front yard aesthetics. • Field observation identified no change to facilities / utilities / services.	**Medium** potential for impacts to urban and rural residential areas • Loss of some residential frontage (property acquisition) along existing right-of-way between Roads 104 and 106 and west of Road 106. No long term alteration/disruption to residence or farm buildings. Likely nuisance impacts to this property. • Loss of entire residence east of Shakespeare (property acquisition and displacement of residence). • Loss of mature hedgerow and landscaped trees and property (acquisition) at residence on Perth Road 107. • Loss of some residential/farm property throughout (property acquisition) • Loss of residential frontage (property acquisition) along existing right-of-way west of Shakespeare village (4 residences) • Loss/encroachment into residential envelope of Shakespeare west of Perth Road 107. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages, and does not reduce highway setback in the village with associated feeling of “highway intrusion” and reduces front yard aesthetics. • Field observation identified no change to facilities / utilities / services.	**Medium** potential for impacts to urban and rural residential areas • Loss of some residential frontage along right-of-way between Roads 104 and 106 and west of Road 106. No long term alteration/disruption to residence or farm buildings. Likely nuisance impacts to this property. • Loss of entire residence east of Shakespeare (property acquisition and displacement of residence). • Loss (property acquisition) of driveway immediately adjacent to barns on residential property (G) between immediately north of Shakespeare. • Encroachment near to residential area in portion of Shakespeare. Likely nuisance impacts to this area. • Loss of some residential/farm property throughout (property acquisition) • Loss of residential frontage (property acquisition) along existing right-of-way west of Shakespeare village (4 residences) • Loss/encroachment into residential envelope of Shakespeare west of Perth Road 107. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages, and does not reduce highway setback in the village with associated feeling of “highway intrusion” and reduces front yard aesthetics. • Field observation identified no change to facilities / utilities / services.
	2.2.4 Commercial / Industrial	Potential and significance of: • encroachment, severance, displacement, property acquisition;	**Medium** potential for impacts to commercial and industrial areas • Encroachment on one trucking	**Medium** potential for impacts to commercial and industrial areas • Encroachment on one trucking	**Medium** potential for impacts to commercial and industrial areas • Encroachment on one trucking	**Medium** potential for impacts to commercial and industrial areas • Encroachment on one trucking

LEGEND

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SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES

Factor / Sub Factor	Criteria	Indicator for Route Selection	Route Alternative			
			B1 1-2-4-5-11-13-15	**B2 1-2-4-5-9-11-13-15**	**B3 1-2-4-6-8-9-11-13-15**	**B4 1-2-4-6-8-11-13-15**
		• long term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services; • interference with commercial community cohesion; • change to highway operation impacts (e.g. customer parking, cargo loading/off loading). to commercial and industrial areas (business owners/tenants and customers).	business east of Road 108 (property acquisition). No long term alteration /disruption anticipated at this property. No nuisance effects likely as it is already located on the existing right of way. • Encroachment/loss (property acquisition) of training area for stables located just west of Road 106. Long term alteration/disruption/ nuisance effects likely to this business. • Field observation identified no change to facilities / utilities / services. • No change to commercial and industrial areas (business owners/tenants and customers). • Bypass of the village reduces drive-by exposure of commercial businesses (e.g. restaurants and gas station) for potential out-of-town customers, and reduces commercial vehicle accessibility, but makes the shopping experience in the village more attractive, and does not impact parking opportunities. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages.	business east of Road 108 (property acquisition). No long term alteration /disruption anticipated at this property. No nuisance effects likely as it is already located on the existing right of way. • Encroachment/loss (property acquisition) of training area for stables located just west of Road 106 Long term alteration/disruption/ nuisance effects likely to this business. • Field observation identified no change to facilities / utilities / services. • No change to commercial and industrial areas (business owners/tenants and customers). • Bypass of the village reduces drive-by exposure of commercial businesses (e.g. restaurants and gas station) for potential out-of-town customers, and reduces commercial vehicle accessibility, but makes the shopping experience in the village more attractive, and does not impact parking opportunities. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages.	business east of Road 108 (property acquisition). No long term alteration /disruption anticipated at this property. No nuisance effects likely as it is already located on the existing right of way. • Encroachment/loss (property acquisition) of training area for stables located just west of Road 106. Long term alteration/disruption/ nuisance effects likely to this business. • Field observation identified no change to facilities / utilities / services. • No change to commercial and industrial areas (business owners/tenants and customers). • Bypass of the village reduces drive-by exposure of commercial businesses (e.g. restaurants and gas station) for potential out-of-town customers, and reduces commercial vehicle accessibility, but makes the shopping experience in the village more attractive, and does not impact parking opportunities. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages.	business east of Road 108 (property acquisition). No long term alteration /disruption anticipated at this property. No nuisance effects likely as it is already located on the existing right of way. • Encroachment/loss (property acquisition) of training area for stables located just west of Road 106. Long term alteration/disruption/ nuisance effects likely to this business. • Field observation identified no change to facilities / utilities / services. • No change to commercial and industrial areas (business owners/tenants and customers). • Bypass of the village reduces drive-by exposure of commercial businesses (e.g. restaurants and gas station) for potential out-of-town customers, and reduces commercial vehicle accessibility, but makes the shopping experience in the village more attractive, and does not impact parking opportunities. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages.
	2.2.5 Tourist Areas and Attractions (e.g. museums, theatres, etc.)	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services; • loss of "critical mass" in number of signature business attractions (e.g. number of antique shops).	**Low** potential for impacts to tourist areas and attractions • No change or impacts to tourist areas and attractions in terms of any property encroachment or acquisition. • No nuisance impacts anticipated given absence of any tourist attractions or areas along this alternative. • No signature business attractions (none along this alternative)	**Low** potential for impacts to tourist areas and attractions • No change or impacts to tourist areas and attractions in terms of any property encroachment or acquisition. • No nuisance impacts anticipated given absence of any tourist attractions or areas along this alternative. • No signature business attractions (none along this alternative)	**Low** potential for impacts to tourist areas and attractions • No change or impacts to tourist areas and attractions in terms of any property encroachment or acquisition. • No nuisance impacts anticipated given absence of any tourist attractions or areas along this alternative. • No signature business attractions (none along this alternative)	**Low** potential for impacts to tourist areas and attractions • No change or impacts to tourist areas and attractions in terms of any property encroachment or acquisition. • No nuisance impacts anticipated given absence of any tourist attractions or areas along this alternative. • No signature business attractions (none along this alternative)

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES

Factor / Sub Factor	Criteria	Indicator for Route Selection	Route Alternative			
			B1 **1-2-4-5-11-13-15**	**B2** **1-2-4-5-9-11-13-15**	**B3** **1-2-4-6-8-9-11-13-15**	**B4** **1-2-4-6-8-11-13-15**
		to tourist areas and attractions.	• Bypass of the village reduces drive-by exposure of tourist attractions (e.g. shops and boutiques) for potential out-of-town customers, but makes the tourist experience in the village more attractive, and does not impact parking opportunities. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages. • Field observation identified no change to facilities / utilities / services.	• Bypass of the village reduces drive-by exposure of tourist attractions (e.g. shops and boutiques) for potential out-of-town customers, but makes the tourist experience in the village more attractive, and does not impact parking opportunities. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages. • Field observation identified no change to facilities / utilities / services.	• Bypass of the village reduces drive-by exposure of tourist attractions (e.g. shops and boutiques) for potential out-of-town customers, but makes the tourist experience in the village more attractive, and does not impact parking opportunities. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages. • Field observation identified no change to facilities / utilities / services.	• Bypass of the village reduces drive-by exposure of tourist attractions (e.g. shops and boutiques) for potential out-of-town customers, but makes the tourist experience in the village more attractive, and does not impact parking opportunities. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages. • Field observation identified no change to facilities / utilities / services.
	2.2.6 Community Facilities / Institutions (e.g. hospitals, schools, places of worship, unique community features)	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services • change to ease and safety of pedestrian movements across the highway and within the highway right of way; • change to highway operation impacts to current use (e.g. highway noise and vibration interfering with church services). to community facilities and institutions.	**Medium** potential for impacts to community facilities and institutions • Bypassing the village avoids further isolating the school, community centre facilities and church from residents on the opposite side of the highway. However, traffic destined to the new route from the south must pass through Shakespeare to access the route. • Field observation identified no change to facilities / utilities / services.	**Medium** potential for impacts to community facilities and institutions • Bypassing the village avoids further isolating the school, community centre facilities and church from residents on the opposite side of the highway. However, traffic destined to the new route from the south must pass through Shakespeare to access the route. • Field observation identified no change to facilities / utilities / services.	**Medium** potential for impacts to community facilities and institutions • Bypassing the village avoids further isolating the school, community centre facilities and church from residents on the opposite side of the highway. However, traffic destined to the new route from the south must pass through Shakespeare to access the route. • Field observation identified no change to facilities / utilities / services.	**Medium** potential for impacts to community facilities and institutions • Bypassing the village avoids further isolating the school, community centre facilities and church from residents on the opposite side of the highway. However, traffic destined to the new route from the south must pass through Shakespeare to access the route. • Field observation identified no change to facilities / utilities / services.
	2.2.7 Municipal Infrastructure and Public Service Facilities (e.g. sewage and water services, police/emergency services, local utilities)	Potential and significance of: • encroachment, severance, displacement; • long term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. to municipal infrastructure and public service facilities.	**Low** potential for impacts to municipal infrastructure / public service facilities • Bypass of village would not lengthen response times to locations outside the village unless Hwy 7&8 direct access is not retained at the east and west village limits. • Potential encroachment (property acquisition) to communications tower located west of Road 106. • From field observations, no other impacts to municipal infrastructure and public service facilities expected	**Low** potential for impacts to municipal infrastructure / public service facilities • Bypass of village would not lengthen response times to locations outside the village unless Hwy 7&8 direct access is not retained at the east and west village limits. • Potential encroachment (property acquisition) to communications tower located west of Road 106. • From field observations, no other impacts to municipal infrastructure and public service facilities expected	**Low** potential for impacts to municipal infrastructure / public service facilities • Bypass of village would not lengthen response times to locations outside the village unless Hwy 7&8 direct access is not retained at the east and west village limits. • From field observations, no other impacts to municipal infrastructure and public service facilities expected	**Low** potential for impacts to municipal infrastructure / public service facilities • Bypass of village would not lengthen response times to locations outside the village unless Hwy 7&8 direct access is not retained at the east and west village limits. • From field observations, no other impacts to municipal infrastructure and public service facilities expected

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study EVALUATION OF ROUTE ALTERNATIVES Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.						
SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES						
Factor / Sub Factor	**Criteria**	**Indicator for Route Selection**	**Route Alternative**			
			B1 **1-2-4-5-11-13-15**	**B2** **1-2-4-5-9-11-13-15**	**B3** **1-2-4-6-8-9-11-13-15**	**B4** **1-2-4-6-8-11-13-15**
	2.2.8 Downtown Historic Crossroads Function	Potential and significance of interference by long distance through traffic on: • "main street" function and structure; • character/aesthetics; • change to ease and safety of pedestrian movements across the highway and within the highway right of way; • change to on street parking in the historic downtown area	**Low** potential for interference in the historic downtown area • Bypass of the village reduces long distance traffic though the village and provides the opportunity to improve the shopping/socializing experience in the village, and does not impact parking opportunities.	**Low** potential for interference in the historic downtown area • Bypass of the village reduces long distance traffic though the village and provides the opportunity to improve the shopping/socializing experience in the village, and does not impact parking opportunities.	**Low** potential for interference in the historic downtown area • Bypass of the village reduces long distance traffic though the village and provides the opportunity to improve the shopping/socializing experience in the village, and does not impact parking opportunities.	**Low** potential for interference in the historic downtown area • Bypass of the village reduces long distance traffic though the village and provides the opportunity to improve the shopping/socializing experience in the village, and does not impact parking opportunities.
2.3 Noise Sensitive Areas (NSAs) (residential areas and sensitive institutional uses)						
	2.3.1 Highway Noise	Potential for significant traffic noise increases in NSAs and for noise sensitive receivers immediately adjacent to the highway.	**Low** potential for significant noise increases • Potential noise impacts of 65 dBA or a 5 dB increase are expected for about 40 NSAs within the area of influence. • A decrease of noise impacts by 5 dB or more is expected for about 45 NSAs due to reduced traffic on the roadway that is currently Hwy 7/8.	**Medium** potential for significant noise increases • Potential noise impacts of 65 dBA or a 5 dB increase are expected for about 75 NSAs within the area of influence. This alternative is closer to the NSAs than B1. • A decrease of noise impacts by 5 dB or more is expected for approximately 40 NSAs due to reduced traffic on the roadway that is currently Hwy 7/8.	**Medium** potential for significant noise increases • Potential noise impacts of 65 dBA or a 5 dB increase are expected for about 80 NSAs within the area of influence. This alternative is closer to more NSAs than B1 and B2. • A decrease of noise impacts by 5 dB or more is expected for approximately 40 NSAs due to reduced traffic on the roadway that is currently Hwy 7/8.	**High** potential for significant noise increases • Potential noise impacts of 65 dBA or a 5 dB increase are expected for about 65 NSAs within the area of influence. The proximity to the closest NSAs will cause the most significant impacts of the "B" alternatives. • A decrease of noise impacts by 5 dB or more is expected for about 35 NSAs due to reduced traffic on the roadway that is currently Hwy 7/8.
	2.3.2 Construction Noise	To be considered during Preliminary Design phase				
2.4 Agriculture						
	2.4.1 Agriculture Canada Land Inventory Class 1,2,3 Land	Potential and significance of encroachment, severance of Canada Land Inventory Classes 1, 2 and 3 soils	**High** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 35 hectares of Class 1 / 2 soil	**High** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 34 hectares of Class 1 / 2 soil	**High** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 34 hectares of Class 1 / 2 soil	**High** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 34 hectares of Class 1 / 2 soil
	2.4.2 Agriculture – Farm Infrastructure	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • nuisance impacts; to farm infrastructure (field tile drainage systems/outlets, irrigation systems, barns / silos/ structures, etc.)	**Medium** potential impacts on farm infrastructure • 2 encroachments on farm infrastructure, 1 just west of Road 106 and 1 between Road 107 and Road 108 • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified	**Medium** potential impacts on farm infrastructure • 3 encroachments on farm infrastructure, 1 just west of Road 106, 1 on Road 107 and 1 between Road 107 and Road 108 • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified	**High** potential impacts on farm infrastructure • 3 encroachments on farm infrastructure, 1 just west of Road 106, 1 on Road 107 and 1 between Road 107 and Road 108 • Displaces infrastructure on 1 operation between Road 106 and Perth Road 107 • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are	**High** potential impacts on farm infrastructure • 3 encroachments on farm infrastructure, 1 just west of Road 106, 1 on Road 107 and 1 between Road 107 and Road 108 • Displaces infrastructure on 1 operation between Road 106 and Perth Road 107 • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study
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SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES

Factor / Sub Factor	Criteria	Indicator for Route Selection	Route Alternative			
			B1 **1-2-4-5-11-13-15**	**B2** **1-2-4-5-9-11-13-15**	**B3** **1-2-4-6-8-9-11-13-15**	**B4** **1-2-4-6-8-11-13-15**
			and mitigation concepts for these impacts will be developed during preliminary design	and mitigation concepts for these impacts will be developed during preliminary design	anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified and mitigation concepts for these impacts will be developed during preliminary design	anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified and mitigation concepts for these impacts will be developed during preliminary design
	2.4.3 Agriculture – Operations on Individual Farms	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • nuisance impacts; to in-farm field operations (planting, harvesting, grazing, nutrient management, etc.) as applicable to the following: • Specialty crops/cropland • Dairy/livestock operations • Field crop operations • High investment agricultural operations • Established agricultural farm communities	**High** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established agricultural community including: - Minor frontage impacts and encroachment on lands of 4 operations west of Road 104, all of which are believed to cash crop and livestock operations - Severs 7 parcels between Road 106 and Road 108 - 2 parcels where nutrient management has been reported by the farmer are impacted significantly - 3 parcels where nutrient management has been reported by the farmer are impacted slightly - 1 parcel where nutrient management is assumed to occur in association with livestock operations are significantly impacted - Additional nutrient management operations may still be identified by potentially impacted farmers	**High** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established agricultural community including: - Minor frontage impacts and encroachment on lands of 4 operations west of Road 104, all of which are believed to cash crop and livestock operations - Severs 7 parcels between Road 106 and Road 108 - 2 parcels where nutrient management has been reported by the farmer are impacted significantly - 3 parcels where nutrient management has been reported by the farmer are impacted slightly - 1 parcel where nutrient management is assumed to occur in association with livestock operations are significantly impacted - Additional nutrient management operations may still be identified by potentially impacted farmers	**High** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established agricultural community including: - Minor frontage impacts and encroachment on lands of 5 operations west of Road 104, all of which are believed to cash crop and livestock operations - Severs 6 parcels between Road 106 and Road 108 - 1 parcel where nutrient management has been reported by the farmer are impacted significantly - 4 parcels where nutrient management has been reported by the farmer are impacted slightly - 1 parcel where nutrient management is assumed to occur in association with livestock operations are significantly impacted - Additional nutrient management operations may still be identified by potentially impacted farmers	**High** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established agricultural community including: - Minor frontage impacts and encroachment on lands of 5 operations west of Road 104, all of which are believed to cash crop and livestock operations - Severs 6 parcels between Road 106 and Road 108 - 1 parcels where nutrient management has been reported by the farmer are impacted significantly - 4 parcels where nutrient management has been reported by the farmer are impacted slightly - 1 parcel where nutrient management is assumed to occur in association with livestock operations are significantly impacted - Additional nutrient management operations may still be identified by potentially impacted farmers
	2.4.4 Agriculture – Transportation Linkages between Integrated Agricultural Business Units (IABUs)	Potential to sever/disrupt transportation linkages between integrated agricultural business units (movement between integrated agricultural business units of equipment, materials, workers, etc.)	**Medium** potential to sever / disrupt transportation linkages • Route alternative passes between parcels of land associated with 2 IABU's as identified to the study team by the farming community	**Medium** potential to sever / disrupt transportation linkages • Route alternative passes between parcels of land associated with 2 IABU's as identified to the study team by the farming community	**Medium** potential to sever / disrupt transportation linkages • Route alternative passes between parcels of land associated with 2 IABU's as identified to the study team by the farming community	**Medium** potential to sever / disrupt transportation linkages • Route alternative passes between parcels of land associated with 2 IABU's as identified to the study team by the farming community
2.5 Land Use / Resources						
	2.5.1 First Nations' Treaty Rights or Use	Potential and significance of: • encroachment, severance, displacement;	**Medium** potential to affect First Nation Treaty Rights or use of land	**Medium** potential to affect First Nation Treaty Rights or use of land	**Medium** potential to affect First Nation Treaty Rights or use of land	**Medium** potential to affect First Nation Treaty Rights or use of land

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study
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SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES

Factor / Sub Factor	Criteria	Indicator for Route Selection	Route Alternative			
			B1 **1-2-4-5-11-13-15**	**B2** **1-2-4-5-9-11-13-15**	**B3** **1-2-4-6-8-9-11-13-15**	**B4** **1-2-4-6-8-11-13-15**
	of Land and Resources for Traditional Purposes (e.g. hunting, fishing, harvesting of country foods, harvesting of medicinal plants)	• long term alteration / disruption; • nuisance impacts; • change to access / travel time. to First Nations' treaty rights or use of land and resources for traditional purposes	and resources for traditional purposes • Route alternative has both existing highway and new route components.	and resources for traditional purposes • Route alternative has both existing highway and new route components.	and resources for traditional purposes • Route alternative has both existing highway and new route components.	and resources for traditional purposes • Route alternative has both existing highway and new route components.
	2.5.2 Parks and Recreational Areas (e.g. national/ provincial parks, conservation areas, municipal parks, public spaces, golf courses, trails, greenways and open space linkages)	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to parks and recreational areas.	**Low** potential for impacts to parks and recreational areas • Bypass of village to the north somewhat isolates the village from the Shakespeare Pond conservation area on Perth Road 107. • No direct impacts to parks and recreational areas as none are in the area.	**Low** potential for impacts to parks and recreational areas • Bypass of village to the north somewhat isolates the village from the Shakespeare Pond conservation area on Perth Road 107. • No direct impacts to parks and recreational areas as none are in the area.	**Low** potential for impacts to parks and recreational areas • Bypass of village to the north somewhat isolates the village from the Shakespeare Pond conservation area on Perth Road 107. • No direct impacts to parks and recreational areas as none are in the area.	**Low** potential for impacts to parks and recreational areas • Bypass of village to the north somewhat isolates the village from the Shakespeare Pond conservation area on Perth Road 107. • No direct impacts to parks and recreational areas as none are in the area.
	2.5.3 Aggregates, Mineral-Resources	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. to current/future extraction of aggregate and mineral resources.	**High** potential for impacts to current/future aggregate / mineral resources • Displacement of aggregate / pit operations immediately east of Perth Road 107. Long term alteration/disruption of entire operation.	**Low** potential for impacts to current/future aggregate / mineral resources • No displacement of aggregate / pit operations	**Low** potential for impacts to current/future aggregate / mineral resources • No displacement of aggregate / pit operations	**Low** potential for impacts to current/future aggregate / mineral resources • No displacement of aggregate / pit operations
2.6 Major Utility Transmission Corridors (e.g. railroads, hydro, gas, oil)						
		Potential and significance of: • encroachment, severance, displacement; • long term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. To major utility transmission corridors.	**No** potential for impacts to major utility transmission corridors • No railway crossings • No major hydro transmission corridor crossings • No major gas / oil corridor crossings	**No** potential for impacts to major utility transmission corridors • No railway crossings • No major hydro transmission corridor crossings • No major gas / oil corridor crossings	**No** potential for impacts to major utility transmission corridors • No railway crossings • No major hydro transmission corridor crossings • No major gas / oil corridor crossings	**No** potential for impacts to major utility transmission corridors • No railway crossings • No major hydro transmission corridor crossings • No major gas / oil corridor crossings

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
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SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES

Factor / Sub Factor	Criteria	Indicator for Route Selection	Route Alternative			
			B1 1-2-4-5-11-13-15 (Selected Corridor)	**B2** 1-2-4-5-9-11-13-15	**B3** 1-2-4-6-8-9-11-13-15	**B4** 1-2-4-6-8-11-13-15
2.7 Contaminated Property and Waste Management (e.g. Landfills, Hazardous Waste Sites, "Brownfield" Areas, other known contaminated sites, and high risk contamination areas)						
		Potential and significance of: • encroachment, severance, displacement; • long term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. to contaminated property and waste management.	**Medium** potential for impacts to contaminated property and waste • Two vehicle fuel and repair facilities were identified in Shakespeare along Highway 7/8. An Esso Service Station at Patrick Street is approximately 150 m south of the B1 alignment and Patriot Gas located east of Highway 107 is at least 650 m south of proposed alignment B1. Regional groundwater flow direction is anticipated to be flowing in a southerly direction. • The distance of the service stations from the proposed realignment indicates that potential environmental concerns related to the service stations are minimal; however, consideration should be given to implementing a scoped subsurface investigation north of the Esso service station at the southern extent of the proposed road alignment to confirm soil and groundwater conditions.	**Medium** potential for impacts to contaminated property and waste • Two vehicle fuel and repair facilities were identified in Shakespeare along Highway 7/8. An Esso Service Station at Patrick Street is approximately 150 m south of the B1 alignment and Patriot Gas located east of Highway 107 is at least 575 m south of proposed alignment B2. Regional groundwater flow direction is anticipated to be flowing in a southerly direction. • The distance of the service stations from the proposed realignment indicates that potential environmental concerns related to the service stations are minimal; however, consideration should be given to implementing a scoped subsurface investigation north of the Esso service station at the southern extent of the proposed road alignment to confirm soil and groundwater conditions.	**Medium** potential for impacts to contaminated property and waste • Two vehicle fuel and repair facilities were identified in Shakespeare along Highway 7/8. An Esso Service Station at Patrick Street is approximately 150 m south of the B1 alignment and Patriot Gas located east of Highway 107 is at least 575 m south of proposed alignment B3. Regional groundwater flow direction is anticipated to be flowing in a southerly direction. • The distance of the service stations from the proposed realignment indicates that potential environmental concerns related to the service stations are minimal; however, consideration should be given to implementing a scoped subsurface investigation north of the Esso service station at the southern extent of the proposed road alignment to confirm soil and groundwater conditions.	**Medium** potential for impacts to contaminated property and waste • Two vehicle fuel and repair facilities were identified in Shakespeare along Highway 7/8. An Esso Service Station at Patrick Street is approximately 150 m south of the B1 alignment and Patriot Gas located east of Highway 107 is at least 375 m south of proposed alignment B4. Regional groundwater flow direction is anticipated to be flowing in a southerly direction. • The distance of the service stations from the proposed realignment indicates that potential environmental concerns related to the service stations are minimal; however, consideration should be given to implementing a scoped subsurface investigation north of the Esso service station at the southern extent of the proposed road alignment to confirm soil and groundwater conditions.
2.8 Landscape Composition						
	2.8.1 Scenic Composition (total aesthetic value of landscape components) 2.8.2 Sensitive Viewer Groups 2.8.3 Scenic value of views/vistas from the transportation facility	Potential and significance of change to scenic composition (total aesthetic value of landscape components). Potential and significance of change vistas/outlooks for sensitive viewer groups. Potential and significance of views/vistas from the transportation facility.	**Medium** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative • High negative impact on affected farmhouses on east and west entry to town • Low negative impact on urban community due to distance, and rolling terrain buffer • Medium/High negative impact on adjacent properties on route alternative due to the loss of frontage and associated potential loss of vegetation along existing	**Medium** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative • High negative impact on affected farmhouses on east and west entry to town • High negative impact on urban community due to distance, and rolling terrain buffer • High negative impact on adjacent properties on route alternative due to the loss of frontage and associated potential loss of vegetation along existing alignment	**Medium** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative • High negative impact on affected farmhouses on east and west entry to town • High negative impact on urban community due to distance, and rolling terrain buffer • High negative impact on adjacent properties on route alternative due to the loss of frontage and associated potential loss of vegetation along existing alignment	**Medium** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative • High negative impact on affected farmhouses on east and west entry to town • High negative impact on urban community due to distance, and rolling terrain buffer • High negative impact on adjacent properties on route alternative due to the loss of frontage and associated potential loss of vegetation along existing alignment

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study
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SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES

Factor / Sub Factor	Criteria	Indicator for Route Selection	Route Alternative			
			B1 **1-2-4-5-11-13-15**	**B2** **1-2-4-5-9-11-13-15**	**B3** **1-2-4-6-8-9-11-13-15**	**B4** **1-2-4-6-8-11-13-15**
			alignment segments • Medium/High visual interest through rolling terrain and agricultural fields • Low visual interest of affected farmhouse backyards	segments • high negative impact on urban community on the eastern and northern edges due to close proximity of proposed highway Medium/High visual interest through rolling terrain and agricultural fields • Low visual interest of affected farmhouse backyards • Medium/high negative impact on affected farmhouse on Perth Road 107	segments • high negative impact on urban community on the eastern and northern edges due to close proximity of proposed highway Medium/High visual interest through rolling terrain and agricultural fields • Low visual interest of affected farmhouse backyards • Medium/high negative impact on affected farmhouse on Perth Road 107	segments • high negative impact on urban community on the eastern and northern edges due to close proximity of proposed highway Medium/High visual interest through rolling terrain and agricultural fields • Low visual interest of affected farmhouse backyards • Medium/high negative impact on affected farmhouse on Perth Road 107
	2.8.4 Specimen Trees	To considered during Preliminary Design phase				
2.9 Air Quality						
	2.9.1 Local and Regional Air Quality (Total contaminant and greenhouse gas emissions)	Previously addressed during Needs Assessment Phase				
	2.9.2 Sensitive receptors to air pollutants and greenhouse gas emissions	Presence and potential for impacts to sensitive receptors to air pollutants and greenhouse gas emissions, including consideration of number of sensitive receptors immediately adjacent to the highway.	**Low** potential impact to sensitive receptors adjacent to the highway • 2 sensitive receptors within the edge of the right-of-way.	**Low** potential impact to sensitive receptors adjacent to the highway • 2 sensitive receptors within the edge of the right-of-way.	**Low** potential impact to sensitive receptors adjacent to the highway • 3 sensitive receptors within the edge of the right-of-way.	**Low** potential impact to sensitive receptors adjacent to the highway • 3 sensitive receptors within the edge of the right-of-way.
3. CULTURAL ENVIRONMENTAL FACTORS						
3.1 Cultural Heritage – Built Heritage and Cultural Landscapes						
	3.1.1 Buildings or "Standing" Sites of Architectural or Heritage Significance or Ontario Heritage Foundation Easement Properties	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to buildings or "standing" sites of extreme local, provincial or national interest or Ontario Heritage Foundation easements properties.	**Medium** potential for impacts to sites of heritage significance and Heritage Foundation Easement Properties • There are 8 built heritage resources within or in immediate proximity to the route. These are within the Highway 7/8 portion of the route; • There are two in close proximity to the extreme east end of the route (1825 Highway 7/8 – George Kleinknecht Farmstead and 1834 Highway 7/8 – outbuilding); these may be encroached but not likely physically impacted	**Medium** potential for impacts to sites of heritage significance and Heritage Foundation Easement Properties • There are 9 built heritage resources within or in immediate proximity to the route. There are 8 within the Highway 7/8 portion of the route; • There are two in close proximity to the extreme east end of the route (1825 Highway 7/8 – George Kleinknecht Farmstead and 1834 Highway 7/8 – outbuilding); these may be encroached but not likely physically impacted	**Medium** potential for impacts to sites of heritage significance and Heritage Foundation Easement Properties • There are 9 built heritage resources within or in immediate proximity to the route. There are 8 within the Highway 7/8 portion of the route; • There are two in close proximity to the extreme east end of the route (1825 Highway 7/8 – George Kleinknecht Farmstead and 1834 Highway 7/8 – outbuilding); these may be encroached but not likely physically impacted	**Medium** potential for impacts to sites of heritage significance and Heritage Foundation Easement Properties • There are 9 built heritage resources within or in immediate proximity to the route. There are 8 within the Highway 7/8 portion of the route; • There are two in close proximity to the extreme east end of the route (1825 Highway 7/8 – George Kleinknecht Farmstead and 1834 Highway 7/8 – outbuilding); these may be encroached but not likely physically impacted
	3.1.2 Heritage Bridges	Potential for destruction or significant alteration of heritage bridges				

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study EVALUATION OF ROUTE ALTERNATIVES Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.						
SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES						
Factor / Sub Factor	**Criteria**	**Indicator for Route Selection**	**Route Alternative**			
			B1 **1-2-4-5-11-13-15**	**B2** **1-2-4-5-9-11-13-15**	**B3** **1-2-4-6-8-9-11-13-15**	**B4** **1-2-4-6-8-11-13-15**
			• Setting may change somewhat. • Six within the Highway 7/8 portion of the route and are generally in close proximity to the road; setting will be heavily altered and some buildings may be displaced. These six buildings are the John McTavish Farmstead (2026 Highway 7/8), the Andrew Riddell Junior Farmstead (2053 Highway 7/8), the Andrew Riddell Farmstead (2007 Highway 7/8), Dr. Flynn's House (1971 Hwy 7/8), Sebastian Fryfogel Farmstead (1899 Highway 7/8), and the Fryfogel Tavern/Inn (1931 Highway 7/8).	• Setting may change somewhat. • Six within the Highway 7/8 portion of the route and are generally in close proximity to the road; setting will be heavily altered and some buildings may be displaced. These six buildings are the John McTavish Farmstead (2026 Highway 7/8), the Andrew Riddell Junior Farmstead (2053 Highway 7/8), the Andrew Riddell Farmstead (2007 Highway 7/8), Dr. Flynn's House (1971 Hwy 7/8), Sebastian Fryfogel Farmstead (1899 Highway 7/8), and the Fryfogel Tavern/Inn (1931 Highway 7/8).	• Setting may change somewhat. • Six within the Highway 7/8 portion of the route and are generally in close proximity to the road; setting will be heavily altered and some buildings may be displaced. These six buildings are the John McTavish Farmstead (2026 Highway 7/8), the Andrew Riddell Junior Farmstead (2053 Highway 7/8), the Andrew Riddell Farmstead (2007 Highway 7/8), Dr. Flynn's House (1971 Hwy 7/8), Sebastian Fryfogel Farmstead (1899 Highway 7/8), and the Fryfogel Tavern/Inn (1931 Highway 7/8).	• Setting may change somewhat. • Six within the Highway 7/8 portion of the route and are generally in close proximity to the road; setting will be heavily altered and some buildings may be displaced. These six buildings are the John McTavish Farmstead (2026 Highway 7/8), the Andrew Riddell Junior Farmstead (2053 Highway 7/8), the Andrew Riddell Farmstead (2007 Highway 7/8), Dr. Flynn's House (1971 Hwy 7/8), Sebastian Fryfogel Farmstead (1899 Highway 7/8), and the Fryfogel Tavern/Inn (1931 Highway 7/8).
	3.1.3 Areas of Historic 19th Century Settlement	Potential and significance of: • encroachment, severance, displacement; • long term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to areas of historic 19th century settlement.	**Low** potential for impacts to areas of historic settlement • The route crosses a portion of Highway 7/8, an early transportation route but no major, concentrated centres of 19th Century settlement	**Low** potential for impacts to areas of historic settlement • The route crosses a portion of Highway 7/8, an early transportation route but no major, concentrated centres of 19th Century settlement	**Low** potential for impacts to areas of historic settlement • The route crosses a portion of Highway 7/8, an early transportation route but no major, concentrated centres of 19th Century settlement	**Low** potential for impacts to areas of historic settlement • The route crosses a portion of Highway 7/8, an early transportation route but no major, concentrated centres of 19th 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.	**Medium** potential for impacts to cultural heritage landscapes • Dilse identified one large, continuous cultural heritage landscape that crosses the east end of this route (from Lingelbach Cemetery west to west of Road 106); only the extreme east end of the route is affected. The other includes Shakespeare and lands immediately north of it	**Medium** potential for impacts to cultural heritage landscapes • Dilse identified one large, continuous cultural heritage landscape that crosses the east end of this route (from Lingelbach Cemetery west to west of Road 106); only the extreme east end of the route is affected. The other includes Shakespeare and lands immediately north of it	**Medium** potential for impacts to cultural heritage landscapes • Dilse identified one large, continuous cultural heritage landscape that crosses the east end of this route (from Lingelbach Cemetery west to west of Road 106); only the extreme east end of the route is affected. The other includes Shakespeare and lands immediately north of it	**Medium** potential for impacts to cultural heritage landscapes • Dilse identified one large, continuous cultural heritage landscape that crosses the east end of this route (from Lingelbach Cemetery west to west of Road 106); only the extreme east end of the route is affected. The other includes Shakespeare and lands immediately north of it
	3.1.5 First Nations' Burial Sites	Potential and significance of: • encroachment, severance, displacement; • long term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time. to First Nations' burial sites.	**No** potential for impacts to First Nations burial sites • There are no known / reported First Nations' burial sites within this route	**No** potential for impacts to First Nations burial sites • There are no known / reported First Nations' burial sites within this route	**No** potential for impacts to First Nations burial sites • There are no known / reported First Nations' burial sites within this route	**No** potential for impacts to First Nations burial sites • There are no known / reported First Nations' burial sites within this route

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
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SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES

Factor / Sub Factor	Criteria	Indicator for Route Selection	Route Alternative			
			B1 **1-2-4-5-11-13-15**	**B2** **1-2-4-5-9-11-13-15**	**B3** **1-2-4-6-8-9-11-13-15**	**B4** **1-2-4-6-8-11-13-15**
	3.1.6 Cemeteries	Potential and significance of: • encroachment, severance, displacement; • long term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to cemeteries.	**Low** potential for impacts to cemeteries • There is one cemetery (Fryfogel) adjacent to this route; boundaries are poorly known	**Low** potential for impacts to cemeteries • There is one cemetery (Fryfogel) adjacent to this route; boundaries are poorly known	**Low** potential for impacts to cemeteries • There is one cemetery (Fryfogel) adjacent to this route; boundaries are poorly known	**Low** potential for impacts to cemeteries • There is one cemetery (Fryfogel) adjacent to this route; boundaries are poorly known
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	**Medium** potential for destruction or disturbance of archaeological sites • There are four known registered sites within this route (Riddell 1, Riddell 2, Fryfogel, Fryfogel Inn); all have portions likely present • There is potential for previously undocumented archaeological sites	**Medium** potential for destruction or disturbance of archaeological sites • There are four known registered sites within this route (Riddell 1, Riddell 2, Fryfogel, Fryfogel Inn); all have portions likely present • There is potential for previously undocumented archaeological sites	**Medium** potential for destruction or disturbance of archaeological sites • There are four known registered sites within this route (Riddell 1, Riddell 2, Fryfogel, Fryfogel Inn); all have portions likely present • There is potential for previously undocumented archaeological sites	**Medium** potential for destruction or disturbance of archaeological sites • There are four known registered sites within this route (Riddell 1, Riddell 2, Fryfogel, Fryfogel Inn); all have portions likely present • There is potential for previously undocumented archaeological sites
	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				
4. AREA ECONOMY – Previously addressed during Needs Assessment Phase						
5. TRANSPORTATION FACTORS						
5.1 Area Transportation System Capacity and Efficiency						
	5.1.1 Federal/ Provincial/Municipal transportation planning policies/goals/ objectives	Previously addressed during Needs Assessment Phase.				
	5.1.2 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	**High** potential to support efficient movement of people. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Shakespeare to route	**High** potential to support efficient movement of people. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Shakespeare to route	**High** potential to support efficient movement of people. • Route segment through Shakespeare is on new alignment, resulting in high level of service due to few intersections and reduced number of driveways • Direct route • Some out-of-way travel for local access from Shakespeare to route	**High** potential to support efficient movement of people. • Route segment through Shakespeare is on new alignment, resulting in high level of service due to few intersections and reduced number of driveways • Direct route • Some out-of-way travel for local access from Shakespeare to route
	5.1.3 Efficient movement of goods	Potential to support efficient movement of goods between urban growth centres and	**High** potential to support efficient movement of goods.	**High** potential to support efficient movement of goods.	**High** potential to support efficient movement of goods.	**High** potential to support efficient movement of goods.

LEGEND

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SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES

Factor / Sub Factor	Criteria	Indicator for Route Selection	Route Alternative			
			B1 **1-2-4-5-11-13-15**	**B2** **1-2-4-5-9-11-13-15**	**B3** **1-2-4-6-8-9-11-13-15**	**B4** **1-2-4-6-8-11-13-15**
		regional intermodal facilities based on road network and Highway 7&8 corridor performance measures (LOS and travel speed)	• Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Shakespeare to route	• Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Shakespeare to route	• Route segment through Shakespeare is on new alignment, resulting in high level of service due to few intersections and reduced number of driveways • Direct route • Some out-of-way travel for local access from Shakespeare to route	• Route segment through Shakespeare is on new alignment, resulting in high level of service due to few intersections and reduced number of driveways • Direct route • Some out-of-way travel for local access from Shakespeare to route
5.2 Area Transportation System Reliability / Redundancy						
		Potential to support system reliability and redundancy for travel (people and goods) between regions and communities during adverse conditions	**High** potential to support system reliability and redundancy • Route is predominantly on new alignment, which provides a new connection in the Shakespeare area to accommodate travel during adverse conditions (i.e. provides an alternate route)	**High** potential to support system reliability and redundancy • Route is predominantly on new alignment, which provides a new connection in the Shakespeare area to accommodate travel during adverse conditions (i.e. provides an alternate route)	**High** potential to support system reliability and redundancy • Route segment through Shakespeare is on new alignment, which provides a new connection in the Shakespeare area to accommodate travel during adverse conditions (i.e. provides an alternate route)	**High** potential to support system reliability and redundancy • Route segment through Shakespeare is on new alignment, which provides a new connection in the Shakespeare area to accommodate travel during adverse conditions (i.e. provides an alternate route)
5.3 Safety						
	5.3.1 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	**High** potential to improve traffic safety • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances • A four/five lane cross section provides for good passing opportunity, provides a wider platform to accommodate evasive moves during potential accidents, and a centre left turn lane would accommodate safer left turns along the highway at intersection and driveway locations	**High** potential to improve traffic safety • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances • A four/five lane cross section provides for good passing opportunity, provides a wider platform to accommodate evasive moves during potential accidents, and a centre left turn lane would accommodate safer left turns along the highway at intersection and driveway locations	**High** potential to improve traffic safety • Route segment through Shakespeare is on new alignment, resulting in limited number of access points at intersection locations and reduced number of access points associated with private entrances • A four/five lane cross section provides for good passing opportunity, provides a wider platform to accommodate evasive moves during potential accidents, and a centre left turn lane would accommodate safer left turns along the highway at intersection and driveway locations	**High** potential to improve traffic safety • Route segment through Shakespeare is on new alignment, resulting in limited number of access points at intersection locations and reduced number of access points associated with private entrances • A four/five lane cross section provides for good passing opportunity, provides a wider platform to accommodate evasive moves during potential accidents, and a centre left turn lane would accommodate safer left turns along the highway at intersection and driveway locations
	5.3.2 Emergency Access	Potential to support emergency access to/from existing and/or new provincial facilities.	**High** potential to support emergency access to/from route • Full moves connection will be provided at Perth Road 107 • Opportunity to provide connections to existing Highway	**High** potential to support emergency access to/from route • Full moves connection will be provided at Perth Road 107 • Opportunity to provide connections to existing Highway	**High** potential to support emergency access to/from route • Full moves connection will be provided at Perth Road 107 • Opportunity to provide connections to existing Highway	**High** potential to support emergency access to/from route • Full moves connection will be provided at Perth Road 107 • Opportunity to provide connections to existing Highway

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study
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SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES

Factor / Sub Factor	Criteria	Indicator for Route Selection	Route Alternative			
			B1 1-2-4-5-11-13-15 (Selected Corridor)	**B2 1-2-4-5-9-11-13-15**	**B3 1-2-4-6-8-9-11-13-15**	**B4 1-2-4-6-8-11-13-15**
			7&8 at east and west ends of Shakespeare • Direct access from existing fire hall east of Perth Road 107 to existing Highway 7&8 will be maintained	7&8 at east and west ends of Shakespeare • Direct access from existing fire hall east of Perth Road 107 to existing Highway 7&8 will be maintained	7&8 at east and west ends of Shakespeare • Direct access from existing fire hall east of Perth Road 107 to existing Highway 7&8 will be maintained	7&8 at east and west ends of Shakespeare • Direct access from existing fire hall east of Perth Road 107 to existing Highway 7&8 will be maintained
	5.3.3 Pedestrian, Cyclist and Snowmobile Safety within the highway right of way	Potential and significance of change to ease and safety of movement across the highway and within the right of way.	**High** potential to improve pedestrian, cyclist and snowmobile safety • Route situated north of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area where pedestrian / cyclist movements predominately occur • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**High** potential to improve pedestrian, cyclist and snowmobile safety • Route situated north of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area where pedestrian / cyclist movements predominately occur • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**High** potential to improve pedestrian, cyclist and snowmobile safety • Route situated north of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area where pedestrian / cyclist movements predominately occur • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**High** potential to improve pedestrian, cyclist and snowmobile safety • Route situated north of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area where pedestrian / cyclist movements predominately occur • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations
5.4 Mobility and Accessibility						
	5.4.1 Modal integration, balance and efficiency	Potential to improve modal choice and increase mode split for person trips between communities, regions and major transit station areas based on connection to concentrations of population, travel performance indicators (LOS, v/c, travel speed) at critical screenlines and on potential to provide higher order transit service.	**Low** potential to improve modal integration, balance and efficiency. • Transit service is potentially constrained by the bypass of the community of Shakespeare, but is supported by the direct connection to development along Highway 7&8 both east and west of Shakespeare. • Use of existing Highway 7&8 would constrain transit travel performance.	**Low** potential to improve modal integration, balance and efficiency. • Transit service is potentially constrained by the bypass of the community of Shakespeare, but is supported by the direct connection to development along Highway 7&8 both east and west of Shakespeare. • Use of existing Highway 7&8 would constrain transit travel performance.	**Low** potential to improve modal integration, balance and efficiency. • Transit service is potentially constrained by the bypass of the community of Shakespeare, but is supported by the direct connection to development along Highway 7&8 both east and west of Shakespeare. • Use of existing Highway 7&8 would constrain transit travel performance.	**Low** potential to improve modal integration, balance and efficiency. • Transit service is potentially constrained by the bypass of the community of Shakespeare, but is supported by the direct connection to development along Highway 7&8 both east and west of Shakespeare. • Use of existing Highway 7&8 would constrain transit travel performance.
	5.4.2 Linkages to Population and Employment Centres	Potential to improve linkages to population and employment centres for people and goods movement	**Medium** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved • Linkages to Shakespeare may be reduced because of limitations imposed by intersection design requirements at potential tie-in	**Medium** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved • Linkages to Shakespeare may be reduced because of limitations imposed by intersection design requirements at potential tie-in	**Medium** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved • Linkages to Shakespeare may be reduced because of limitations imposed by intersection design requirements at potential tie-in	**Medium** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved • Linkages to Shakespeare may be reduced because of limitations imposed by intersection design requirements at potential tie-in

LEGEND

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SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES

Factor / Sub Factor	Criteria	Indicator for Route Selection	Route Alternative			
			B1 1-2-4-5-11-13-15	**B2 1-2-4-5-9-11-13-15**	**B3 1-2-4-6-8-9-11-13-15**	**B4 1-2-4-6-8-11-13-15**
			points between the bypass and the current highway	points between the bypass and the current highway	points between the bypass and the current highway	points between the bypass and the current highway
	5.4.3 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)	**Medium** potential to support recreation and tourism travel • Shakespeare tourist area is bypassed, but tourist travel through the analysis area is facilitated	**Medium** potential to support recreation and tourism travel • Shakespeare tourist area is bypassed, but tourist travel through the analysis area is facilitated	**Medium** potential to support recreation and tourism travel • Shakespeare tourist area is bypassed, but tourist travel through the analysis area is facilitated	**Medium** potential to support recreation and tourism travel • Shakespeare tourist area is bypassed, but tourist travel through the analysis area is facilitated
	5.4.4 Accommodate mobility of pedestrians, cyclists and snowmobiles	Potential to accommodate mobility of pedestrians, cyclists within critical travel corridors in urbanized areas and snowmobiles in recognized rural trails	**High** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route situated north of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area provides opportunity to improve mobility of pedestrian / cyclist movements within developed area • Existing snowmobile trail crossings east and west of Shakespeare can be maintained	**High** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route situated north of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area provides opportunity to improve mobility of pedestrian / cyclist movements within developed area • Existing snowmobile trail crossings east and west of Shakespeare can be maintained	**High** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route situated north of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area provides opportunity to improve mobility of pedestrian / cyclist movements within developed area • Existing snowmobile trail crossings east and west of Shakespeare can be maintained	**High** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route situated north of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area provides opportunity to improve mobility of pedestrian / cyclist movements within developed area • Existing snowmobile trail crossings east and west of Shakespeare can be maintained
5.5 Network Compatibility						
	5.5.1 Network Connectivity	Potential to improve transportation system connectivity within and to/from the analysis area.	**High** potential to improve transportation system connectivity • Provides improved linkage between Stratford and New Hamburg	**High** potential to improve transportation system connectivity • Provides improved linkage between Stratford and New Hamburg	**High** potential to improve transportation system connectivity • Provides improved linkage between Stratford and New Hamburg	**High** potential to improve transportation system connectivity • Provides improved linkage between Stratford and New Hamburg
	5.5.2 Flexibility for Future Expansion	Potential to address future transportation needs beyond the forecasted planning horizons.	**High** potential for future expansion. • Route is outside Shakespeare urban boundary, and since it is predominantly on new alignment, the majority of the right-of-way could accommodate future expansion	**High** potential for future expansion. • Route is outside Shakespeare urban boundary, and since it is predominantly on new alignment, the majority of the right-of-way could accommodate future expansion	**Medium** potential for future expansion. • Route is situated in close proximity to Shakespeare urban boundary, limiting potential for future expansion	**Medium** potential for future expansion. • Route is situated in close proximity to Shakespeare urban boundary, limiting potential for future expansion
5.6 Engineering						
	5.6.1 Constructability	Potential ease of implementation considering feasibility/difficulty of physical, property or environmental constraints	**Low** potential for constructability issues • Utilizes segment of existing Highway 7&8 corridor • No railway crossings	**Low** potential for constructability issues • Utilizes segment of existing Highway 7&8 corridor • No railway crossings	**Low** potential for constructability issues • Utilizes segment of existing Highway 7&8 corridor • No railway crossings	**Low** potential for constructability issues • Utilizes segment of existing Highway 7&8 corridor • Situated in close proximity to

LEGEND

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SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES

Factor / Sub Factor	Criteria	Indicator for Route Selection	Route Alternative			
			B1 1-2-4-5-11-13-15	**B2 1-2-4-5-9-11-13-15**	**B3 1-2-4-6-8-9-11-13-15**	**B4 1-2-4-6-8-11-13-15**
			• No new major watercourse crossings	• No new major watercourse crossings	• No new major watercourse crossings	developed area of Shakespeare • No railway crossings • No new major watercourse crossings
	5.6.2 Compliance with Design Criteria	Conformity to applicable provincial safety and design standards.	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths
5.7 Traffic Operations						
		Potential for negative impact on traffic operations due to factors such as design features, private access, and transportation network connections	**Medium** potential for negative impact on traffic operations • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances. • Can accommodate full moves connection at Perth Road 107 • Can accommodate partial connections to existing Highway 7&8 at east and west ends of Shakespeare • Traffic destined to new route from the south must pass through Shakespeare to access the new route	**Medium** potential for negative impact on traffic operations • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances. • Can accommodate full moves connection at Perth Road 107 • Can accommodate partial connections to existing Highway 7&8 at east and west ends of Shakespeare • Traffic destined to new route from the south must pass through Shakespeare to access the new route	**Medium** potential for negative impact on traffic operations • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances. • Can accommodate full moves connection at Perth Road 107 • Can accommodate partial connections to existing Highway 7&8 at east and west ends of Shakespeare • Traffic destined to new route from the south must pass through Shakespeare to access the new route	**Medium** potential for negative impact on traffic operations • Route segment through Shakespeare is on new alignment, resulting in limited number of access points at intersection locations and reduced number of access points associated with private entrances. • Can accommodate full moves connection at Perth Road 107 • Can accommodate partial connections to existing Highway 7&8 at east and west ends of Shakespeare • Traffic destined to new route from the south must pass through Shakespeare to access the new route
5.8 Construction Cost (excludes property costs and engineering costs)						
		Relative road construction cost, excluding property and engineering costs	**Medium Cost** $5.0 M	**Medium Cost** $4.8 M	**Medium Cost** $4.8 M	**Medium Cost** $4.6 M

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

Highway 7&8 Transportation Corridor Planning and Class EA Study

EVALUATION OF ROUTE ALTERNATIVES

Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

SEGMENT B – SHAKESPEARE AREA NORTHERN BYPASSES

Factor / Sub Factor	Criteria	Indicator for Route Selection	Route Alternative			
			B1 **1-2-4-5-11-13-15**	**B2** **1-2-4-5-9-11-13-15**	**B3** **1-2-4-6-8-9-11-13-15**	**B4** **1-2-4-6-8-11-13-15**
SUMMARY OF EVALUATION			**Summary of Natural Environment** Route Alternatives B!, B2 and B3 are preferred from a natural environment perspective as they have lower potential impacts to groundwater relative to Route Alternative B4. **Summary of Land Use / Socio-Economic Environment** Route Alternative B1 has lower potential impacts to urban and rural residential areas, future development, noise sensitive areas and agriculture. The higher potential impacts to an existing aggregate / pit operation for Route Alternative B1 can be mitigated. Therefore, Route Alternative B1 is preferred from a land use / socio-economic environment perspective, **Summary of Cultural Environment** All route alternatives result in comparable impacts to built heritage and archaeological sites. **Summary of Transportation** All route alternatives are comparable in their ability to support transportation criteria for most transportation factors. However, Route Alternatives B1 and B2 are slightly preferred relative to Route Alternatives B3 and B4 because they have the potential to better accommodate future transportation needs. **Conclusion** Based upon the above, Route Alternative B1 is the preferred northern by-pass alternative.			

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED CORRIDOR

SEGMENT B - SHAKESPEARE AREA NORTHERN BY-PASSES

FACTORS	Weighting	Alternative 1	2	3	4
1.0 NATURAL ENVIRONMENT	**20.00**				
1.1 Fisheries and Aquatic Ecosystems	8.00				
Weighted Score		5.36	5.36	5.36	5.36
1.2 Terrestrial Ecosystems	5.00				
Weighted Score		3.10	3.10	3.10	3.10
1.3 Groundwater	5.00				
Weighted Score		3.17	3.17	3.17	2.51
1.4 Surface Water	2.00				
Weighted Score		0.66	0.66	0.66	0.66
Factor Score	**20.00**	**12.29**	**12.29**	**12.29**	**11.62**
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	**35.00**				
2.1 Land Use Planning Policies, Goals, Objectives	3.50				
Weighted Score		2.17	2.17	1.99	1.99
2.2 Land Use / Community	7.00				
Weighted Score		4.09	3.73	3.73	3.73
2.3 Noise Sensitive Areas	5.25				
Weighted Score		3.52	1.73	1.73	0.00
2.4 Agriculture	7.00				
Weighted Score		1.16	1.16	0.23	0.23
2.5 Land Use / Resources	3.50				
Weighted Score		1.76	2.23	2.23	2.23
2.6 Major Utility Transmission Corridors	0.70				
Weighted Score		0.70	0.70	0.70	0.70
2.7 Contaminated Property and Waste Management	0.70				
Weighted Score		0.23	0.23	0.23	0.23
2.8 Landscape Composition	2.10				
Weighted Score		0.69	0.69	0.69	0.69
2.9 Air Quality	5.25				
Weighted Score		3.52	3.52	3.52	3.52
Factored Score	**35.00**	**17.83**	**16.16**	**15.06**	**13.32**
3.0 CULTURAL ENVIRONMENT	**20.00**				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	16.00				
Weighted Score		7.32	7.32	7.32	7.32
3.2 Archaeology	4.00				
Weighted Score		1.32	1.32	1.32	1.32
Factored Score	**20.00**	**8.64**	**8.64**	**8.64**	**8.64**
5.0 TRANSPORTATION	**25.00**				
5.1 Area Transportation System Capacity and Efficiency	3.75				
Weighted Score		3.75	3.75	3.75	3.75
5.2 Area Transportation System Reliability / Redundancy	3.75				
Weighted Score		3.75	3.75	3.75	3.75
5.3 Safety	6.25				
Weighted Score		6.25	6.25	6.25	6.25
5.4 Mobility and Accessibility	2.50				
Weighted Score		1.84	1.84	1.84	1.84
5.5 Network Compatibility	1.25				
Weighted Score		1.25	1.25	1.17	1.17
5.6 Engineering	2.50				
Weighted Score		1.84	1.84	1.84	1.84
5.7 Traffic Operations	3.75				
Weighted Score		1.24	1.24	1.24	1.24
5.8 Construction Cost	1.25				
Weighted Score		1.24	1.24	1.24	1.24
Factored Score	**25.00**	**21.15**	**21.15**	**21.07**	**21.07**
	100.00				
Total Alternative Score		**59.91**	**58.24**	**57.05**	**54.65**

ALTERNATIVE DESCRIPTIONS

1: B1: 1-2-4-5-11-13-15
2: B2: 1-2-4-5-9-11-13-15
3: B3: 1-2-4-6-8-9-11-13-15
4: B4: 1-2-4-6-8-11-13-15

NATURAL ENVIRONMENT WEIGHTING TABLE - SEGMENT B: SHAKESPEARE AREA NORTHERN BY-PASSES

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative			
				1	2	3	4
1.0 NATURAL ENVIRONMENT			**20.00**				
1.1 Fisheries and Aquatic Ecosystems			8.00				
1.1.1 Fish Habitat	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: critical fish habitat features, riparian areas and habitat rehabilitation goals.	No / Low / Medium / High Effects	8.00	0.67	0.67	0.67	0.67
1.1.2 Fish Community	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: fish species at risk (vulnerable, threatened or endangered fish species), fish movement/migration, critical fish life stage processes (spawning, rearing, nursery, feeding) and long-term fish community management goals.						
		Weighted Score		5.36	5.36	5.36	5.36
1.2 Terrestrial Ecosystems			5.00				
1.2.1 Wildlife	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: wildlife species at risk (vulnerable, threatened or endangered wildlife species); wildlife of local and regional importance; migratory birds; critical wildlife habitat features; ecologically functional areas such as connective corridors or travel ways for movement/migration; important wildlife areas such as deeryards, heronries, waterfowl areas, important bird areas; wildlife management, rehabilitation/research program sites; and interference with critical wildlife life stage processes (eg mating/rearing, etc.).	No / Low / Medium / High Effects	0.75	0.33	0.33	0.33	0.33
1.2.2 Wetlands	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: provincially significant wetlands, their buffer areas, and their wetland function; evaluated and un-evaluated wetlands, their wetland buffer areas, and their wetland function; and wetland management, research and/or wetland conservation programs/areas.	No / Low / Medium / High Effects	1.25	0.67	0.67	0.67	0.67
1.2.3 Forests	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: significant woodlands/valley lands; and forest management/research program areas.	No / Low / Medium / High Effects	1.25	0.67	0.67	0.67	0.67
1.2.4 Vegetation	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: subpopulations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant regional/local flora/communities; areas/corridors supporting known populations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant flora/communities; and vegetation management, rehabilitation/research program sites.	No / Low / Medium / High Effects	0.75	0.67	0.67	0.67	0.67
1.2.5 Designated/Special Areas	Potential and significance of: encroachment, severance, displacement, long-term alteration/disruption, change in area character/aesthetics, nuisance impacts, change to access/travel time, and change to facilities/utilities/services to designated/special areas.	No / Low / Medium / High Effects	1.00	0.67	0.67	0.67	0.67
		Weighted Score		3.10	3.10	3.10	3.10
1.3 Groundwater			5.00				
1.3.1 Areas of Groundwater Recharge and Discharge	Potential and significance of alteration to areas of groundwater recharge and discharge due to physical intrusion or groundwater inception, draw-down, impoundment, obstruction, or soil compaction impacting groundwater base-flow and quality.	No / Low / Medium / High Effects	0.50	0.67	0.67	0.67	0.33
1.3.2 Groundwater Source Areas and Wellhead Protection Areas	Potential and significance of alteration to areas of groundwater resource areas and wellhead protection areas due to physical intrusion, or groundwater interception, draw-down, impoundment, obstruction and by soil compaction.	No / Low / Medium / High Effects	1.00	0.33	0.33	0.33	0.00
1.3.3 Large Volume Wells	Potential and significance of alteration to large volume wells due to physical intrusion or groundwater intereception, draw-down, impoundment, obstruction and by soil compaction.	No / Low / Medium / High Effects	0.50	0.33	0.33	0.33	0.00

NATURAL ENVIRONMENT WEIGHTING TABLE - SEGMENT B: SHAKESPEARE AREA NORTHERN BY-PASSES

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative			
				1	2	3	4
1.0 NATURAL ENVIRONMENT			**20.00**				
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.	No / Low / Medium / High Effects	1.00	0.67	0.67	0.67	0.67
1.3.5 Groundwater-Dependent Commercial Enterprises (e.g. water bottling operations)	Potential and significance of alteration to groundwater use by groundwater-dependent commercial enterprises due to physical intrusion, or groundwater interception, draw-down, impoundment, obstruction and by soil compaction.	No / Low / Medium / High Effects	1.00	1.00	1.00	1.00	1.00
1.3.6 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.	No / Low / Medium / High Effects	1.00	0.67	0.67	0.67	0.67
		Weighted Score		3.17	3.17	3.17	2.51
1.4 Surface Water			2.00				
1.4.1 Watershed / Sub-Watershed Drainage Features / Patterns	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: watercourse crossings (permanent, intermittent and ephemeral); floodplain or meander belts; riparian areas; sensitive headwater areas; and watershed and sub watershed management plans.	No / Low / Medium / High Effects	2.00	0.33	0.33	0.33	0.33
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. Potential and significance of impacts on hydrology due to changes in ground permeability, modifications to surface drainage patterns and alterations of waterbodies.	No / Low / Medium / High Effects					
		Weighted Score		0.66	0.66	0.66	0.66
		Factored Score	**20.00**	**12.29**	**12.29**	**12.29**	**11.62**

ALTERNATIVE DESCRIPTIONS

1: B1: 1-2-4-5-11-13-15
2: B2: 1-2-4-5-9-11-13-15
3: B3: 1-2-4-6-8-9-11-13-15
4: B4: 1-2-4-6-8-11-13-15

SUMMARY WEIGHTING TABLE - SEGMENT B: SHAKESPEARE AREA NORTHERN BY-PASSES

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative			
				1	2	3	4
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT			35.00				
2.0 Land Use Planning Policies, Goals and Objectives			3.50				
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	No / Low / Medium / High Effects	0.18	0.67	0.67	0.67	0.67
2.1.2 Provincial/Federal land use planning policies/goals/objectives	Degree of compatibility with federal/provincial land use policies/goals/objectives	No / Low / Medium / High Effects	0.52	0.33	0.33	0.33	0.33
2.1.3 Municipal (regional and local land use planning policies/goals/ objectives (Official Plans)	Degree of compatibility with municipal Official Plans	No / Low / Medium / High Effects	2.28	0.67	0.67	0.67	0.67
2.1.4 Development Objectives of Private Property Owners	Potential to isolate property from current/future urban envelope. Impact on future land use.	No / Low / Medium / High Effects	0.52	0.67	0.67	0.33	0.33
		Weighted Score		2.17	2.17	1.99	1.99
2.2 Land Use / Community			7.00				
2.2.1 First Nation Reserves	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts and change to access / travel time to First Nation Reserves.	No / Low / Medium / High Effects	0.35	1.00	1.00	1.00	1.00
2.2.2 First Nations' Sacred Grounds	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts and change to access / travel time to First Nations' sacred grounds.	No / Low / Medium / High Effects	0.35	0.67	0.67	0.67	0.67
2.2.3 Urban and Rural Residential	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption (e.g. loss of parking area); change in area character / aesthetics (e.g. loss of trees/garden area); nuisance impacts (e.g. intrusion of highway into current residential envelope); change to access / travel time; change to facilities / utilities / services; interference with residential community cohesion; change to highway operational impacts (e.g. snow storage and highway access visibility) to urban and rural residential areas (residents (owners/tenants) and community groups).	No / Low / Medium / High Effects	1.05	0.67	0.33	0.33	0.33
2.2.4 Commercial/Industrial	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/aesthetics; nuisance impacts; change to travel access/travel time; change to facilities/utilities/services; interference with commercial community cohesion; change to highway operation impacts (e.g. customer parking, cargo loading/off-loading); to commercial and industrial areas (business owners/tenants and customers).	No / Low / Medium / High Effects	1.05	0.33	0.33	0.33	0.33
2.2.5 Tourist Areas and Attractions (e.g. museums, theatres, etc.)	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/aesthetics; nuisance impacts; change to travel access/travel time; change to facilities/utilities/services; loss of "critical mass" in number of signature business attractions (e.g. number of antique shops); to tourist areas and attractions.	No / Low / Medium / High Effects	1.05	0.67	0.67	0.67	0.67
2.2.6 Community Facilities/Institutions (e.g. hospitals, schools, places of worship, unique community features)	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/aesthetics; nuisance impacts; change to travel access/travel time; change to facilities/utilities/services; change to ease and safety of pedestrian movements across the highway and within the highway right-of-way; change to highway operation impacts to current use (e.g. highway noise and vibration interfering with church services); to community facilities and institutions.	No / Low / Medium / High Effects	1.05	0.33	0.33	0.33	0.33
2.2.7 Municipal Infrastructure and Public Service Facilities (e.g. sewage and water services, police/emergency services, local utilities)	Potential and significance of: encroachment, severance, displacement; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to municipal infrastructure and public service facilities.	No / Low / Medium / High Effects	0.35	0.67	0.67	0.67	0.67
2.2.8 Downtown Historic Crossroads Function	Potential and significance of interference by long-distance through-traffic on: "main street" function and structure; character/aesthetics; change to ease and safety of pedestrian movements across the highway and within the highway right-of-way; change to on-street parking; in historic downtown area.	No / Low / Medium / High Effects	1.75	0.67	0.67	0.67	0.67
		Weighted Score		4.09	3.73	3.73	3.73
2.3 Noise Sensitive Areas (NSAs) (residential areas and sensitive institutional uses)			5.25				
2.3.1 Highway Noise	Potential for significant traffic noise increases in NSAs and for noise-sensitive receivers immediately adjacent to the highway	No / Low / Medium / High Effects	5.25	0.67	0.33	0.33	0.00
		Weighted Score		3.52	1.73	1.73	0.00

SUMMARY WEIGHTING TABLE - SEGMENT B: SHAKESPEARE AREA NORTHERN BY-PASSES

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative 1	Alternative 2	Alternative 3	Alternative 4
2.4 Agriculture			7.00				
2.4.1 Agriculture - Canada Land Inventory Class 1, 2, 3 Land	Potential and significance of encroachment, severance of Canada Land inventory Classes 1, 2 and 3 soils	No / Low / Medium / High Effects	0.70	0.00	0.00	0.00	0.00
2.4.2 Agriculture - Farm Infrastructure	Potential and significance of: encroachment, severance, displacement; long-term alteration/disruption; nuisance impacts; to farm infrastructure (field tile drainage systems/outlets, irrigation systems, barns/silos/structures, etc.).	No / Low / Medium / High Effects	2.80	0.33	0.33	0.00	0.00
2.4.3 Agriculture - Operations on Individual Farms	Potential and significance of: encroachment, severance, displacement; long-term alteration/disruption; nuisance impacts; to in-farm field operations (planting, harvesting, grazing, nutrient management, etc.) as applicable to the following: specialty crops/cropland; diary/livestock operations; field crop operations; high investment agricultural operations; established agricultural farm communities.	No / Low / Medium / High Effects	2.80	0.00	0.00	0.00	0.00
2.4.4 Agriculture - Transportation Linkages between Integrated Agricultural Business Units	Potential to sever/disrupt transportation linkages between integrated agricultural business units (movement between integrated agricultural business units of equipment, materials, workers, etc.)	No / Low / Medium / High Effects	0.70	0.33	0.33	0.33	0.33
		Weighted Score		1.16	1.16	0.23	0.23
2.5 Land Use / Resources			3.50				
2.5.1 First Nations' 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: encroachment, severance, displacement; long-term alteration/disruption; nuisance impacts; change to access/travel time; to First Nations' treaty rights or use of land and resources for traditional purposes.	No / Low / Medium / High Effects	0.35	0.33	0.33	0.33	0.33
2.5.2 Parks and Recreational Areas (e.g. national/provincial parks, conservation areas, municipal parks, public spaces, golf courses, trails, greenways and open space linkages)	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/ aesthetics; nuisance impacts; change to access/travel time; change to facilities/utilities/services; to parks and recreational areas.	No / Low / Medium / High Effects	2.45	0.67	0.67	0.67	0.67
2.5.3 Aggregates, Mineral-Resources	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to current/future extraction of aggregate and mineral resources.	No / Low / Medium / High Effects	0.70	0.00	0.67	0.67	0.67
		Weighted Score		1.76	2.23	2.23	2.23
2.6 Major Utility Transmission Corridors (e.g. railroads, hydro, gas, oil)			0.70				
	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to major utility transmission corridors.	No / Low / Medium / High Effects	0.70	1.00	1.00	1.00	1.00
		Weighted Score		0.70	0.70	0.70	0.70
2.7 Contaminated Property and Waste Management (e.g. landfills, hazardous waste sites, "brownfield" areas, other known contaminated sites, and high-risk contamination areas)			0.70				
	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to contaminated property and waste management.	No / Low / Medium / High Effects	0.70	0.33	0.33	0.33	0.33
		Weighted Score		0.23	0.23	0.23	0.23
2.8 Landscape Composition			2.10				
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).	No / Low / Medium / High Effects					
2.8.2 Sensitive Viewer Groups	Potential and significance of change to vistas/outlooks for sensitive viewer groups.	No / Low / Medium / High Effects	2.10	0.33	0.33	0.33	0.33
2.8.3 Scenic Value of Views/Vistas from the transportation facility	Potential and significance of views/vistas from the transportation facility.	No / Low / Medium / High Effects					
		Weighted Score		0.69	0.69	0.69	0.69
2.9 Air Quality			5.25				
2.9.2 Sensitive receptors to air pollutants and greenhouse gas emissions	Presence and potential for impacts to sensitive receptors to air pollutants and greenhouse gas emissions, including consideration of number of sensitive receptors immediately adjacent to the highway.	No / Low / Medium / High Effects	5.25	0.67	0.67	0.67	0.67
		Weighted Score		3.52	3.52	3.52	3.52
		Factored Score	**35.00**	**17.83**	**16.16**	**15.06**	**13.32**

ALTERNATIVE DESCRIPTIONS

1: B1: 1-2-4-5-11-13-15
2: B2: 1-2-4-5-9-11-13-15
3: B3: 1-2-4-6-8-9-11-13-15
4: B4: 1-2-4-6-8-11-13-15

SUMMARY WEIGHTING TABLE - SEGMENT B: SHAKESPEARE AREA NORTHERN BY-PASSES

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative 1	2	3	4
3.0 CULTURAL ENVIRONMENT			20.00				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes			16.00				
3.1.1 Buildings or "Standing" Sites of Architectural or Heritage Significance or Ontario Heritage Foundation Easement Properties	Potential and significance of encroachment, severance, displacement, property acquisition, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, change to facilities / utilities/ service to buildings or "standing" sites of extreme local, provincial or national interest or Ontario Heritage Foundation easements properties.	No / Low / Medium / High Effects	8.00	0.33	0.33	0.33	0.33
3.1.2 Heritage Bridges	Potential for destruction or significant alteration of heritage bridges.	No / Low / Medium / High Effects					
3.1.3 Areas of Historic 19th Century Settlement	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, change to facilities / utilities/ service to areas of historic 19th century settlement.	No / Low / Medium / High Effects	3.00	0.67	0.67	0.67	0.67
3.1.4 Cultural Heritage Landscapes (collection of individual manmade features modifying pristine landscape)	Potential and significance of change to composition of cultural landscapes.	No / Low / Medium / High Effects	2.00	0.33	0.33	0.33	0.33
3.1.5 First Nations' Burial Sites	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, to First Nations' burial sites.	No / Low / Medium / High Effects	0.00	1.00	1.00	1.00	1.00
3.1.6 Cemeteries	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, change to facilities / utilities/ service to cemeteries.	No / Low / Medium / High Effects	3.00	0.67	0.67	0.67	0.67
		Weighted Score		7.32	7.32	7.32	7.32
3.2 Cultural Heritage - Archaeology			4.00				
3.2.1 Pre-Historic and Historic First Nations Sites	Potential for destruction or disturbance of prehistoric and historic First Nations archaeological sites of extreme local, provincial or national interest	No / Low / Medium / High Effects	4.00	0.33	0.33	0.33	0.33
3.2.2 Historic EuorCanadian Archaeological Sites	Potential for destruction or disturbance of historic EuroCanadian archaeological sites of extreme local, provincial or national interest	No / Low / Medium / High Effects					
		Weighted Score		1.32	1.32	1.32	1.32
		Factored Score	**20.00**	**8.64**	**8.64**	**8.64**	**8.64**

ALTERNATIVE DESCRIPTIONS

1: B1: 1-2-4-5-11-13-15
2: B2: 1-2-4-5-9-11-13-15
3: B3: 1-2-4-6-8-9-11-13-15
4: B4: 1-2-4-6-8-11-13-15

SUMMARY WEIGHTING TABLE - SEGMENT B: SHAKESPEARE AREA NORTHERN BY-PASSES

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative 1	Alternative 2	Alternative 3	Alternative 4
5.0 TRANSPORTATION			25.00				
5.1 Area Transportation System Capacity and Efficiency			3.75				
5.1.2 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	No / Low / Medium / High Effects	1.88	1.00	1.00	1.00	1.00
5.1.3 Efficient movement of goods	Potential to support the efficient movement of goods between communities and regions based on Level of Service (LOS) and volume to capacity (v/c) on a network, screenline and critical link basis	No / Low / Medium / High Effects	1.88	1.00	1.00	1.00	1.00
		Weighted Score		3.75	3.75	3.75	3.75
5.2 Area Transportation System Reliability / Redundancy			3.75				
	Potential to support system reliability and redundancy for travel (people and goods) between regions and communities during adverse conditions.	No / Low / Medium / High Effects	3.75	1.00	1.00	1.00	1.00
		Weighted Score		3.75	3.75	3.75	3.75
5.3 Safety			6.25				
5.3.1 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	No / Low / Medium / High Effects	2.50	1.00	1.00	1.00	1.00
5.3.2 Emergency Access	Potential to support emergency access to/from existing and/or new provincial facilities	No / Low / Medium / High Effects	1.25	1.00	1.00	1.00	1.00
5.3.3 Pedestrian, Cyclist and Snowmobile Safety within the highway right-of-way	Potential and significance of change to ease and safety of movement across the highway and within the right-of-way.	No / Low / Medium / High Effects	2.50	1.00	1.00	1.00	1.00
		Weighted Score		6.25	6.25	6.25	6.25
5.4 Mobility and Accessibility			2.50				
5.4.1 Modal integration, balance and efficiency	Potential to improve modal choice and increase mode split for person trips between communities, regions and major transit station areas based on connection to concentrations of population, travel performance indicators (LOS, v/c, travel speed) at critical screenlines and on potential to provide higher order transit service.	No / Low / Medium / High Effects	0.25	0.33	0.33	0.33	0.33
5.4.2 Linkages to Population and Employment Centres	Potential to improve linkages to population and employment centres for people and goods movement.	No / Low / Medium / High Effects	0.75	0.67	0.67	0.67	0.67
5.4.3 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)	No / Low / Medium / High Effects	0.75	0.67	0.67	0.67	0.67
5.4.4 Accommodate mobility of pedestrians, cyclists and snowmobiles	Potential to accommodate mobility of pedestrians, cyclists within critical travel corridors in urbanized areas and snowmobiles in recognized rural trails.	No / Low / Medium / High Effects	0.75	1.00	1.00	1.00	1.00
		Weighted Score		1.84	1.84	1.84	1.84
5.5 Network Compatibility			1.25				
5.5.1 Network Connectivity	Potential to improve transportation system connectivity within and to/from the analysis area.	No / Low / Medium / High Effects	1.00	1.00	1.00	1.00	1.00
5.5.2 Flexibility for Future Expansion	Potential to address future transportation needs beyond the forecasted planning horizons.	No / Low / Medium / High Effects	0.25	1.00	1.00	0.67	0.67
		Weighted Score		1.25	1.25	1.17	1.17
5.6 Engineering			2.50				
5.6.1 Constructability	Potential ease of implementation considering feasibility/difficulty of physical, property or environmental constraints.	No / Low / Medium / High Effects	2.00	0.67	0.67	0.67	0.67
5.6.2 Compliance with Design Criteria	Conformity to applicable provincial safety and design standards.	No / Low / Medium / High Effects	0.50	1.00	1.00	1.00	1.00
		Weighted Score		1.84	1.84	1.84	1.84
5.7 Traffic Operations			3.75				
	Potential for negative impact on traffic operations due to factors such as design features, private access, and transportation network connections.	No / Low / Medium / High Effects	3.75	0.33	0.33	0.33	0.33
		Weighted Score		1.24	1.24	1.24	1.24
5.8 Construction Cost (excludes property costs and engineering costs)			1.25				
	Relative road construction cost, excluding property and engineering costs.	No / Low / Medium / High Effects	1.25	0.33	0.33	0.33	0.33
		Weighted Score		1.24	1.24	1.24	1.24
		Factored Score	**25.00**	**21.15**	**21.15**	**21.07**	**21.07**

ALTERNATIVE DESCRIPTIONS
1: B1: 1-2-4-5-11-13-15
2: B2: 1-2-4-5-9-11-13-15
3: B3: 1-2-4-6-8-9-11-13-15
4: B4: 1-2-4-6-8-11-13-15

SUMMARY WEIGHTING TABLE - SEGMENT B: SHAKESPEARE AREA NORTHERN BY-PASSES
SUMMARY OF SENSITIVITY ANALYSIS - RANKING OF ALTERNATIVES

FACTORS	RATING	WEIGHT	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Evaluation Team	Initial Weights		1	2	3	4
SENSITIVITY ANALYSIS						
Natural Environment	High	50%	1	2	3	4
	Low	10%	1	2	3	4
Land Use / Socio-Economic Environment	High	85%	1	2	3	4
	Low	10%	1	2	3	4
Cultural Environment	High	50%	1	2	3	4
	Low	10%	1	2	3	4
Transportation	High	70%	1	2	3	4
	Low	10%	1	2	3	4
Stakeholder Input (SARA)	SARA Weights		1	2	3	4
Overall Ranking			1	2	3	4

ALTERNATIVE DESCRIPTIONS

1: B1: 1-2-4-5-11-13-15
2: B2: 1-2-4-5-9-11-13-15
3: B3: 1-2-4-6-8-9-11-13-15
4: B4: 1-2-4-6-8-11-13-15

Highway 2W Transportation Corridor
Planning and Class EA Study

SEGMENT B - SHAKESPEARE AREA NORTHERN BY-PASSES

FACTORS	Weighting	Alternative 1	2	3	4
1.0 NATURAL ENVIRONMENT	20.00				
1.1 Fisheries and Aquatic Ecosystems	8.00				
Weighted Score		5.36	5.36	5.36	5.36
1.2 Terrestrial Ecosystems	5.00				
Weighted Score		3.10	3.10	3.10	3.10
1.3 Groundwater	5.00				
Weighted Score		3.17	3.17	3.17	2.51
1.4 Surface Water	2.00				
Weighted Score		0.66	0.66	0.66	0.66
Factored Score	20.00	12.29	12.29	12.29	11.62
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	35.00				
2.1 Land Use Planning Policies, Goals, Objectives	3.50				
Weighted Score		2.17	2.17	1.80	1.80
2.2 Land Use / Community	7.00				
Weighted Score		4.09	3.73	3.73	3.73
2.3 Noise Sensitive Areas	5.25				
Weighted Score		3.52	1.73	1.73	0.00
2.4 Agriculture	7.00				
Weighted Score		1.16	1.16	0.23	0.23
2.5 Land Use / Resources	3.50				
Weighted Score		1.76	2.23	2.23	2.23
2.6 Major Utility Transmission Corridors	0.70				
Weighted Score		0.70	0.70	0.70	0.70
2.7 Contaminated Property and Waste Management	0.70				
Weighted Score		0.23	0.23	0.23	0.23
2.8 Landscape Composition	2.10				
Weighted Score		0.69	0.69	0.69	0.69
2.9 Air Quality	5.25				
Weighted Score		3.52	3.52	3.52	3.52
Factored Score	35.00	17.83	16.16	15.06	13.32
3.0 CULTURAL ENVIRONMENT	20.00				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	16.00				
Weighted Score		7.32	7.32	7.32	7.32
3.2 Archaeology	4.00				
Weighted Score		1.32	1.32	1.32	1.32
Factored Score	20.00	8.64	8.64	8.64	8.64
5.0 TRANSPORTATION	25.00				
5.1 Area Transportation System Capacity and Efficiency	3.75				
Weighted Score		3.75	3.75	3.75	3.75
5.2 Area Transportation System Reliability / Redundancy	3.75				
Weighted Score		3.75	3.75	3.75	3.75
5.3 Safety	6.25				
Weighted Score		6.25	6.25	6.25	6.25
5.4 Mobility and Accessibility	2.50				
Weighted Score		1.84	1.84	1.84	1.84
5.5 Network Compatibility	1.25				
Weighted Score		1.25	1.25	1.17	1.17
5.6 Engineering	2.50				
Weighted Score		1.84	1.84	1.84	1.84
5.7 Traffic Operations	3.75				
Weighted Score		1.24	1.24	1.24	1.24
5.8 Construction Cost	1.25				
Weighted Score		1.24	1.24	1.24	1.24
Factored Score	25.00	21.15	21.15	21.07	21.07
	100.00				
Total Alternative Score		59.91	58.24	57.05	54.65

Natural 50%

Weighting	Alternative 1	2	3	4
50.00				
20.00	13.40	13.40	13.40	13.40
12.50	7.74	7.74	7.74	7.74
12.50	7.93	7.93	7.93	6.26
5.00	1.65	1.65	1.65	1.65
50.00	30.71	30.71	30.71	29.05
22.00				
2.20	1.36	1.36	1.25	1.25
4.40	2.57	2.35	2.35	2.35
3.30	2.21	1.09	1.09	0.00
4.40	0.73	0.73	0.15	0.15
2.20	1.10	1.40	1.40	1.40
0.44	0.44	0.44	0.44	0.44
0.44	0.15	0.15	0.15	0.15
1.32	0.44	0.44	0.44	0.44
3.30	2.21	2.21	2.21	2.21
22.00	11.21	10.16	9.46	8.38
12.50				
10.00	4.58	4.58	4.58	4.58
2.50	0.83	0.83	0.83	0.83
12.50	5.40	5.40	5.40	5.40
15.50				
2.33	2.33	2.33	2.33	2.33
2.33	2.33	2.33	2.33	2.33
3.88	3.88	3.88	3.88	3.88
1.55	1.14	1.14	1.14	1.14
0.78	0.78	0.78	0.72	0.72
1.55	1.14	1.14	1.14	1.14
2.33	0.77	0.77	0.77	0.77
0.78	0.77	0.77	0.77	0.77
15.50	13.11	13.11	13.06	13.06
100.00	60.43	59.38	58.64	55.89

Natural 10%

	Weighting	Alternative 1	2	3	4	
2.5	10.00					0.5
	4.00	2.68	2.68	2.68	2.68	
	2.50	1.55	1.55	1.55	1.55	
	2.50	1.59	1.59	1.59	1.25	
	1.00	0.33	0.33	0.33	0.33	
	10.00	6.14	6.14	6.14	5.81	
0.63	39.50					1.13
	3.95	2.45	2.45	2.25	2.25	
	7.90	4.62	4.21	4.21	4.21	
	5.93	3.97	1.96	1.96	0.00	
	7.90	1.30	1.30	0.26	0.26	
	3.95	1.88	2.51	2.51	2.51	
	0.79	0.79	0.79	0.79	0.79	
	0.79	0.26	0.26	0.26	0.26	
	2.37	0.78	0.78	0.78	0.78	
	5.93	3.97	3.97	3.97	3.97	
	39.50	20.12	18.24	16.99	15.04	
0.63	22.50					1.13
	18.00	8.24	8.24	8.24	8.24	
	4.50	1.48	1.48	1.48	1.48	
	22.50	9.72	9.72	9.72	9.72	
0.62	28.00					1.12
	4.20	4.20	4.20	4.20	4.20	
	4.20	4.20	4.20	4.20	4.20	
	7.00	7.00	7.00	7.00	7.00	
	2.80	2.06	2.06	2.06	2.06	
	1.40	1.40	1.40	1.21	1.21	
	2.80	2.06	2.06	2.06	2.06	
	4.20	1.39	1.39	1.39	1.39	
	1.40	1.39	1.39	1.39	1.39	
	28.00	23.69	23.69	23.60	23.60	
	100.00	59.68	57.79	56.45	54.17	

ALTERNATIVE DESCRIPTIONS
1: B1: 1-2-4-5-11-13-15
2: B2: 1-2-4-5-9-11-13-15
3: B3: 1-2-4-6-8-9-11-13-15
4: B4: 1-2-4-6-8-11-13-15

Highway 7/8 Transportation Corridor
Planning and Class EA Study **SEGMENT B - SHAKESPEARE Alt**Land Use / Socio-Economic 85%

FACTORS	Weighting	Alternative 1	2	3	4
1.0 NATURAL ENVIRONMENT	5.00				
1.1 Fisheries and Aquatic Ecosystems	2.00				
Weighted Score		1.34	1.34	1.34	1.34
1.2 Terrestrial Ecosystems	1.25				
Weighted Score		0.77	0.77	0.77	0.77
1.3 Groundwater	1.25				
Weighted Score		0.79	0.79	0.79	0.63
1.4 Surface Water	0.50				
Weighted Score		0.17	0.17	0.17	0.17
Factored Score	5.00	3.07	3.07	3.07	2.91
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	85.00				
2.1 Land Use Planning Policies, Goals, Objectives	8.50				
Weighted Score		5.27	5.27	4.84	4.84
2.2 Land Use / Community	17.00				
Weighted Score		9.94	9.07	9.07	9.07
2.3 Noise Sensitive Areas	12.75				
Weighted Score		8.54	4.21	4.21	0.00
2.4 Agriculture	17.00				
Weighted Score		2.81	2.81	0.56	0.56
2.5 Land Use / Resources	8.50				
Weighted Score		4.27	5.41	5.41	5.41
2.6 Major Utility Transmission Corridors	1.70				
Weighted Score		1.70	1.70	1.70	1.70
2.7 Contaminated Property and Waste Management	1.70				
Weighted Score		0.56	0.56	0.56	0.56
2.8 Landscape Composition	5.10				
Weighted Score		1.68	1.68	1.68	1.68
2.9 Air Quality	12.75				
Weighted Score		8.54	8.54	8.54	8.54
Factored Score	85.00	43.30	39.24	36.57	32.36
3.0 CULTURAL ENVIRONMENT	5.00				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	4.00				
Weighted Score		1.83	1.83	1.83	1.83
3.2 Archaeology	1.00				
Weighted Score		0.33	0.33	0.33	0.33
Factored Score	5.00	2.16	2.16	2.16	2.16
5.0 TRANSPORTATION	5.00				
5.1 Area Transportation System Capacity and Efficiency	0.75				
Weighted Score		0.75	0.75	0.75	0.75
5.2 Area Transportation System Reliability / Redundancy	0.75				
Weighted Score		0.75	0.75	0.75	0.75
5.3 Safety	1.25				
Weighted Score		1.25	1.25	1.25	1.25
5.4 Mobility and Accessibility	0.50				
Weighted Score		0.37	0.37	0.37	0.37
5.5 Network Compatibility	0.25				
Weighted Score		0.25	0.25	0.23	0.23
5.6 Engineering	0.50				
Weighted Score		0.37	0.37	0.37	0.37
5.7 Traffic Operations	0.75				
Weighted Score		0.25	0.25	0.25	0.25
5.8 Construction Cost	0.25				
Weighted Score		0.25	0.25	0.25	0.25
Factored Score	5.00	4.23	4.23	4.21	4.21
Total Alternative Score	100.00	52.76	48.70	46.01	41.64

Land Use / Socio-Economic 10%

	Weighting	Alternative 1	2	3	4
0.25	28.00				
	11.20				
		7.50	7.50	7.50	7.50
	7.00				
		4.33	4.33	4.33	4.33
	7.00				
		4.44	4.44	4.44	3.51
	2.80				
		0.92	0.92	0.92	0.92
	28.00	17.20	17.20	17.20	16.27
2.43	10.00				
	1.00				
		0.62	0.62	0.57	0.57
	2.00				
		1.17	1.07	1.07	1.07
	1.50				
		1.01	0.90	0.90	0.00
	2.00				
		0.33	0.33	0.07	0.07
	1.00				
		0.50	0.64	0.64	0.64
	0.20				
		0.20	0.20	0.20	0.20
	0.20				
		0.07	0.07	0.07	0.07
	0.60				
		0.20	0.20	0.20	0.20
	1.50				
		1.01	1.01	1.01	1.01
	10.00	5.09	4.62	4.30	3.81
0.25	28.00				
	22.40				
		10.25	10.25	10.25	10.25
	5.60				
		1.85	1.85	1.85	1.85
	28.00	12.10	12.10	12.10	12.10
0.2	34.00				
	5.10				
		5.10	5.10	5.10	5.10
	5.10				
		5.10	5.10	5.10	5.10
	8.50				
		8.50	8.50	8.50	8.50
	3.40				
		2.50	2.50	2.50	2.50
	1.70				
		1.70	1.70	1.59	1.59
	3.40				
		2.50	2.50	2.50	2.50
	5.10				
		1.68	1.68	1.68	1.68
	1.70				
		1.68	1.68	1.68	1.68
	34.00	28.77	28.77	28.66	28.66
	100.00	63.16	62.68	62.25	60.83

Cultural 50%

	Weighting	Alternative 1	2	3	4	
1.4	12.50					0.625
	5.00					
		3.35	3.35	3.35	3.35	
	3.13					
		1.93	1.93	1.93	1.93	
	3.13					
		1.98	1.98	1.98	1.57	
	1.25					
		0.41	0.41	0.41	0.41	
	12.50	7.68	7.68	7.68	7.26	
0.29	22.00					0.63
	2.20					
		1.36	1.36	1.25	1.25	
	4.40					
		2.57	2.35	2.35	2.35	
	3.30					
		2.21	1.08	1.08	0.00	
	4.40					
		0.73	0.72	0.15	0.15	
	2.20					
		1.10	1.40	1.40	1.40	
	0.44					
		0.44	0.44	0.44	0.44	
	0.44					
		0.15	0.15	0.15	0.15	
	1.32					
		0.44	0.44	0.44	0.44	
	3.30					
		2.21	2.21	2.21	2.21	
	22.00	11.21	10.16	9.46	8.38	
1.40	50.00					2.50
	40.00					
		18.30	18.30	18.30	18.30	
	10.00					
		3.30	3.30	3.30	3.30	
	50.00	21.60	21.60	21.60	21.60	
1.26	15.50					0.62
	2.33					
		2.33	2.33	2.33	2.33	
	2.33					
		2.33	2.33	2.33	2.33	
	3.88					
		3.88	3.88	3.88	3.88	
	1.55					
		1.14	1.14	1.14	1.14	
	0.78					
		0.78	0.78	0.72	0.72	
	1.55					
		1.14	1.14	1.14	1.14	
	2.33					
		0.77	0.77	0.77	0.77	
	0.78					
		0.77	0.77	0.77	0.77	
	15.50	13.11	13.11	13.06	13.06	
	100.00	53.60	52.55	51.81	50.30	

ALTERNATIVE DESCRIPTIONS
1: B1: 1-2-4-5-11-13-15
2: B2: 1-2-4-5-9-11-13-15
3: B3: 1-2-4-6-8-9-11-13-15
4: B4: 1-2-4-6-8-11-13-15

Highway 7/8 Transportation Corridor
Planning and Class EA Study **SEGMENT B - SHAKESPEARE AI**Cultural 10%

FACTORS	Weighting	Alternative 1	2	3	4
1.0 NATURAL ENVIRONMENT	22.50				
1.1 Fisheries and Aquatic Ecosystems	9.00				
Weighted Score		6.03	6.03	6.03	6.03
1.2 Terrestrial Ecosystems	5.63				
Weighted Score		3.48	3.48	3.48	3.48
1.3 Groundwater	5.63				
Weighted Score		3.57	3.57	3.57	2.82
1.4 Surface Water	2.25				
Weighted Score		0.74	0.74	0.74	0.74
Factored Score	22.50	13.82	13.82	13.82	13.07
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	39.50				
2.1 Land Use Planning Policies, Goals, Objectives	3.95				
Weighted Score		2.45	2.45	2.25	2.25
2.2 Land Use / Community	7.90				
Weighted Score		4.62	4.21	4.21	4.21
2.3 Noise Sensitive Areas	5.93				
Weighted Score		3.97	1.96	1.96	0.00
2.4 Agriculture	7.90				
Weighted Score		1.30	1.30	0.26	0.26
2.5 Land Use / Resources	3.95				
Weighted Score		1.98	2.51	2.51	2.51
2.6 Major Utility Transmission Corridors	0.79				
Weighted Score		0.79	0.79	0.79	0.79
2.7 Contaminated Property and Waste Management	0.79				
Weighted Score		0.26	0.26	0.26	0.26
2.8 Landscape Composition	2.37				
Weighted Score		0.78	0.78	0.78	0.78
2.9 Air Quality	5.93				
Weighted Score		3.97	3.97	3.97	3.97
Factored Score	39.50	20.12	18.24	16.99	15.04
3.0 CULTURAL ENVIRONMENT	10.00				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	8.00				
Weighted Score		3.66	3.66	3.66	3.66
3.2 Archaeology	2.00				
Weighted Score		0.66	0.66	0.66	0.66
Factored Score	10.00	4.32	4.32	4.32	4.32
5.0 TRANSPORTATION	28.00				
5.1 Area Transportation System Capacity and Efficiency	4.20				
Weighted Score		4.20	4.20	4.20	4.20
5.2 Area Transportation System Reliability / Redundancy	4.20				
Weighted Score		4.20	4.20	4.20	4.20
5.3 Safety	7.00				
Weighted Score		7.00	7.00	7.00	7.00
5.4 Mobility and Accessibility	2.80				
Weighted Score		2.06	2.06	2.06	2.06
5.5 Network Compatibility	1.40				
Weighted Score		1.40	1.40	1.31	1.31
5.6 Engineering	2.80				
Weighted Score		2.06	2.06	2.06	2.06
5.7 Traffic Operations	4.20				
Weighted Score		1.39	1.39	1.39	1.39
5.8 Construction Cost	1.40				
Weighted Score		1.39	1.39	1.39	1.39
Factored Score	28.00	23.69	23.69	23.60	23.60
Total Alternative Score	100.00	61.95	60.07	58.73	56.03

Transportation 70%

	Weighting	Alternative 1	2	3	4
1.125	8.00				
	3.20	2.14	2.14	2.14	2.14
	2.00	1.24	1.24	1.24	1.24
	2.00	1.27	1.27	1.27	1.00
	0.80	0.26	0.26	0.26	0.26
	8.00	4.91	4.91	4.91	4.65
1.13	14.00				
	1.40	0.87	0.87	0.80	0.80
	2.80	1.64	1.49	1.49	1.49
	2.10	1.41	0.69	0.69	0.00
	2.80	0.46	0.46	0.09	0.09
	1.40	0.70	0.09	0.89	0.89
	0.28	0.28	0.28	0.28	0.28
	0.28	0.09	0.09	0.09	0.09
	0.84	0.28	0.28	0.28	0.28
	2.10	1.41	1.41	1.41	1.41
	14.00	7.13	6.46	6.02	5.33
0.50	8.00				
	6.40	2.93	2.93	2.93	2.93
	1.60	0.53	0.53	0.53	0.53
	8.00	3.46	3.46	3.46	3.46
1.12	70.00				
	10.50	10.50	10.50	10.50	10.50
	10.50	10.50	10.50	10.50	10.50
	17.50	17.50	17.50	17.50	17.50
	7.00	5.15	5.15	5.15	5.15
	3.50	3.50	3.50	3.27	3.27
	7.00	5.15	5.15	5.15	5.15
	10.50	3.47	3.47	3.47	3.47
	3.50	3.47	3.47	3.47	3.47
	70.00	59.23	59.23	59.00	59.00
	100.00	74.73	74.06	73.39	72.43

Transportation 10%

	Weighting	Alternative 1	2	3	4
0.4	24.00				
	9.60	6.43	6.43	6.43	6.43
	6.00	3.71	3.71	3.71	3.71
	6.00	3.80	3.80	3.80	3.01
	2.40	0.79	0.79	0.79	0.79
	24.00	14.74	14.74	14.74	13.94
0.40	42.00				
	4.20	2.80	2.80	2.39	2.39
	8.40	4.91	4.48	4.48	4.48
	6.30	4.22	2.08	2.08	0.00
	8.40	1.39	1.39	0.28	0.28
	4.20	2.11	2.67	2.67	2.67
	0.84	0.84	0.84	0.84	0.84
	0.84	0.28	0.28	0.28	0.28
	2.52	0.83	0.83	0.83	0.83
	6.30	4.22	4.22	4.22	4.22
	42.00	21.40	19.39	18.07	15.99
0.40	24.00				
	19.20	8.78	8.78	8.78	8.78
	4.80	1.58	1.58	1.58	1.58
	24.00	10.37	10.37	10.37	10.37
2.8	10.00				
	1.50	1.50	1.50	1.50	1.50
	1.50	1.50	1.50	1.50	1.50
	2.50	2.50	2.50	2.50	2.50
	1.00	0.74	0.74	0.74	0.74
	0.50	0.50	0.50	0.47	0.47
	1.00	0.74	0.74	0.74	0.74
	1.50	0.50	0.50	0.50	0.50
	0.50	0.50	0.50	0.50	0.50
	10.00	8.46	8.46	8.43	8.43
	100.00	54.97	52.96	51.61	48.73

SIARA

	Weighting	Alternative 1	2	3	4	
1.2	10.00					0.5
	4.00	2.68	2.68	2.68	2.68	
	2.50	1.55	1.55	1.55	1.55	
	2.50	1.59	1.59	1.59	1.25	
	1.00	0.33	0.33	0.33	0.33	
	10.00	6.14	6.14	6.14	5.81	
1.2	20.00					0.57
	2.00	1.24	1.24	1.14	1.14	
	4.00	2.34	2.13	2.13	2.13	
	3.00	2.01	0.99	0.99	0.00	
	4.00	0.86	0.86	0.13	0.13	
	2.00	1.00	1.27	1.27	1.27	
	0.40	0.40	0.40	0.40	0.40	
	0.40	0.13	0.13	0.13	0.13	
	1.20	0.40	0.40	0.40	0.40	
	3.00	2.01	2.01	2.01	2.01	
	20.00	10.19	9.23	8.60	7.61	
1.2	20.00					1.00
	16.00	7.32	7.32	7.32	7.32	
	4.00	1.32	1.32	1.32	1.32	
	20.00	8.64	8.64	8.64	8.64	
0.4	50.00					2
	7.50	7.50	7.50	7.50	7.50	
	7.50	7.50	7.50	7.50	7.50	
	12.50	12.50	12.50	12.50	12.50	
	5.00	3.68	3.68	3.68	3.68	
	2.50	2.50	2.50	2.34	2.34	
	5.00	3.68	3.68	3.68	3.68	
	7.50	2.48	2.48	2.48	2.48	
	2.50	2.48	2.48	2.48	2.48	
	50.00	42.31	42.31	42.14	42.14	
	100.00	67.28	66.32	65.53	64.20	

ALTERNATIVE DESCRIPTIONS
1: B1: 1-2-4-5-11-13-15
2: B2: 1-2-4-5-9-11-13-15
3: B3: 1-2-4-6-8-9-11-13-15
4: B4: 1-2-4-6-8-11-13-15

Best of Shakespeare Area Alternatives

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

BEST OF SHAKESPEARE AREA ALTERNATIVES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			Best of A plus E A3 + E: 1-2-4-7-10-12-14	**Best of A plus F A3 + F: 1-2-4-7-10-12-15**	**Best of B B1: 1-2-4-5-11-13-15**	**Existing Highway 7&8 Alignment 1-2-4-6-13-15**
1. NATURAL ENVIRONMENTAL FACTORS						
1.1 Fisheries and Aquatic Ecosystems						
	1.1.1 Fish Habitat	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • critical fish habitat features • riparian areas • habitat rehabilitation goals	**Low** potential to affect fish and fish habitat • 2 permanent warmwater and 1 permanent coolwater crossings of Horner Creek containing low to medium quality habitat supporting warmwater fish species • I permanent coolwater crossing of the North Woodstock River containing low to medium quality fish habitat. • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Fish movements are likely localized between feeding and spawning areas which are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route alternative. • There are no SAR within the route alternative • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated.	**Low** potential to affect fish and fish habitat • 2 permanent warmwater and 1 permanent coolwater crossings of Horner Creek containing low to medium quality habitat supporting warmwater fish species • I permanent coolwater crossing of the North Woodstock River containing low to medium quality fish habitat. • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Fish movements are likely localized between feeding and spawning areas which are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route alternative. • There are no SAR within the route alternative • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated.	**Low** potential to affect fish and fish habitat • 2 permanent warmwater and 1 permanent coolwater crossings of Horner Creek containing low to medium quality habitat supporting warmwater fish species • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Fish movements are likely localized between feeding and spawning areas which are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route alternative. • There are no SAR within the route alternative • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated.	**Low** potential to affect fish and fish habitat • 2 permanent warmwater crossings of Horner Creek containing low to medium quality habitat supporting warmwater fish species • Existing ROW already represents some local disturbance due to existing culverts and surface water road run-off • Fish communities and habitats present are considered to be moderately resilient to disturbance and show evidence of historical channel alignments or modifications • Fish movements are likely localized between feeding and spawning areas which are abundant within the reaches outside of the study area. There are no critical habitat types within reaches associated with the route alternative. • There are no SAR within the route alternative • Expected impacts include temporary disturbance to fish and fish habitat associated with construction, potential for short term impacts to water quality during construction. Impacts can be mitigated and/or compensated.
	1.1.2 Fish Community	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • fish species at risk (vulnerable, threatened or endangered fish species) • fish movement/migration • critical fish life stage processes (spawning, rearing, nursery, feeding) • long-term fish community management goals					
1.2 Terrestrial Ecosystems						
	1.2.1 Wildlife	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following:	**Low** potential to affect wildlife and their habitat • No special concern, endangered or threatened wildlife species	**Low** potential to affect wildlife and their habitat • No special concern, endangered or threatened wildlife species	**Medium** potential to affect wildlife and their habitat • 1 threatened amphibian species was reported within or adjacent to	**Medium** potential to affect wildlife and their habitat • 1 threatened amphibian species was reported within or adjacent to

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED ROUTE

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

BEST OF SHAKESPEARE AREA ALTERNATIVES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			Best of A plus E A3 + E: 1-2-4-7-10-12-14	**Best of A plus F A3 + F: 1-2-4-7-10-12-15**	**Best of B B1: 1-2-4-5-11-13-15**	**Existing Highway 7&8 Alignment 1-2-4-6-13-15**
		• wildlife species at risk (vulnerable, threatened or endangered wildlife species) • wildlife of local and regional importance • migratory birds • critical wildlife habitat features • ecologically functional areas such as connective corridors or travel ways for movement/migration • important wildlife areas such as deeryards, heronries, waterfowl areas, important bird areas • wildlife management, rehabilitation/research program sites • interference with critical wildlife life stage processes (eg mating/rearing) etc	• No provincially rare species (S1 – S3) • 1 area sensitive bird species recorded in study corridor • No critical wildlife habitat or habitat supporting species of concern present within the route alternative	• No provincially rare species (S1 – S3) • 1 area sensitive bird species recorded in study corridor • No critical wildlife habitat or habitat supporting species of concern present within the route alternative	the route alternative • No provincially rare species (S1 – S3) • 1 area sensitive bird species recorded within study corridor • Route alternative has the potential to encroach on wetland habitat supporting a threatened species	the route alternative • No provincially rare species (S1 – S3) • 1 area sensitive bird species recorded within study corridor • Route alternative has the potential to encroach on wetland habitat supporting a threatened species
	1.2.2 Wetlands	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • provincially significant wetlands, their buffer areas, and their wetland function • evaluated and un-evaluated wetlands, their wetland buffer areas, and their wetland function • wetland management, research and/or wetland conservation programs/areas	**Low** potential to affect wetlands • No PSW or LSW are present within the study corridor • 3 unevaluated low quality wetlands such as meadow marsh are found within the route alternative	**Low** potential to affect wetlands • No PSW or LSW are present within the study corridor • 3 unevaluated low quality wetlands such as meadow marsh are found within the route alternative	**Low** potential to affect wetlands • No PSW or LSW are present within the route alternative • 3 small unevaluated low quality wetlands such as meadow marsh are found within the route alternative	**Low** potential to affect wetlands • No PSW or LSW are present within the route alternative • 3 small unevaluated low quality wetlands such as meadow marsh are found within the route alternative
	1.2.3 Forests	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • significant woodlands/valley lands • forest management / research program areas	**Low** potential to affect significant or established woodlands or forests • Route alternative will require a minimal removal of vegetation from 3 woodlands • Impacts to woodlands limited to encroachment to edge of forests	**Low** potential to affect significant or established woodlands or forests • Route alternative will require a minimal removal of vegetation from 3 woodlands • Impacts to woodlands limited to encroachment to edge of forests	**Low** potential to affect significant or established woodlands or forests • Route alternative will require a minimal removal of vegetation from 2 woodlands • Impacts to woodlands limited to encroachment on forest edge	**Low** potential to affect significant or established woodlands or forests • Route alternative will require a minimal removal of vegetation from 2 woodlands • Impacts to woodlands limited to encroachment on forest edge
	1.2.4 Vegetation	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption as applicable to the following: • populations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant regional/local	**Low** potential to affect vegetation • Route alternative is predominantly agricultural field and existing roadway • Impacts include encroachment into low quality wetland habitat	**Low** potential to affect vegetation • Route alternative is predominantly agricultural field and existing roadway • Impacts include encroachment into low quality wetland habitat	**Low** potential to affect vegetation • Route is predominantly agricultural field and existing roadway • Impacts include encroachment into low quality wetland habitat	**Low** potential to affect vegetation • Route is predominantly existing roadway with manicured lawns and property trees, and agricultural fields • Impacts include encroachment into low quality wetland habitat

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED ROUTE

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

BEST OF SHAKESPEARE AREA ALTERNATIVES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			Best of A plus E A3 + E: 1-2-4-7-10-12-14	**Best of A plus F A3 + F: 1-2-4-7-10-12-15**	**Best of B B1: 1-2-4-5-11-13-15**	**Existing Highway 7&8 Alignment 1-2-4-6-13-15**
		flora/communities • areas/corridors supporting known populations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant flora/communities • vegetation management, rehabilitation/research program sites				
	1.2.5 Designated/ Special Areas	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to designated/special areas.	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI	**Low** potential to affect designated/special areas • Does not cross any ESA or ANSI
1.3 Groundwater						
	1.3.1 Areas of Groundwater 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-f**Low** and quality	**Low** potential to adversely affect volume of groundwater at recharge and discharge areas • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings, higher infiltration can be expected. • No temporary or long-term change to groundwater recharge or discharge is anticipated due to the small surface area affected by highway construction in the route alternative.	**Low** potential to adversely affect volume of groundwater at recharge and discharge areas • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings, higher infiltration can be expected. • No temporary or long-term change to groundwater recharge or discharge is anticipated due to the small surface area affected by highway construction in the route alternative.	**Medium** potential to adversely affect groundwater recharge and discharge areas. • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings, higher infiltration can be expected. • The route intersects the 25 year capture zone (recharge area) for Shakespeare's Municipal well. • No temporary or long term change to groundwater recharge or discharge is anticipated due to the small surface area affected by the route alternative.	**Low** potential to adversely affect volume of groundwater at recharge and discharge areas • Surface runoff is interpreted to exceed infiltration for the majority of the route given the relatively impermeable nature of the glaciolacustrine and silty till deposits. • However, in areas of sandy deposits, such as river crossings, higher infiltration can be expected. • No temporary or long-term change to groundwater recharge or discharge is anticipated due to the small surface area affected by highway construction in the route alternative.
	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	**Low** potential to adversely affect groundwater wellhead protection area. • The route alternative is upgradient of the delineated wellhead protection area for the	**Low** potential to adversely affect groundwater wellhead protection area. • The route alternative is upgradient of the delineated wellhead protection area for the	**Medium** potential to adversely affect groundwater quality within wellhead protection area. • The route is located within the 25 year capture zone (recharge	**Low** potential to adversely affect groundwater wellhead protection area. • The proposed route is upgradient of the delineated wellhead protection area for the town of

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED ROUTE

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

BEST OF SHAKESPEARE AREA ALTERNATIVES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			Best of A plus E **A3 + E: 1-2-4-7-10-12-14**	**Best of A plus F** **A3 + F: 1-2-4-7-10-12-15**	**Best of B** **B1: 1-2-4-5-11-13-15**	**Existing Highway 7&8 Alignment** **1-2-4-6-13-15**
		compaction	town of Tavistock. • The proposed route is located outside of the 25 year capture zone (recharge area) for the municipal well, which is located approximately 6 km to the south of the route alternative. • The municipal well is screened within the bedrock aquifer, which is confined above by **Low** permeability Silty Till and Glaciolacustrine deposits.	town of Tavistock. • The proposed route is located outside of the 25 year capture zone (recharge area) for the municipal well, which is located approximately 6 km to the south of the route alternative. • The municipal well is screened within the bedrock aquifer, which is confined above by **Low** permeability Silty Till and Glaciolacustrine deposits.	area) for the Shakespeare municipal well. • Runoff control and road salt use should be mitigated within this area.	Tavistock. • The proposed route is located outside of the 25 year capture zone (recharge area) for the municipal well, which is located approximately 6 km to the south of the route alternative. • The municipal well is screened within the bedrock aquifer, which is confined above by **Low** permeability Silty Till and Glaciolacustrine deposits.
	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	**Low** potential to adversely affect large volume wells. • The route alternative is upgradient of the delineated wellhead protection area for the town of Tavistock. • The route alternative is located outside of the 25 year capture zone (recharge area) for the municipal well, which is located approximately 6 km to the south of the route alternative. • No other large production wells were identified along the route	**Low** potential to adversely affect large volume wells. • The route alternative is upgradient of the delineated wellhead protection area for the town of Tavistock. • The route alternative is located outside of the 25 year capture zone (recharge area) for the municipal well, which is located approximately 6 km to the south of the route alternative. • No other large production wells were identified along the route	**Medium** potential to adversely affect groundwater quality within wellhead protection area. • The route is located within the 25 year capture zone (recharge area) for the Shakespeare municipal well. • Runoff control and road salt use should be mitigated within this area.	**Low** potential to adversely affect large volume wells. • The proposed route is upgradient of the delineated wellhead protection area for the town of Tavistock. • The proposed route is located outside of the 25 year capture zone (recharge area) for the municipal well, which is located approximately 6 km to the south of the route alternative. • No other large production wells were identified along the route
	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	**Low** potential to adversely affect private wells • The route alternative is in close proximity (<150 m) to 3 shallow dug wells completed within surficial sand deposits. These wells are located immediately to the west of Road 106 and immediately to the south along the existing Hwy 7/8 Route. • These wells are sensitive to surface contamination (i.e. road salt). The potential exists for long-term and short-term effects to these wells due to their close proximity to the route. • Mitigation measures to prevent adverse impact to these wells due to highway construction should be	**Low** potential to adversely affect private wells • The route alternative is in close proximity (<150 m) to 3 shallow dug wells completed within surficial sand deposits. These wells are located immediately to the west of Road 106 and immediately to the south along the existing Hwy 7/8 Route. • These wells are sensitive to surface contamination (i.e. road salt). The potential exists for long-term and short-term effects to these wells due to their close proximity to the route. • Mitigation measures to prevent adverse impact to these wells due to highway construction	**Low** potential to adversely affect private wells • Route is in close proximity to 3 shallow dug wells completed within surficial sand deposits. These wells are located immediately to the west of Road 106 and immediately to the south along the existing Hwy 7/8 Route. • These wells are sensitive to surface contamination (i.e. road salt). The potential exists for long term and short term adverse effects to these wells due to their close proximity to the route. • Mitigation measures to prevent or eliminate adverse impacts to these wells due to highway construction should be	**Low** potential to adversely affect private wells • Route is in close proximity (<150 m) to 3 shallow dug wells completed within surficial sand deposits. These wells are located immediately to the west of 106th Road and immediately to the south along the existing Hwy 7/8 Route. • These wells are sensitive to surface contamination (i.e. road salt). The potential exists for long-term and short-term effects to these wells due to their close proximity to the route. • Mitigation measures to prevent adverse impact to these wells due to highway construction should be

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED ROUTE

Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

BEST OF SHAKESPEARE AREA ALTERNATIVES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			Best of A plus E A3 + E: 1-2-4-7-10-12-14	**Best of A plus F A3 + F: 1-2-4-7-10-12-15**	**Best of B B1: 1-2-4-5-11-13-15**	**Existing Highway 7&8 Alignment 1-2-4-6-13-15**
			implemented, such as a road salt management plan. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer and are therefore not at risk.	should be implemented, such as a road salt management plan. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer and are therefore not at risk.	implemented, such as a road salt management plan. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer and are therefore not at risk.	implemented, such as a road salt management plan. • All other private wells along the route obtain water supply from the deep confined bedrock aquifer and are therefore not at risk.
	1.3.5 Groundwater-Dependent Commercial Enterprises (e.g. water bottling operations)	Potential and significance of alteration to groundwater use by groundwater-dependent commercial enterprises due to physical intrusion, or groundwater interception, draw-down, impoundment, obstruction and by soil compaction	**No** potential to adversely affect groundwater dependent commercial enterprises • No groundwater dependent commercial enterprises have been identified along this route.	**No** potential to adversely affect groundwater dependent commercial enterprises • No groundwater dependent commercial enterprises have been identified along this route.	**No** potential to adversely affect groundwater dependent commercial enterprises • No groundwater dependent commercial enterprises have been identified along this route.	**No** potential to adversely affect groundwater dependent commercial enterprises • No groundwater dependent commercial enterprises have been identified along this route.
	1.3.6 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	**Low** potential to adversely affect groundwater sensitive ecosystems • One (1) new crossing of a potentially groundwater fed stream. • Possible encroachment on an unevaluated wetland (i.e. not identified as provincially or locally significant). • Potential long-term adverse effect to groundwater quality due to increased road salt use and road run-off. • Potential temporary adverse effects to groundwater quantity exist if construction dewatering is required	**Low** potential to adversely affect groundwater sensitive ecosystems • One (1) new crossing of a potentially groundwater fed stream. • Possible encroachment on an unevaluated wetland (i.e. not identified as provincially or locally significant). • Potential long-term adverse effect to groundwater quality due to increased road salt use and road run-off. • Potential temporary adverse effects to groundwater quantity exist if construction dewatering is required	**Low** potential to adversely affect groundwater sensitive ecosystems • Alteration to three (3) existing crossings of potentially groundwater fed streams. • Possible encroachment on an unevaluated wetland (i.e. not identified as provincially or locally significant). • Potential long term adverse effect to groundwater quality due to increased road salt use and road run off. • Potential temporary effects to groundwater quantity are possible if construction dewatering is required.	**Low** potential to adversely affect groundwater sensitive ecosystems • Alteration to two (2) existing crossings of potentially groundwater fed streams. • Potential long-term adverse effect to groundwater quality due to increased road salt use and road run-off. • Potential temporary adverse effects to groundwater quantity exist if construction dewatering is required.
1.4 Surface Water						
	1.4.1 Watershed / Sub-Watershed Drainage Features/Patterns	Potential and significance of: • encroachment, severance, displacement; • long-term alteration/ disruption. as applicable to the following: • watercourse crossings (permanent, intermittent and ephemeral) • floodplain or meander belts • riparian areas • sensitive headwater areas • watershed and subwatershed management plans	**Low** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 4 watercourses	**Low** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 4 watercourses	**Medium** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 3 watercourses • Route encroaches on Easthope Moraine	**Low** potential to affect drainage features / patterns and surface water quality / quantity • Crosses 4 watercourses

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
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BEST OF SHAKESPEARE AREA ALTERNATIVES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			Best of A plus E **A3 + E: 1-2-4-7-10-12-14**	**Best of A plus F** **A3 + F: 1-2-4-7-10-12-15**	**Best of B** **B1: 1-2-4-5-11-13-15**	**Existing Highway 7&8 Alignment** **1-2-4-6-13-15**
	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 Potential and significance of impacts on hydrology due to changes in ground permeability, modifications to surface drainage patterns and alterations of water bodies				
2. LAND USE / SOCIO-ECONOMIC FACTORS						
2.1 Land Use Planning Policies, Goals, Objectives						
	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	**Low** potential to displace areas where there are outstanding First Nations lands claims. • 5 First Nations land claims have been filed in the study area	**Low** potential to displace areas where there are outstanding First Nations lands claims. • 5 First Nations land claims have been filed in the study area	**Low** potential to displace areas where there are outstanding First Nations lands claims. • 5 First Nations land claims have been filed in the study area	**Low** potential to displace areas where there are outstanding First Nations lands claims. • 5 First Nations land claims have been filed in the study area
	2.1.2 Provincial/ Federal land use planning policies/ goals/objectives	Degree of compatibility with federal/provincial land use policies/goals/objectives NOTES: PPS Policy 1.6.6.4 stipulates that when planning for corridors for significant transportation facilities, consideration will be given to significant natural heritage, water, agricultural, mineral, cultural heritage and archaeological resources. PPS Policy 2.3 requires prime agricultural areas be protected for long-term use. Prime agricultural areas include specialty crop areas and Classes 1, 2, and 3 soils in this order of priority.	**Medium** compatibility with federal/ provincial land use policies/goals • Portion of route is on new alignment; remainder uses the existing corridor which results in reduced impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area	**Medium** compatibility with federal/ provincial land use policies/goals • Portion of route is on new alignment; remainder uses the existing corridor which results in reduced impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area	**Low** compatibility with federal/ provincial land use policies/goals • Route is predominantly on new alignment which results in increased impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area	**Medium** compatibility with federal/ provincial land use policies/goals • Route predominantly uses the existing corridor thereby minimizing impacts relative to PPS Policies 1.6.6.4 and 2.3. • There are no location-specific federal or provincial land use policies for this area
	2.1.3 Municipal (regional and local) land use planning policies/goals/ objectives (Official Plans)	Degree of compatibility with municipal Official Plans	**Medium** compatibility with municipal Official Plans. • The route impacts agricultural designated lands in County of Perth O.P. Although the corridor does not directly service the Village of Shakespeare settlement area, it is consistent with County of Perth 6.5.1 e) to preserve the natural setting and rural character of village/hamlet areas.	**Medium** compatibility with municipal Official Plans. • The route impacts agricultural designated lands in County of Perth O.P. Although the corridor does not directly service the Village of Shakespeare settlement area, it is consistent with County of Perth 6.5.1 e) to preserve the natural setting and rural character of village/hamlet areas.	**Medium** compatibility with municipal Official Plans. • The route impacts agricultural designated lands in County of Perth O.P. Although the corridor does not directly service the Village of Shakespeare settlement area, it is consistent with County of Perth 6.5.1 e) to preserve the natural setting and rural character of village/hamlet areas.	**Medium** compatibility with municipal Official Plans. • Route largely avoids agricultural designated lands in County of Perth O.P. Although the corridor directly services the Village of Shakespeare settlement area, it is not consistent with County of Perth 6.5.1 e) to preserve the natural setting and rural character of village/hamlet areas.

LEGEND

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	2.1.4 Development Objectives of Private Property Owners	Potential to isolate property from current/future urban envelope Impact on future land use	**Low** potential to impact future land use • Route alternative does not limit the potential for future development	**Low** potential to impact future land use • Route alternative does not limit the potential for future development	**Low** potential to impact future land use • Route alternative does not limit the potential for future development which is contiguous with the existing Shakespeare community.	**Low** potential to impact future land use • Route alternative does not limit the potential for future development which is contiguous with the existing Shakespeare community.
2.2 Land Use / Community						
	2.2.1 First Nation Reserves	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time. to First Nation Reserves	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area	**No** potential effects to First Nation reserves • No Indian Reserves in the Analysis Area
	2.2.2 First Nations' Sacred Grounds	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time. to First Nations' sacred grounds	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area	**Low** potential effect to First Nations' sacred grounds • No known First Nations' sacred grounds in the Analysis Area
	2.2.3 Urban and Rural Residential	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption (e.g. loss of parking area); • change in area character / aesthetics (e.g. loss of trees/garden area); • nuisance impacts (e.g. intrusion of highway into current residential envelope); • change to access / travel time; • change to facilities / utilities / services; • interference with residential community cohesion; • change to highway operational impacts (e.g. snow storage and highway access visibility). to urban and rural residential areas (residents [owners/tenants] and community groups).	**Low** potential for impacts to urban and rural residential areas • Loss of some frontage to residential/farm properties along existing right of way. • Some encroachment to residential area of Shakespeare village with route alternative abutting railway corridor. Some nuisance impacts likely to residential area. Area is already bounded by railway tracks, route is south of this boundary so no impact on community cohesion anticipated. • Loss (acquisition) of some residential/farm properties along entire route. • Bypass of village avoids driveway access impacts along Hwy 7&8	**Medium** potential for impacts to urban and rural residential areas • Loss of some frontage to residential/farm properties along existing right of way. • Some encroachment to residential area of Shakespeare village with route alternative abutting railway corridor. Some nuisance impacts likely to residential area. Area is already bounded by railway tracks, route is south of this boundary so no impact on community cohesion anticipated. • Loss (acquisition) of some residential/farm properties along entire route. • Bypass of village avoids driveway access impacts along	**Low** potential for impacts to urban and rural residential areas • Loss of some residential frontage (property acquisition) along existing right of way. No long term alteration/disruption to residence or farm buildings. Likely nuisance impacts to this property. • Loss of some horse-training area (property acquisition and displacement of residence) at residence/business. • Loss of some residential/farm property (property acquisition) throughout • Loss of residential frontage (property acquisition) along existing right-of-way west of Shakespeare village (4	**High** potential for impacts to urban and rural residential areas • Loss of some frontage (property acquisition) to 18 residential properties outside of the Shakespeare area. No long term alteration/disruption to residence or farm buildings. Likely nuisance impacts to these properties. • Encroachment to residential area within Shakespeare Village. Some homes within the Shakespeare area are directly adjacent to the roadway, so impacts may be greater in these cases. Some property acquisition may be required in these cases. Nuisance impacts likely to residential area. • Loss (acquisition) of some

LEGEND

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BEST OF SHAKESPEARE AREA ALTERNATIVES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			Best of A plus E **A3 + E: 1-2-4-7-10-12-14**	**Best of A plus F** **A3 + F: 1-2-4-7-10-12-15**	**Best of B** **B1: 1-2-4-5-11-13-15**	**Existing Highway 7&8 Alignment** **1-2-4-6-13-15**
			due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages, and does not reduce highway setback in the village with associated feeling of "highway intrusion" and reduces front yard aesthetics. • Field observation identified no change to facilities / utilities / services.	Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages, and does not reduce highway setback in the village with associated feeling of "highway intrusion" and reduces front yard aesthetics. • Field observation identified no change to facilities / utilities / services. • Loss of entire residence and farm buildings (property acquisition and displacement of residence).east of Road 108 on existing Highway 7/8 corridor. • Loss of frontage (property acquisition) of two residences just east of Road 108.	residences) • Loss/encroachment into residential envelope of some residential property on the north western residential portion of Shakespeare east of Road 108. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages, and does not reduce highway setback in the village with associated feeling of "highway intrusion" and reduces front yard aesthetics. • Field observation identified no change to facilities / utilities / services.	residential/farm properties along entire route. • Widening through village causes driveway access impacts along Hwy 7&8 due to left turns across a widened highway, causes increases in snow storage along village property frontages; and by reducing highway setback increases the feeling of "highway intrusion" and reduces front yard aesthetics. • Field observation identified no change to facilities / utilities / services.
	2.2.4 Commercial / Industrial	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services; • interference with commercial community cohesion; • change to highway operation impacts (e.g. customer parking, cargo loading/off-loading). to commercial and industrial areas (business owners/tenants and customers).	**Low** potential for impacts to commercial and industrial areas • Possible encroachment of industrial area east of Road 108. • No long term alteration /disruption • No nuisance impacts anticipated given existing industrial development • Field observation identified no change to facilities / utilities / services; • No interference with commercial community cohesion; • Bypass of the village reduces drive-by exposure of commercial businesses (e.g. restaurants and gas station) for potential out-of-town customers, and reduces commercial vehicle accessibility, but makes the shopping experience in the village more attractive, and does not impact parking opportunities. • Bypass of village avoids driveway access impacts along Hwy 7&8	**Low** potential for impacts to commercial and industrial areas • Possible encroachment of industrial area east of Road 108. • No long term alteration /disruption • No nuisance impacts anticipated given existing industrial development • Field observation identified no change to facilities / utilities / services; • No interference with commercial community cohesion; • Bypass of the village reduces drive-by exposure of commercial businesses (e.g. restaurants and gas station) for potential out-of-town customers, and reduces commercial vehicle accessibility, but makes the shopping experience in the village more attractive, and does not impact parking opportunities. • Bypass of village avoids	**Medium** potential for impacts to commercial and industrial areas • Encroachment on one trucking business east of Road 108 (property acquisition). No long term alteration /disruption anticipated at this property. No nuisance effects likely as it is already located on the existing right of way. • Encroachment/loss (property acquisition) of training area for stables located between Road 106 and Perth Road 107. Long term alteration/disruption/nuisance effects likely to this business. • Field observation identified no change to facilities / utilities / services. • No interference with commercial community cohesion; • Bypass of the village reduces drive-by exposure of commercial businesses (e.g. restaurants and	**High** potential for impacts to commercial and industrial areas • Encroachment to commercial area within Shakespeare Village. Some businesses (including, but not limited to, the Shakespeare truck Centre, several antique stores, an Esso Gas Station, Coffee Time, Convenience Store, speciality (tourist based) shops, hair salon, glass repair and Home Hardware) within the Shakespeare area are directly adjacent to the roadway, so impacts may be greater in these cases. Some property acquisition and loss of frontage may be required in these cases. Nuisance impacts likely to the area within Shakespeare. • Field observation identified no change to facilities / utilities / services; • No interference with commercial community cohesion;

LEGEND

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			due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages.	driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages.	gas station) for potential out-of-town customers, and reduces commercial vehicle accessibility, but makes the shopping experience in the village more attractive, and does not impact parking opportunities. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages.	• Widening through the village leaves drive-by exposure of businesses (e.g. restaurants and gas station)for potential out-of-town customers and commercial vehicle accessibility unchanged, but makes the shopping experience in the village less attractive, and reduces parking opportunities. • Widening through village causes driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and causes increases in snow storage along village property frontages
	2.2.5 Tourist Areas and Attractions (e.g. museums, theatres, etc.)	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services; • loss of "critical mass" in number of signature business attractions (e.g. number of antique shops). to tourist areas and attractions.	**Low** potential for impacts to tourist areas and attractions • No change or impacts to tourist areas and attractions in terms of any property encroachment or acquisition. • No nuisance impacts anticipated given absence of any tourist attractions or areas along this alternative. • No signature business attractions (none along this alternative) • Bypass of the village reduces drive-by exposure of tourist attractions (e.g. shops and boutiques) for potential out-of-town customers, but makes the tourist experience in the village more attractive, and does not impact parking opportunities. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages. • Field observation identified no change to facilities / utilities / services.	**Low** potential for impacts to tourist areas and attractions • No change or impacts to tourist areas and attractions in terms of any property encroachment or acquisition. • No nuisance impacts anticipated given absence of any tourist attractions or areas along this alternative. • No signature business attractions (none along this alternative) • Bypass of the village reduces drive-by exposure of tourist attractions (e.g. shops and boutiques) for potential out-of-town customers, but makes the tourist experience in the village more attractive, and does not impact parking opportunities. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages. • Field observation identified no change to facilities / utilities / services.	**Low** potential for impacts to tourist areas and attractions • No change or impacts to tourist areas and attractions in terms of any property encroachment or acquisition. • No nuisance impacts anticipated given absence of any tourist attractions or areas along this alternative. • No signature business attractions (none along this alternative) • Bypass of the village reduces drive-by exposure of tourist attractions (e.g. shops and boutiques) for potential out-of-town customers, but makes the tourist experience in the village more attractive, and does not impact parking opportunities. • Bypass of village avoids driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and avoids increases in winter snow storage along village property frontages. • Field observation identified no change to facilities / utilities / services.	**Medium** potential for impacts to tourist areas and attractions • Potential loss of downtown "feel" and antique based businesses within Shakespeare. • Potential for increased number of drive through visitors, • Potential long-term alternation of the community character within Shakespeare. • Further detailed design and business impact analysis required to determine loss of number of signature businesses. • Widening through the village leaves drive-by exposure of tourist attractions (e.g. shops and boutiques) for potential out-of-town customers unchanged, but makes the tourist experience in the village less attractive, and reduces parking opportunities. • Widening through village causes driveway access impacts along Hwy 7&8 due to left turns across a widened highway, and causes increases in snow storage along village property frontages • Field observation identified no

LEGEND

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						change to facilities / utilities / services.
	2.2.6 Community Facilities / Institutions (e.g. hospitals, schools, places of worship, unique community features)	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services • change to ease and safety of pedestrian movements across the highway and within the highway right-of-way; • change to highway operation impacts to current use (e.g. highway noise and vibration interfering with church services). to community facilities and institutions.	**Low** potential for impacts to community facilities and institutions • Route alternative at Perth Road 107 will bring new roadway closer to Optimist Hall and Sprucedale Public School/Community Center playing fields. Area is already bounded by railway tracks so impact to area character/aesthetics of this area is not likely to be significant. • Bypassing the village avoids further isolating the school, community centre facilities and church from residents on the opposite side of the highway. • Field observation identified no change to facilities / utilities / services. • Some potential for nuisance impacts at the hall and playing fields.	**Low** potential for impacts to community facilities and institutions • Route alternative at Perth Road 107 will bring new roadway closer to Optimist Hall and Sprucedale Public School/Community Center playing fields. Area is already bounded by railway tracks so impact to area character/aesthetics of this area is not likely to be significant. • Bypassing the village avoids further isolating the school, community centre facilities and church from residents on the opposite side of the highway. • Field observation identified no change to facilities / utilities / services. • Some potential for nuisance impacts at the hall and playing fields.	**Medium** potential for impacts to community facilities and institutions • Bypassing the village avoids further isolating the school, community centre facilities and church from residents on the opposite side of the highway. However, traffic destined to the new route from the south must pass through Shakespeare to access the route. • Field observation identified no change to facilities / utilities / services.	**High** potential for impacts to community facilities and institutions • Encroachment (property acquisition) to Shakespeare Presbyterian Church – potential loss of parking spaces. Likely increased nuisance impacts to the church. • Widening through the village isolates the north half of the village from the school and community centre facilities; and isolates the south half of the village from the church. • Field observation identified no change to facilities / utilities / services.
	2.2.7 Municipal Infrastructure and Public Service Facilities (e.g. sewage and water services, police/emergency services, local utilities)	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. to municipal infrastructure and public service facilities.	**No** potential for impacts to municipal infrastructure / public service facilities • Bypass of village would not lengthen response times to locations outside the village unless Hwy 7&8 direct access is not retained at the east and west village limits. • From field observations, no impacts to municipal infrastructure and public service facilities.	**No** potential for impacts to municipal infrastructure / public service facilities • Bypass of village would not lengthen response times to locations outside the village unless Hwy 7&8 direct access is not retained at the east and west village limits. • From field observations, no impacts to municipal infrastructure and public service facilities.	**Low** potential for impacts to municipal infrastructure / public service facilities • Bypass of village would not lengthen response times to locations outside the village unless Hwy 7&8 direct access is not retained at the east and west village limits. • Potential encroachment (property acquisition) to communications tower located west of Road 106. • From field observations, no other impacts to municipal infrastructure and public service facilities expected	**Medium** potential for impacts to municipal infrastructure / public service facilities • Widening through village does not impact lengthen response times to locations outside the village. • Potential encroachment and property acquisition of the Perth East Fire Department / Shakespeare Fire Department. Likely loss of paved area. Likely increased nuisance impacts. • Field observation identified no other change to facilities / utilities / services.
	2.2.8 Downtown Historic Crossroads Function	Potential and significance of interference by long-distance through-traffic on: • “main street” function and structure; • character/aesthetics;	**Low** potential for interference in the historic downtown area • Bypass of the village reduces long distance traffic through the	**Low** potential for interference in the historic downtown area • Bypass of the village reduces long distance traffic through the	**Low** potential for interference in the historic downtown area • Bypass of the village reduces long distance traffic through the	**High** potential for interference in the historic downtown area • Likely adverse effects on Main Street function, character as

LEGEND

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		• change to ease and safety of pedestrian movements across the highway and within the highway right-of-way; • change to on-street parking in the historic downtown area	village and provides the opportunity to improve the shopping/socializing experience in the village, and does not impact parking opportunities.	village and provides the opportunity to improve the shopping/socializing experience in the village, and does not impact parking opportunities.	village and provides the opportunity to improve the shopping/socializing experience in the village, and does not impact parking opportunities.	pedestrian movements restricted and street parking may become prohibited. • Widening through the village introduces more long distance traffic through the village and diminishes the shopping/socializing experience in the village, and reduces parking opportunities.
2.3 Noise Sensitive Areas (NSAs) (residential areas and sensitive institutional uses)						
	2.3.1 Highway Noise	• Potential for significant traffic noise increases in NSAs and for noise-sensitive receivers immediately adjacent to the highway.	**Medium** potential for significant noise increases • Potential noise impacts of 65 dBA or a 5 dB increase are expected for about 105 NSAs within the area of influence. • Potential noise impacts to 1 school (Sprucedale Public School) are expected. • A decrease of noise impacts by 5 dB or more is expected for about 60 NSAs due to reduced traffic on the roadway that is currently Hwy 7/8. • The rail line along the south edge of Shakespeare causes daily short duration noise impacts for NSAs that would be influenced by this alternative. • The elevated rail line is not expected to be high enough to form an effective noise barrier for road noise. Mitigation would therefore be more challenging.	**Medium** potential for significant noise increases • Potential noise impacts of 65 dBA or a 5 dB increase are expected for about 105 NSAs within the area of influence. • Potential noise impacts to 1 school (Sprucedale Public School) are expected. • A decrease of noise impacts by 5 dB or more is expected for about 60 NSAs due to reduced traffic on the roadway that is currently Hwy 7/8. • The rail line along the south edge of Shakespeare causes daily short duration noise impacts for NSAs that would be influenced by this alternative. • The elevated rail line is not expected to be high enough to form an effective noise barrier for road noise. Mitigation would therefore be more challenging.	**Low** potential for significant noise increases • Potential noise impacts of 65 dBA or a 5 dB increase are expected for about 40 NSAs within the area of influence. • A decrease of noise impacts by 5 dB or more is expected for about 45 NSAs due to reduced traffic on the roadway that is currently Hwy 7/8.	**High** potential for significant noise increases • Potential noise impacts of 65 dBA are expected for about 75 NSAs within the area of influence. • Potential noise impacts to 1 church (Shakespeare Presbyterian Church) are expected within the area of influence of the ROW • Mitigation of noise impacts in Shakespeare will not be feasible because driveways for the NSAs would negate the barrier effectiveness.
	2.3.2 Construction Noise	To be considered during Preliminary Design phase				
2.4 Agriculture						
	2.4.1 Agriculture - Canada Land Inventory Class 1,2,3 Land	Potential and significance of encroachment, severance of Canada Land Inventory Classes 1, 2 and 3 soils	**High** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 30 hectares of Class 1 / 2 soil	**High** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 38 hectares of Class 1 / 2 soil	**High** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 35 hectares of Class 1 / 2 soil	**Low** potential for impacts to CLI Class 1, 2 and 3 lands • Impacts 16 hectares of Class 1 / 2 soil

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
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BEST OF SHAKESPEARE AREA ALTERNATIVES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			Best of A plus E A3 + E: 1-2-4-7-10-12-14	**Best of A plus F A3 + F: 1-2-4-7-10-12-15**	**Best of B B1: 1-2-4-5-11-13-15**	**Existing Highway 7&8 Alignment 1-2-4-6-13-15**
	2.4.2 Agriculture – Farm Infrastructure	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • nuisance impacts; to farm infrastructure (field tile drainage systems/outlets, irrigation systems, barns / silos/ structures, etc.)	**Medium** potential impacts on farm infrastructure • 1 minor encroachment on farm infrastructure west of Road 104 • 2 encroachments on farm infrastructure, 1 between Road 104 and Road 106 and 1 on Road 106, south of the railway • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified and mitigation concepts for these impacts will be developed during preliminary design	**Medium** potential impacts on farm infrastructure • 1 minor encroachment on farm infrastructure west of Road 104 • 2 encroachments on farm infrastructure, 1 between Road 104 and Road 106 and 1 on Road 106, south of the railway • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified and mitigation concepts for these impacts will be developed during preliminary design	**Medium** potential impacts on farm infrastructure • 2 encroachments on farm infrastructure, 1 just west of Road 106 and 1 between Road 107 and Road 108 • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified and mitigation concepts for these impacts will be developed during preliminary design	**Medium** potential impacts on farm infrastructure • Displaces homestead on 1 livestock and cash crop operation west of Road 106 • Impacts to subsurface farm infrastructure (e.g. tile drainage) and to area farm drainage systems are anticipated. The locations of subsurface farm infrastructure along the preferred route will be identified and mitigation concepts for these impacts will be developed during preliminary design
	2.4.3 Agriculture – Operations on Individual Farms	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • nuisance impacts; to in-farm field operations (planting, harvesting, grazing, nutrient management, etc.) as applicable to the following: • Specialty crops/cropland • Dairy/livestock operations • Field crop operations • High investment agricultural operations • Established agricultural farm communities	**Medium** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established agricultural community including: - Minor frontage impacts and encroachment on lands of 1 cash crop operation west of Road 104 - Severs 1 parcel between Road 104 and Road 106 - Very minor encroachment on lands in the corner of 2 parcels associated with a cash crop and livestock operation between Road 104 and Road 106 - Significant encroachment on portions of land abutting the railway on 8 parcels which are associated with 5 different cash crop and livestock operations in the area - Displaces portions of land abutting the railway on 3 parcels - 6 parcels where nutrient	**Medium** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established agricultural community including: - Minor frontage impacts and encroachment on lands of 1 cash crop operation west of Road 104 - Severs 2 parcels, 1 between Road 104 and Road 106 and 1 west of Shakespeare - Very minor encroachment on lands in the corner of 2 parcels associated with a cash crop and livestock operation between Road 104 and Road 106 - Significant encroachment on portions of land abutting the railway on 8 parcels which are associated with 5 different cash crop and livestock operations in the area - Displaces portions of land abutting the railway on 3 parcels	**High** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established agricultural community including: - Significant frontage impacts and encroachment and severance of lands on 1 livestock and cash crop operation west of Road 106 - Severs 2 parcels associated with 2 different livestock and cash crop operations, both of which are adjacent to the Shakespeare village - Significant encroachment and severance of 4 parcels north of the existing right-of-way and on both the east and west sides of Road 107 - 2 parcels where nutrient management has been reported by the farmer are significantly impacted - 1 parcel where nutrient management is assumed to occur in association with	**Low** potential for impacts to operations on individual farms • Long term alteration to in field farm operations in an established agricultural community including: - Minor frontage impacts and encroachment on lands on 12 livestock and cash crop operations - Minor frontage impacts and encroachment on lands on 6 parcels - 11 parcels where nutrient management has been reported by the farmer are significantly impacted - 1 parcels where nutrient management is assumed to occur in association with livestock operations are significantly impacted - Additional nutrient management operations may still be identified by potentially impacted farmers

LEGEND

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BEST OF SHAKESPEARE AREA ALTERNATIVES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
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			management has been reported by the farmer are impacted significantly - 2 parcels where nutrient management has been reported by the farmer are impacted slightly - 3 parcels where nutrient management is assumed to occur in association with livestock operations are significantly impacted - Additional nutrient management operations may still be identified by potentially impacted farmers	- 5 parcels where nutrient management has been reported by the farmer are impacted significantly - 2 parcels where nutrient management has been reported by the farmer are impacted slightly - 3 parcels where nutrient management is assumed to occur in association with livestock operations are significantly impacted - Additional nutrient management operations may still be identified by potentially impacted farmers	livestock operations is significantly impacted - Additional nutrient management operations may still be identified by potentially impacted farmers	
	2.4.4 Agriculture – Transportation Linkages between Integrated Agricultural Business Units (IABUs)	Potential to sever/disrupt transportation linkages between integrated agricultural business units (movement between integrated agricultural business units of equipment, materials, workers, etc.)	**Medium** potential to sever / disrupt transportation linkages • Route alternative passes between parcels of land associated with 4 IABU's as identified to the study team by the farming community	**Medium** potential to sever / disrupt transportation linkages • Route alternative passes between parcels of land associated with 4 IABU's as identified to the study team by the farming community	**Medium** potential to sever / disrupt transportation linkages • Route alternative passes between parcels of land associated with 4 IABU's as identified to the study team by the farming community	**Low** potential to sever / disrupt transportation linkages • Route alternative passes between parcels of land associated with 4 IABU's as identified to the study team by the farming community however, this alternative involves additional lanes to cross rather than a new route to cross.
2.5 Land Use / Resources						
	2.5.1 First Nations' 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: • encroachment, severance, displacement; • long-term alteration / disruption; • nuisance impacts; • change to access / travel time. to First Nations' treaty rights or use of land and resources for traditional purposes	**Medium** potential to affect First Nation Treaty Rights or use of land and resources for traditional purposes • Route alternative has both existing highway and new corridor components.	**Medium** potential to affect First Nation Treaty Rights or use of land and resources for traditional purposes • Route alternative has both existing highway and new corridor components.	**Medium** potential to affect First Nation Treaty Rights or use of land and resources for traditional purposes • Route alternative has both existing highway and new corridor components.	**Low** potential to affect First Nation Treaty Rights or use of land and resources for traditional purposes • Route alternative is almost entirely existing highway.
	2.5.2 Parks and Recreational Areas (e.g. national/ provincial parks, conservation areas, municipal parks,	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts;	**Low** potential for impacts to parks and recreational areas • Bypass of village to the south avoids isolating the village from the Shakespeare Pond conservation area on Perth Road	**Low** potential for impacts to parks and recreational areas • Bypass of village to the south avoids isolating the village from the Shakespeare Pond conservation area on Perth Road	**Low** potential for impacts to parks and recreational areas • Bypass of village to the north somewhat isolates the village from the Shakespeare Pond conservation area on Perth Road	**Low** potential for impacts to parks and recreational areas • Widening through the village somewhat isolates the south half of the village from the Shakespeare Pond conservation

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study
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BEST OF SHAKESPEARE AREA ALTERNATIVES

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	public spaces, golf courses, trails, greenways and open space linkages)	• change to access / travel time; • change to facilities / utilities / services. to parks and recreational areas.	107. • Segment east of Road 108 will bring new roadway closer to park near Optimist Hall and Sprucedale Public School/ Community Center playing fields. Area is already bounded by railway tracks so impact to area character/aesthetics is not likely to be significant. • No encroachment or direct impacts to property boundaries of parks and recreational facilities and no long-term alteration/disruption likely. • Field observation identified no change to facilities / utilities / services. • Some potential for nuisance impacts at the park and playing fields.	107. • Segment east of Road 108 will bring new roadway closer to park near Optimist Hall and Sprucedale Public School/ Community Center playing fields. Area is already bounded by railway tracks so impact to area character/ aesthetics is not likely to be significant. • No encroachment or direct impacts to property boundaries of parks and recreational facilities and no long-term alteration/disruption likely. • Field observation identified no change to facilities / utilities / services. • Some potential for nuisance impacts at the park and playing fields.	107. • No direct impacts to parks and recreational areas as none are in the area.	area on Perth Road 107. • No direct impacts to parks and recreational areas as none are in the area.
	2.5.3 Aggregates, Mineral-Resources	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. to current/future extraction of aggregate and mineral resources.	**No** potential for impacts to current/future aggregate / mineral resources • No impacts to mineral-aggregate resources	**No** potential for impacts to current/future aggregate / mineral resources • No impacts to mineral-aggregate resources	**High** potential for impacts to current/future aggregate / mineral resources • Displacement of aggregate / pit operations immediately east of Perth Road 107. Long term alteration/disruption of entire operation.	**No** potential for impacts to current/future aggregate / mineral resources • No impacts to aggregates, mineral-resources
2.6 Major Utility Transmission Corridors (e.g. railroads, hydro, gas, oil)						
		Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. To major utility transmission corridors.	**Low** potential for impacts to major utility transmission corridors • One new railway crossing • No major hydro transmission corridor crossings • No major gas / oil corridor crossings	**Medium** potential for impacts to major utility transmission corridors • Two new railway crossings • No major hydro transmission corridor crossings • No major gas / oil corridor crossings	**No** potential for impacts to major utility transmission corridors • No railway crossings • No major hydro transmission corridor crossings • No major gas / oil corridor crossings	**No** potential for impacts to major utility transmission corridors • No railway crossings • No major hydro transmission corridor crossings • No major gas / oil corridor crossings

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study
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BEST OF SHAKESPEARE AREA ALTERNATIVES

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2.7 Contaminated Property and Waste Management (e.g. Landfills, Hazardous Waste Sites, "Brownfield" Areas, other known contaminated sites, and high-risk contamination areas)						
		Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change to access / travel time; • change to facilities / utilities / services. to contaminated property and waste management.	**Medium** potential for impacts to contaminated property and waste • Two vehicle fuel and repair facilities were identified in Shakespeare along Highway 7/8. Both sites, an Esso Service Station at Patrick Street and Patriot Gas east of Road 107, are at least 400 m north of proposed alignment at the west end of the alignment. Regional groundwater flow direction is anticipated to be flowing in a southerly direction. • The distance of the service stations from the proposed realignment indicates that potential environmental concerns related to the service stations are minimal; however, consideration should be given to implementing a scoped subsurface investigation south of the service stations at the northern extent of the proposed road alignment to confirm soil and groundwater conditions.	**Medium** potential for impacts to contaminated property and waste • Two vehicle fuel and repair facilities were identified in Shakespeare along Highway 7/8. Both sites, an Esso Service Station at Patrick Street and Patriot Gas east of Road 107, are at least 400 m north of proposed alignment at the west end of the alignment. Regional groundwater flow direction is anticipated to be flowing in a southerly direction. • The distance of the service stations from the proposed realignment indicates that potential environmental concerns related to the service stations are minimal; however, consideration should be given to implementing a scoped subsurface investigation south of the service stations at the northern extent of the proposed road alignment to confirm soil and groundwater conditions.	**Medium** potential for impacts to contaminated property and waste • Two vehicle fuel and repair facilities were identified in Shakespeare along Highway 7/8. An Esso Service Station at Patrick Street is approximately 150 m south of the B1 alignment and Patriot Gas located east of Highway 107 is at least 650 m south of proposed alignment B1. Regional groundwater flow direction is anticipated to be flowing in a southerly direction. • The distance of the service stations from the proposed realignment indicates that potential environmental concerns related to the service stations are minimal; however, consideration should be given to implementing a scoped subsurface investigation north of the Esso service station at the southern extent of the proposed road alignment to confirm soil and groundwater conditions.	**Medium** potential for impacts to contaminated property and waste • Two vehicle fuel and repair facilities were identified in Shakespeare along Highway 7/8. An Esso Service Station is directly north of the alignment at Patrick Street and Patriot Gas is directly south of Highway 7/8 east of Highway 107. Regional groundwater flow direction is anticipated to be flowing in a southerly direction. • The distance of the service stations from the existing ROW indicates potential environmental concerns.
2.8 Landscape Composition						
	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).	**Medium** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative • Low/Medium negative impacts on urban community due to existing railroad, and existing hedge buffer • Medium negative impact on affected farmhouse on east entry, and south of route alternative • medium/High negative impact on adjacent properties on route alternative due to the loss of frontage and associated potential	**Medium** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative • Low/Medium negative impacts on urban community due to existing railroad, and existing hedge buffer • Medium negative impact on affected farmhouse on east entry, and south of proposed roadway • medium/High negative impact on adjacent properties on route	**Medium** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative • High negative impact on affected farmhouses on east and west entry • Low negative impact on urban community due to distance, and rolling terrain buffer • Medium/High negative impact on adjacent properties on route alternative due to the loss of frontage and associated potential	**High** potential to impact scenic composition for sensitive viewer groups and of views from the route alternative • Low negative impact due to use of existing thoroughfare footprint • Medium/High negative impact on adjacent properties due to the loss of frontage and associated potential loss of vegetation • Medium visual interest of agricultural fields, and hedgerows • Medium/High visual interest of
	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.				

LEGEND

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			loss of vegetation • High negative impacts on affected farms on western curve • Low negative impact due to potential loss of vegetation through western rail corridor • Medium visual interest through agricultural fields • High visual interest of southern woodlot across fields • High visual interest of riparian areas and associated vegetation • Medium visual interest of hedge buffer of railroad tracks • Low/Medium visual interest of flat terrain and railroad corridor	alternative due to the loss of frontage and associated potential loss of vegetation • High negative impacts on affected farmhouses on east entry of route alternative • High negative impacts on affected farms on western curve of route alternative • Low negative impact due to potential loss of vegetation on western curve • High negative impact on the nearby urban community because of proximity of the western portion of route alternative • Medium visual interest through agricultural fields • High visual interest of southern woodlot across fields • High visual interest of riparian areas and associated vegetation • Medium visual interest of hedge buffer of railroad tracks • low/Medium visual interest of flat terrain and railroad corridor	loss of vegetation • Medium/High visual interest through rolling terrain and agricultural fields • Low visual interest of affected farmhouses backyards	community buffer zone of farm houses and established vegetation • Medium/High visual interest of urban community and urban core
	2.8.4 Specimen Trees	To be considered during Preliminary Design phase				
2.9 Air Quality						
	2.9.1 Local and Regional Air Quality (Total contaminant and greenhouse gas emissions)	Previously addressed during Needs Assessment Phase				
	2.9.2 Sensitive receptors to air pollutants and greenhouse gas emissions	Presence and potential for impacts to sensitive receptors to air pollutants and greenhouse gas emissions, including consideration of number of sensitive receptors immediately adjacent to the highway.	**Low** potential impact to sensitive receptors adjacent to the highway • 1 sensitive receptor within 20m of the edge of the right-of-way.	**Low** potential impact to sensitive receptors adjacent to the highway • 1 sensitive receptor within 20m of the edge of the right-of-way.	**Low** potential impact to sensitive receptors adjacent to the highway • 2 sensitive receptors within the edge of the right-of-way.	**High** potential impact to sensitive receptors adjacent to the highway • 46 sensitive receptors within the edge of the right-of-way.

LEGEND

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3. CULTURAL ENVIRONMENTAL FACTORS						
3.1 Cultural Heritage – Built Heritage and Cultural Landscapes						
	3.1.1 Buildings or "Standing" Sites of Architectural or Heritage Significance or Ontario Heritage Foundation Easement Properties	Potential and significance of: • encroachment, severance, displacement, property acquisition; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to buildings or "standing" sites of extreme local, provincial or national interest or Ontario Heritage Foundation easements properties.	**Medium** potential for impacts to sites of heritage significance and Heritage Foundation Easement Properties • There are 8 built heritage resources within or in immediate proximity to the route • There are two in close proximity to the extreme east end of the route (1825 Highway 7/8 – George Kleinknecht Farmstead and 1834 Highway 7/8 – outbuilding); these may be encroached but not likely physically impacted • Setting may change somewhat. • Six within the route and are generally in close proximity to the road; setting will be heavily altered and some buildings may be displaced. These six buildings are the John McTavish Farmstead (2026 Highway 7/8), the Andrew Riddell Junior Farmstead (2053 Highway 7/8), the Andrew Riddell Farmstead (2007 Highway 7/8), Dr. Flynn's House (1971 Hwy 7/8), Sebastian Fryfogel Farmstead (1899 Highway 7/8), and the Fryfogel Tavern/Inn (1931 Highway 7/8).	**Medium** potential for impacts to sites of heritage significance and Heritage Foundation Easement Properties • There are 8 built heritage resources within or in immediate proximity to the route • There are two in close proximity to the extreme east end of the route (1825 Highway 7/8 – George Kleinknecht Farmstead and 1834 Highway 7/8 – outbuilding); these may be encroached but not likely physically impacted • Setting may change somewhat. • Six within the route and are generally in close proximity to the road; setting will be heavily altered and some buildings may be displaced. These six buildings are the John McTavish Farmstead (2026 Highway 7/8), the Andrew Riddell Junior Farmstead (2053 Highway 7/8), the Andrew Riddell Farmstead (2007 Highway 7/8), Dr. Flynn's House (1971 Hwy 7/8), Sebastian Fryfogel Farmstead (1899 Highway 7/8), and the Fryfogel Tavern/Inn (1931 Highway 7/8)	**Medium** potential for impacts to sites of heritage significance and Heritage Foundation Easement Properties • There are 8 built heritage resources within or in immediate proximity to the route. These are within the Highway 7/8 portion of the route; • There are two in close proximity to the extreme east end of the route (1825 Highway 7/8 – George Kleinknecht Farmstead and 1834 Highway 7/8 – outbuilding); these may be encroached but not likely physically impacted • Setting may change somewhat. • Six within the Highway 7/8 portion of the route and are generally in close proximity to the road; setting will be heavily altered and some buildings may be displaced. These six buildings are the John McTavish Farmstead (2026 Highway 7/8), the Andrew Riddell Junior Farmstead (2053 Highway 7/8), the Andrew Riddell Farmstead (2007 Highway 7/8), Dr. Flynn's House (1971 Hwy 7/8), Sebastian Fryfogel Farmstead (1899 Highway 7/8), and the Fryfogel Tavern/Inn (1931 Highway 7/8).	**High** potential for impacts to sites of heritage significance and Heritage Foundation Easement Properties • There are 18 built heritage resources within or in immediate proximity to the route. Eight of these are east of Shakespeare along Highway 7/8. Of these there are two in close proximity to the extreme east end of the route (1825 Highway 7/8 – George Kleinknecht Farmstead and 1834 Highway 7/8 – outbuilding); these may be encroached but not likely physically impacted • Setting may change somewhat. • Six along the Highway 7/8 portion of the route and are generally in close proximity to the road; setting will be heavily altered and some buildings may be displaced. These six buildings are the John McTavish Farmstead (2026 Highway 7/8), the Andrew Riddell Junior Farmstead (2053 Highway 7/8), the Andrew Riddell Farmstead (2007 Highway 7/8), Dr. Flynn's House (1971 Hwy 7/8), Sebastian Fryfogel Farmstead (1899 Highway 7/8), and the Fryfogel Tavern/Inn (1931 Highway 7/8). • Ten structures are within Shakespeare and may be displaced or have their setting heavily altered. These include the Commercial Block at 2204 Hwy 7/8, the Union Hotel on the north side of the highway, the Shakespeare Presbyterian Church at 2196 Hwy 7/8, a Georgian House at 2182 Hwy 7/8, a row of Gothic Revival Houses at
	3.1.2 Heritage Bridges	Potential for destruction or significant alteration of heritage bridges				

LEGEND

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						2215, 2217, 2219 Hwy 7/8 and 3997 Galt Street, a house at 2213 Hwy 7/8, a cottage at 2209 Hwy 7/8, the Capeling House near the intersection of Hwy 59, 7/8, a Gothic Revival house at the same general intersection and a small house at the corner of Byron Street and Hwy 7/8
	3.1.3 Areas of Historic 19th Century Settlement	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time; • change to facilities / utilities / services. to areas of historic 19th century settlement.	**Low** potential for impacts to areas of historic settlement • The route crosses a portion of Highway 7/8, an early transportation route but no major, concentrated centres of 19th Century settlement	**Low** potential for impacts to areas of historic settlement • The route crosses a portion of Highway 7/8, an early transportation route but no major, concentrated centres of 19th Century settlement	**Low** potential for impacts to areas of historic settlement • The route crosses a portion of Highway 7/8, an early transportation route but no major, concentrated centres of 19th Century settlement	**High** potential for impacts to areas of historic settlement • The route crosses through Shakespeare, an area of concentrated historic 19th 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.	**Medium** potential for impacts to cultural heritage landscapes • Dilse identified one large, continuous cultural heritage landscape that crosses the east end of this route (from Lingelbach Cemetery west to west of Road 106); only the extreme east end of the route is affected	**Medium** potential for impacts to cultural heritage landscapes • Dilse identified one large, continuous cultural heritage landscape that crosses the east end of this route (from Lingelbach Cemetery west to west of Road 106); only the extreme east end of the route is affected	**Medium** potential for impacts to cultural heritage landscapes • Two general areas of cultural heritage landscape are defined in Dilse's study one large, continuous cultural heritage landscape that crosses the east end of this route (from Lingelbach Cemetery west to west of Road 106); only the east end of the route is affected. The other includes Shakespeare and lands immediately north of it	**High** potential for impacts to cultural heritage landscapes • Two general areas of cultural heritage landscape are defined in Dilse's study - one large, continuous cultural heritage landscape that crosses the east end of this route (from Lingelbach Cemetery west to west of Road 106). The other includes the entire community of Shakespeare.
	3.1.5 First Nations' Burial Sites	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character / aesthetics; • nuisance impacts; • change to access / travel time. to First Nations' burial sites.	**No** potential for impacts to First Nations burial sites • There are no known / reported First Nations' burial sites within this route	**No** potential for impacts to First Nations burial sites • There are no known / reported First Nations' burial sites within this route	**No** potential for impacts to First Nations burial sites • There are no known/reported First Nations' burial sites within this route	**No** potential for impacts to First Nations burial sites • There are no known/reported First Nations' burial sites within this route
	3.1.6 Cemeteries	Potential and significance of: • encroachment, severance, displacement; • long-term alteration / disruption; • change in area character/ aesthetics; • nuisance impacts;	**Low** potential for impacts to cemeteries • There is one cemetery (Fryfogel) adjacent to this route; boundaries are poorly known	**Low** potential for impacts to cemeteries • There is one cemetery (Fryfogel) adjacent to this route; boundaries are poorly known	**Low** potential for impacts to cemeteries • There is one cemetery (Fryfogel) adjacent to this route; boundaries are poorly known	**Low** potential for impacts to cemeteries • There is one cemetery (Fryfogel) adjacent to this route; boundaries are poorly known

LEGEND

MOST PREFERRED	MODERATELY PREFERRED	LEAST PREFERRED	NO DIFFERENCE	SELECTED ROUTE

Highway 7&8 Transportation Corridor Planning and Class EA Study EVALUATION OF ROUTE ALTERNATIVES Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.						
BEST OF SHAKESPEARE AREA ALTERNATIVES						
Factor / Sub-Factor	**Criteria**	**Indicator for Route Selection**	**Route Alternative**			
			Best of A plus E A3 + E: 1-2-4-7-10-12-14	**Best of A plus F A3 + F: 1-2-4-7-10-12-15**	**Best of B B1: 1-2-4-5-11-13-15**	**Existing Highway 7&8 Alignment 1-2-4-6-13-15**
		• change to access / travel time; • change to facilities / utilities / services. 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	**Medium** potential for destruction or disturbance of archaeological sites • There are four known registered sites within this route (Riddell 1, Riddell 2, Fryfogel, Fryfogel Inn); all have portions likely present • There is potential for previously undocumented archaeological sites	**Medium** potential for destruction or disturbance of archaeological sites • There are four known registered sites within this route (Riddell 1, Riddell 2, Fryfogel, Fryfogel Inn); all have portions likely present • There is potential for previously undocumented archaeological sites	**Medium** potential for destruction or disturbance of archaeological sites • There are four known registered sites within this route (Riddell 1, Riddell 2, Fryfogel, Fryfogel Inn); all have portions likely present • There is potential for previously undocumented archaeological sites	**Medium** potential for destruction or disturbance of archaeological sites • There are four known registered sites within this route (Riddell 1, Riddell 2, Fryfogel, Fryfogel Inn); all have portions likely present • There is potential for previously undocumented archaeological sites
	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				
4. AREA ECONOMY – Previously addressed during Needs Assessment Phase						
5. TRANSPORTATION FACTORS						
5.1 Area Transportation System Capacity and Efficiency						
	5.1.1 Federal/ Provincial/Municipal transportation planning policies/goals/ objectives	Previously addressed during Needs Assessment Phase.				
	5.1.2 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	**High** potential to support efficient movement of people. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Shakespeare to route	**High** potential to support efficient movement of people. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Shakespeare to route	**High** potential to support efficient movement of people. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route • Some out-of-way travel for local access from Shakespeare to route	**Medium** potential to support efficient movement of people. • Route predominantly utilizes existing corridor, with reduced level of service through developed area of Shakespeare given number of existing intersections and driveways. • Direct route • No out-of-way travel for local access from Shakespeare to corridor
	5.1.3 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)	**High** potential to support efficient movement of goods. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route	**High** potential to support efficient movement of goods. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route	**High** potential to support efficient movement of goods. • Route is predominantly on new alignment, with high level of service due to few intersections and few driveways • Direct route	**Medium** potential to support efficient movement of goods. • Route predominantly utilizes existing corridor, with reduced level of service through developed area of Shakespeare given number of existing intersections

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study EVALUATION OF ROUTE ALTERNATIVES Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.						
BEST OF SHAKESPEARE AREA ALTERNATIVES						
Factor / Sub-Factor	**Criteria**	**Indicator for Route Selection**	**Route Alternative**			
			Best of A plus E A3 + E: 1-2-4-7-10-12-14	**Best of A plus F A3 + F: 1-2-4-7-10-12-15**	**Best of B B1: 1-2-4-5-11-13-15**	**Existing Highway 7&8 Alignment 1-2-4-6-13-15**
			• Some out-of-way travel for local access from Shakespeare to route	• Some out-of-way travel for local access from Shakespeare to route	• Some out-of-way travel for local access from Shakespeare to route	and driveways. • Direct route • No out-of-way travel for local access from Shakespeare to corridor
5.2 Area Transportation System Reliability / Redundancy						
		Potential to support system reliability and redundancy for travel (people and goods) between regions and communities during adverse conditions	**High** potential to support system reliability and redundancy • Route is predominantly on new alignment, which provides a new connection in the Shakespeare area to accommodate travel during adverse conditions (i.e. provides an alternate route)	**High** potential to support system reliability and redundancy • Route is predominantly on new alignment, which provides a new connection in the Shakespeare area to accommodate travel during adverse conditions (i.e. provides an alternate route)	**High** potential to support system reliability and redundancy • Route is predominantly on new alignment, which provides a new connection in the Shakespeare area to accommodate travel during adverse conditions (i.e. provides an alternate route)	**Low** potential to support system reliability and redundancy • Route is all existing roadway, which does not provide a new connection in the Shakespeare area to accommodate travel during adverse conditions (i.e. provides an alternate route)
5.3 Safety						
	5.3.1 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	**High** potential to improve traffic safety • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances • A four/five lane cross section provides for good passing opportunity, provides a wider platform to accommodate evasive moves during potential accidents, and a centre left turn lane would accommodate safer left turns along the highway at intersection and driveway locations	**High** potential to improve traffic safety • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances • A four/five lane cross section provides for good passing opportunity, provides a wider platform to accommodate evasive moves during potential accidents, and a centre left turn lane would accommodate safer left turns along the highway at intersection and driveway locations	**High** potential to improve traffic safety • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances • A four/five lane cross section provides for good passing opportunity, provides a wider platform to accommodate evasive moves during potential accidents, and a centre left turn lane would accommodate safer left turns along the highway at intersection and driveway locations	**Medium** potential to improve traffic safety • All of route is existing corridor with numerous access points associated with private entrances • A four/five lane cross section provides for good passing opportunity, provides a wider platform to accommodate evasive moves during potential accidents, and a centre left turn lane would accommodate safer left turns along the highway since limited opportunity to reduce number of intersections and driveways
	5.3.2 Emergency Access	Potential to support emergency access to/from existing and/or new provincial facilities.	**High** potential to support emergency access to/from route • Full moves connection will be provided at Perth Road 107 • Opportunity to provide connections to existing Highway 7&8 at east and west ends of Shakespeare • Direct access from existing fire hall east of Perth Road 107 to existing Highway 7&8 will be maintained	**High** potential to support emergency access to/from route • Full moves connection will be provided at Perth Road 107 • Opportunity to provide connections to existing Highway 7&8 at east and west ends of Shakespeare • Direct access from existing fire hall east of Perth Road 107 to existing Highway 7&8 will be maintained	**High** potential to support emergency access to/from route • Full moves connection will be provided at Perth Road 107 • Opportunity to provide connections to existing Highway 7&8 at east and west ends of Shakespeare • Direct access from existing fire hall east of Perth Road 107 to existing Highway 7&8 will be maintained	**High** potential to support emergency access to/from route • Full moves connection retained at Perth Road 107 • Direct access from existing fire hall east of Perth Road 107 to existing Highway 7&8 will be maintained

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study
EVALUATION OF ROUTE ALTERNATIVES
Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

BEST OF SHAKESPEARE AREA ALTERNATIVES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			Best of A plus E A3 + E: 1-2-4-7-10-12-14	**Best of A plus F A3 + F: 1-2-4-7-10-12-15**	**Best of B B1: 1-2-4-5-11-13-15**	**Existing Highway 7&8 Alignment 1-2-4-6-13-15**
	5.3.3 Pedestrian, Cyclist and Snowmobile Safety within the highway right-of-way	Potential and significance of change to ease and safety of movement across the highway and within the right-of-way.	**High** potential to improve pedestrian, cyclist and snowmobile safety • Route situated south of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area where pedestrian / cyclist movements predominately occur • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**High** potential to improve pedestrian, cyclist and snowmobile safety • Route situated south of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area where pedestrian / cyclist movements predominately occur • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**Medium** potential to improve pedestrian, cyclist and snowmobile safety • Route situated north of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area where pedestrian / cyclist movements predominately occur; however, traffic destined to/from south on Road 107 must pass through Shakespeare to access new Highway 7&8 alignment • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations	**Low** potential to improve pedestrian, cyclist and snowmobile safety • Route situated within developed area of Shakespeare where pedestrian / cyclist movements predominately occur • Pedestrian, cyclist and snowmobile movements across right-of-way can be provided at intersection locations and/or designated crossing locations
5.4 Mobility and Accessibility						
	5.4.1 Modal integration, balance and efficiency	Potential to improve modal choice and increase mode split for person trips between communities, regions and major transit station areas based on connection to concentrations of population, travel performance indicators (LOS, v/c, travel speed) at critical screenlines and on potential to provide higher order transit service.	**Medium** potential to improve modal integration, balance and efficiency. • Transit service is potentially constrained by the bypass of the community of Shakespeare, but is supported by the direct connection to development along Highway 7&8 both east and west of Shakespeare. • Use of existing Highway 7&8 would constrain transit travel performance. • Opportunity to support interface between rail transit service and highway	**Medium** potential to improve modal integration, balance and efficiency. • Transit service is potentially constrained by the bypass of the community of Shakespeare, but is supported by the direct connection to development along Highway 7&8 both east and west of Shakespeare. • Use of existing Highway 7&8 would constrain transit travel performance. • Opportunity to support interface between rail transit service and highway	**Low** potential to improve modal integration, balance and efficiency. • Transit service is potentially constrained by the bypass of the community of Shakespeare, but is supported by the direct connection to development along Highway 7&8 both east and west of Shakespeare. • Use of existing Highway 7&8 would constrain transit travel performance.	**Medium** potential to improve modal integration, balance and efficiency. • Potential transit service is supported by direct connection to the community of Shakespeare and the development along Highway 7&8. • Use of existing Highway 7&8 would constrain transit travel performance.
	5.4.2 Linkages to Population and Employment Centres	Potential to improve linkages to population and employment centres for people and goods movement	**Medium** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved • Linkages to Shakespeare may be reduced because of limitations imposed by intersection design	**Medium** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved • Linkages to Shakespeare may be reduced because of limitations imposed by intersection design	**Medium** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved • Linkages to Shakespeare may be reduced because of limitations imposed by intersection design	**High** potential to improve linkages to population and employment centres. • Linkage to Stratford and New Hamburg improved • Direct connection through Shakespeare

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study
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Note – Evaluation of the route alternatives is based on a qualitative assessment of each route (high, medium or low). Relevant and site-specific information for each criterion/cell is provided to justify the high, medium or low assessment.

BEST OF SHAKESPEARE AREA ALTERNATIVES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			Best of A plus E **A3 + E: 1-2-4-7-10-12-14**	**Best of A plus F** **A3 + F: 1-2-4-7-10-12-15**	**Best of B** **B1: 1-2-4-5-11-13-15**	**Existing Highway 7&8 Alignment** **1-2-4-6-13-15**
			requirements at potential tie-in points between the bypass and the current highway	requirements at potential tie-in points between the bypass and the current highway	requirements at potential tie-in points between the bypass and the current highway	
	5.4.3 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)	**Medium** potential to support recreation and tourism travel • Shakespeare tourist area is bypassed, but tourist travel through the analysis area is facilitated	**Medium** potential to support recreation and tourism travel • Shakespeare tourist area is bypassed, but tourist travel through the analysis area is facilitated	**Medium** potential to support recreation and tourism travel • Shakespeare tourist area is bypassed, but tourist travel through the analysis area is facilitated	**Medium** potential to support recreation and tourism travel • Shakespeare tourist area is not bypassed, but tourist travel through analysis area is slowed by congestion in Shakespeare
	5.4.4 Accommodate mobility of pedestrians, cyclists and snowmobiles	Potential to accommodate mobility of pedestrians, cyclists within critical travel corridors in urbanized areas and snowmobiles in recognized rural trails	**High** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route situated south of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area provides opportunity to improve mobility of pedestrian / cyclist movements within developed area • Existing snowmobile trail crossings east and west of Shakespeare can be maintained	**High** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route situated south of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area provides opportunity to improve mobility of pedestrian / cyclist movements within developed area • Existing snowmobile trail crossings east and west of Shakespeare can be maintained	**Medium** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route situated north of developed area of Shakespeare so need for movement within the right-of-way eliminated; reduced traffic on existing Highway 7&8 in developed area provides opportunity to improve mobility of pedestrian / cyclist movements within developed area; however traffic destined to/from south on Road 107 must pass through Shakespeare to access new Highway 7&8 alignment • Existing snowmobile trail crossings east and west of Shakespeare can be maintained	**Low** potential to accommodate mobility of pedestrians, cyclists and snowmobiles • Route passes directly through developed area of Shakespeare where pedestrian / cyclist movements predominately occur; confined boulevard area constrains pedestrian / cyclist mobility • Existing snowmobile trail crossings east and west of Shakespeare can be maintained
5.5 Network Compatibility						
	5.5.1 Network Connectivity	Potential to improve transportation system connectivity within and to/from the analysis area.	**High** potential to improve transportation system connectivity • Provides improved linkage between Stratford and New Hamburg	**High** potential to improve transportation system connectivity • Provides improved linkage between Stratford and New Hamburg	**High** potential to improve transportation system connectivity • Provides improved linkage between Stratford and New Hamburg	**High** potential to improve transportation system connectivity • Provides improved linkage between Stratford and New Hamburg
	5.5.2 Flexibility for Future Expansion	Potential to address future transportation needs beyond the forecasted planning horizons.	**High** potential for future expansion • Route is outside Shakespeare urban boundary, and since it is predominantly on new alignment, the majority of the right-of-way could accommodate future expansion	**High** potential for future expansion • Route is outside Shakespeare urban boundary, and since it is predominantly on new alignment, the majority of the right-of-way could accommodate future expansion	**High** potential for future expansion • Route is outside Shakespeare urban boundary, and since it is predominantly on new alignment, the majority of the right-of-way could accommodate future expansion	**Low** potential for future expansion • Route passes directly through developed area of Shakespeare, and the right-of-way through Shakespeare could not readily accommodate further expansion beyond the 4/5-lane section associated with this route alternative

LEGEND

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BEST OF SHAKESPEARE AREA ALTERNATIVES

Factor / Sub-Factor	Criteria	Indicator for Route Selection	Route Alternative			
			Best of A plus E **A3 + E: 1-2-4-7-10-12-14**	**Best of A plus F** **A3 + F: 1-2-4-7-10-12-15**	**Best of B** **B1: 1-2-4-5-11-13-15**	**Existing Highway 7&8 Alignment** **1-2-4-6-13-15**
5.6 Engineering						
	5.6.1 Constructability	Potential ease of implementation considering feasibility/difficulty of physical, property or environmental constraints	**Low** potential for constructability issues • Utilizes segment of existing Highway 7&8 corridor • One railway crossing • Two new watercourse crossings	**High** potential for constructability issues • Utilizes segment of existing Highway 7&8 corridor • Two railway crossings • Two new watercourse crossings	**Low** potential for constructability issues • Utilizes segment of existing Highway 7&8 corridor • No railway crossings • No new major watercourse crossings	**Medium** potential for constructability issues • Utilizes existing Highway 7&8 corridor; confined environment through Shakespeare • No railway crossings • No new major watercourse crossings
	5.6.2 Compliance with Design Criteria	Conformity to applicable provincial safety and design standards.	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths	**High** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane and shoulder widths	**Medium** conformity to safety and design standards • Supports use of better than minimum horizontal and vertical alignment elements • Can accommodate standard lane widths • Constrained boulevard area
5.7 Traffic Operations						
		Potential for negative impact on traffic operations due to factors such as design features, private access, and transportation network connections	**Low** potential for negative impact on traffic operations • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances. • Can accommodate full moves connection at Perth Road 107 • Can accommodate connections to existing Highway 7&8 at east and west ends of Shakespeare	**Low** potential for negative impact on traffic operations • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances. • Can accommodate full moves connection at Perth Road 107 • Can accommodate connections to existing Highway 7&8 at east and west ends of Shakespeare	**Medium** potential for negative impact on traffic operations • Route is predominantly on new alignment, with limited number of access points at intersection locations and a few access points associated with private entrances. • Can accommodate full moves connection at Perth Road 107 • Can accommodate connections to existing Highway 7&8 at east and west ends of Shakespeare • Traffic destined to new route from the south must pass through Shakespeare to access the new route	**High** potential for negative impact on traffic operations • Route is all existing highway, with multiple entrances and intersections • Can accommodate full moves connection at Perth Road 107 • Can accommodate connections to existing Highway 7&8 at east and west ends of Shakespeare
5.8 Construction Cost (excludes property costs and engineering costs)						
		Relative road construction cost, excluding property and engineering costs	**Medium Cost** $10 M	**High Cost** $15 M	**Low Cost** $5 M	**Low Cost** $5 M

LEGEND

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Highway 7&8 Transportation Corridor Planning and Class EA Study

EVALUATION OF ROUTE ALTERNATIVES

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BEST OF SHAKESPEARE AREA ALTERNATIVES

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SUMMARY OF EVALUATION			**Summary of Natural Environment** Route Alternatives 'Best of A plus E' and 'Best of A plus F' are preferred from a natural environment perspective as they have lower potential impacts to wildlife, groundwater and surface water relative to the other two alternatives. **Summary of Land Use / Socio-Economic Environment** Route Alternative 'Best of A plus F' is preferred from a land use / socio-economic environment perspective as it has lower potential impacts to the community, including urban and rural residential areas, commercial and industrial areas, and community facilities, and to local resources and moderate potential impacts to agriculture relative to the other alternative. **Summary of Cultural Environment** Route Alternatives 'Best of A plus F', 'Best of A plus F' and 'Best of B' are preferred as they result in comparable impacts to built heritage and archaeological sites and reduced impacts relative to the 'Existing Highway 7&8 Alignment' alternative. **Summary of Transportation** Route Alternatives 'Best of A plus E' and 'Best of A plus F' are preferred for the majority of the transportation criteria. However, Route Alternative 'Best of A plus E' is preferred because it has lower potential for constructability issues and a lower relative construction cost than Alternative 'Best of A plus F'. **Conclusion** Based upon the above, Route Alternative 'Best of A plus E" (i.e. southern by-pass which remains south of the railway corridor west of Shakespeare) is the preferred alternative for the Shakespeare area.			

LEGEND

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BEST OF SHAKESPEARE AREA ALTERNATIVES

FACTORS	Weighting	Alternative 1	2	3	4
1.0 NATURAL ENVIRONMENT	**20.00**				
1.1 Fisheries and Aquatic Ecosystems	8.00				
Weighted Score		5.36	5.36	5.36	5.36
1.2 Terrestrial Ecosystems	5.00				
Weighted Score		3.35	3.35	3.10	3.10
1.3 Groundwater	5.00				
Weighted Score		3.68	3.68	3.00	3.68
1.4 Surface Water	2.00				
Weighted Score		0.66	0.66	1.34	0.66
Factor Score	**20.00**	**13.05**	**13.05**	**12.80**	**12.80**
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	**35.00**				
2.1 Land Use Planning Policies, Goals, Objectives	3.50				
Weighted Score		2.35	2.35	2.17	2.35
2.2 Land Use / Community	7.00				
Weighted Score		4.92	4.56	4.09	1.05
2.3 Noise Sensitive Areas	5.25				
Weighted Score		1.73	1.73	3.52	0.00
2.4 Agriculture	7.00				
Weighted Score		2.08	2.08	1.16	3.74
2.5 Land Use / Resources	3.50				
Weighted Score		2.46	2.46	1.76	2.58
2.6 Major Utility Transmission Corridors	0.70				
Weighted Score		0.47	0.23	0.70	0.70
2.7 Contaminated Property and Waste Management	0.70				
Weighted Score		0.23	0.23	0.23	0.23
2.8 Landscape Composition	2.10				
Weighted Score		0.69	0.69	0.69	0.00
2.9 Air Quality	5.25				
Weighted Score		3.52	3.52	3.52	0.00
Factored Score	**35.00**	**18.45**	**17.85**	**17.83**	**10.64**
3.0 CULTURAL ENVIRONMENT	**20.00**				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	16.00				
Weighted Score		6.30	6.30	6.30	2.01
3.2 Archaeology	4.00				
Weighted Score		1.32	1.32	1.32	1.32
Factored Score	**20.00**	**7.62**	**7.62**	**7.62**	**3.33**
5.0 TRANSPORTATION	**25.00**				
5.1 Area Transportation System Capacity and Efficiency	3.75				
Weighted Score		3.75	3.75	3.75	2.51
5.2 Area Transportation System Reliability / Redundancy	3.75				
Weighted Score		3.75	3.75	3.75	1.24
5.3 Safety	6.25				
Weighted Score		6.25	6.25	5.43	3.75
5.4 Mobility and Accessibility	2.50				
Weighted Score		1.92	1.92	1.59	1.67
5.5 Network Compatibility	1.25				
Weighted Score		1.25	1.25	1.25	1.08
5.6 Engineering	2.50				
Weighted Score		1.84	0.50	1.84	1.00
5.7 Traffic Operations	3.75				
Weighted Score		2.51	2.51	1.24	0.00
5.8 Construction Cost	1.25				
Weighted Score		1.24	0.00	2.51	2.51
Factored Score	**25.00**	**22.51**	**19.94**	**21.36**	**13.76**
	100.00				
Total Alternative Score		**61.63**	**58.46**	**59.60**	**40.52**

ALTERNATIVE DESCRIPTIONS

1: Best of A plus E = A3 + E = 1-2-4-7-10-12-14
2: Best of A plus F = A3 + F = 1-2-4-7-10-12-15
3: Best of B = B1 = 1-2-4-5-11-13-15
4: Existing Highway 7&8 Alignment = 1-2-4-6-13-15

NATURAL ENVIRONMENT WEIGHTING TABLE - BEST OF SHAKESPEARE AREA ALTERNATIVES

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative 1	Alternative 2	Alternative 3	Alternative 4
1.0 NATURAL ENVIRONMENT			**20.00**				
1.1 Fisheries and Aquatic Ecosystems			8.00				
1.1.1 Fish Habitat	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: critical fish habitat features, riparian areas and habitat rehabilitation goals.	No / Low / Medium / High Effects	8.00	0.67	0.67	0.67	0.67
1.1.2 Fish Community	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: fish species at risk (vulnerable, threatened or endangered fish species), fish movement/migration, critical fish life stage processes (spawning, rearing, nursery, feeding) and long-term fish community management goals.						
		Weighted Score		5.36	5.36	5.36	5.36
1.2 Terrestrial Ecosystems			5.00				
1.2.1 Wildlife	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: wildlife species at risk (vulnerable, threatened or endangered wildlife species); wildlife of local and regional importance; migratory birds; critical wildlife habitat features; ecologically functional areas such as connective corridors or travel ways for movement/migration; important wildlife areas such as deeryards, heronries, waterfowl areas, important bird areas; wildlife management, rehabilitation/research program sites; and interference with critical wildlife life stage processes (eg mating/rearing, etc.).	No / Low / Medium / High Effects	0.75	0.67	0.67	0.33	0.33
1.2.2 Wetlands	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: provincially significant wetlands, their buffer areas, and their wetland function; evaluated and un-evaluated wetlands, their wetland buffer areas, and their wetland function; and wetland management, research and/or wetland conservation programs/areas.	No / Low / Medium / High Effects	1.25	0.67	0.67	0.67	0.67
1.2.3 Forests	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: significant woodlands/valley lands; and forest management/research program areas.	No / Low / Medium / High Effects	1.25	0.67	0.67	0.67	0.67
1.2.4 Vegetation	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: subpopulations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant regional/local flora/communities; areas/corridors supporting known populations of vegetation species at risk (vulnerable, threatened or endangered species), species of conservation concern and significant flora/communities; and vegetation management, rehabilitation/research program sites.	No / Low / Medium / High Effects	0.75	0.67	0.67	0.67	0.67
1.2.5 Designated/Special Areas	Potential and significance of: encroachment, severance, displacement, long-term alteration/disruption, change in area character/aesthetics, nuisance impacts, change to access/travel time, and change to facilities/utilities/services to designated/special areas.	No / Low / Medium / High Effects	1.00	0.67	0.67	0.67	0.67
		Weighted Score		3.35	3.35	3.10	3.10
1.3 Groundwater			5.00				
1.3.1 Areas of Groundwater Recharge and Discharge	Potential and significance of alteration to areas of groundwater recharge and discharge due to physical intrusion or groundwater inception, draw-down, impoundment, obstruction, or soil compaction impacting groundwater base-flow and quality.	No / Low / Medium / High Effects	0.50	0.67	0.67	0.33	0.67
1.3.2 Groundwater Source Areas and Wellhead Protection Areas	Potential and significance of alteration to areas of groundwater resource areas and wellhead protection areas due to physical intrusion, or groundwater interception, draw-down, impoundment, obstruction and by soil compaction.	No / Low / Medium / High Effects	1.00	0.67	0.67	0.33	0.67
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.	No / Low / Medium / High Effects	0.50	0.67	0.67	0.33	0.67

NATURAL ENVIRONMENT WEIGHTING TABLE - BEST OF SHAKESPEARE AREA ALTERNATIVES

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative			
				1	2	3	4
1.0 NATURAL ENVIRONMENT			**20.00**				
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.	No / Low / Medium / High Effects	1.00	0.67	0.67	0.67	0.67
1.3.5 Groundwater-Dependent Commercial Enterprises (e.g. water bottling operations)	Potential and significance of alteration to groundwater use by groundwater-dependent commercial enterprises due to physical intrusion, or groundwater interception, draw-down, impoundment, obstruction and by soil compaction.	No / Low / Medium / High Effects	1.00	1.00	1.00	1.00	1.00
1.3.6 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.	No / Low / Medium / High Effects	1.00	0.67	0.67	0.67	0.67
		Weighted Score		3.68	3.68	3.00	3.68
1.4 Surface Water			2.00				
1.4.1 Watershed / Sub-Watershed Drainage Features / Patterns	Potential and significance of: encroachment, severance, displacement; and long-term alteration/disruption as applicable to the following: watercourse crossings (permanent, intermittent and ephemeral); floodplain or meander belts; riparian areas; sensitive headwater areas; and watershed and sub watershed management plans.	No / Low / Medium / High Effects	2.00	0.33	0.33	0.67	0.33
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. Potential and significance of impacts on hydrology due to changes in ground permeability, modifications to surface drainage patterns and alterations of waterbodies.	No / Low / Medium / High Effects					
		Weighted Score		0.66	0.66	1.34	0.66
		Factored Score	**20.00**	**13.05**	**13.05**	**12.80**	**12.80**

ALTERNATIVE DESCRIPTIONS

1: Best of A plus E = A3 + E = 1-2-4-7-10-12-14
2: Best of A plus F = A3 + F = 1-2-4-7-10-12-15
3: Best of B = B1 = 1-2-4-5-11-13-15
4: Existing Highway 7&8 Alignment = 1-2-4-6-13-15

SUMMARY WEIGHTING TABLE - BEST OF SHAKESPEARE AREA ALTERNATIVES

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative 1	Alternative 2	Alternative 3	Alternative 4
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT			35.00				
2.0 Land Use Planning Policies, Goals and Objectives			3.50				
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	No / Low / Medium / High Effects	0.18	0.67	0.67	0.67	0.67
2.1.2 Provincial/Federal land use planning policies/goals/objectives	Degree of compatibility with federal/provincial land use policies/goals/objectives	No / Low / Medium / High Effects	0.52	0.67	0.67	0.33	0.67
2.1.3 Municipal (regional and local land use planning policies/goals/ objectives (Official Plans)	Degree of compatibility with municipal Official Plans	No / Low / Medium / High Effects	2.28	0.67	0.67	0.67	0.67
2.1.4 Development Objectives of Private Property Owners	Potential to isolate property from current/future urban envelope. Impact on future land use.	No / Low / Medium / High Effects	0.52	0.67	0.67	0.67	0.67
		Weighted Score		2.35	2.35	2.17	2.35
2.2 Land Use / Community			7.00				
2.2.1 First Nation Reserves	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts and change to access / travel time to First Nation Reserves.	No / Low / Medium / High Effects	0.35	1.00	1.00	1.00	1.00
2.2.2 First Nations' Sacred Grounds	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts and change to access / travel time to First Nations' sacred grounds.	No / Low / Medium / High Effects	0.35	0.67	0.67	0.67	0.67
2.2.3 Urban and Rural Residential	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption (e.g. loss of parking area); change in area character / aesthetics (e.g. loss of trees/garden area); nuisance impacts (e.g. intrusion of highway into current residential envelope); change to access / travel time; change to facilities / utilities / services; interference with residential community cohesion; change to highway operational impacts (e.g. snow storage and highway access visibility) to urban and rural residential areas (residents (owners/tenants) and community groups).	No / Low / Medium / High Effects	1.05	0.67	0.33	0.67	0.00
2.2.4 Commercial/Industrial	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/aesthetics; nuisance impacts; change to travel access/travel time; change to facilities/utilities/services; interference with commercial community cohesion; change to highway operation impacts (e.g. customer parking, cargo loading/off-loading); to commercial and industrial areas (business owners/tenants and customers).	No / Low / Medium / High Effects	1.05	0.67	0.67	0.33	0.00
2.2.5 Tourist Areas and Attractions (e.g. museums, theatres, etc.)	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/aesthetics; nuisance impacts; change to travel access/travel time; change to facilities/utilities/services; loss of "critical mass" in number of signature business attractions (e.g. number of antique shops); to tourist areas and attractions.	No / Low / Medium / High Effects	1.05	0.67	0.67	0.67	0.33
2.2.6 Community Facilities/Institutions (e.g. hospitals, schools, places of worship, unique community features)	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/aesthetics; nuisance impacts; change to travel access/travel time; change to facilities/utilities/services; change to ease and safety of pedestrian movements across the highway and within the highway right-of-way; change to highway operation impacts to current use (e.g. highway noise and vibration interfering with church services); to community facilities and institutions.	No / Low / Medium / High Effects	1.05	0.67	0.67	0.33	0.00
2.2.7 Municipal Infrastructure and Public Service Facilities (e.g. sewage and water services, police/emergency services, local utilities)	Potential and significance of: encroachment, severance, displacement; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to municipal infrastructure and public service facilities.	No / Low / Medium / High Effects	0.35	1.00	1.00	0.67	0.33
2.2.8 Downtown Historic Crossroads Function	Potential and significance of interference by long-distance through-traffic on: "main street" function and structure; character/aesthetics; change to ease and safety of pedestrian movements across the highway and within the highway right-of-way; change to on-street parking; in historic downtown area.	No / Low / Medium / High Effects	1.75	0.67	0.67	0.67	0.00
		Weighted Score		4.92	4.56	4.09	1.05
2.3 Noise Sensitive Areas (NSAs) (residential areas and sensitive institutional uses)			5.25				
2.3.1 Highway Noise	Potential for significant traffic noise increases in NSAs and for noise-sensitive receivers immediately adjacent to the highway	No / Low / Medium / High Effects	5.25	0.33	0.33	0.67	0.00
		Weighted Score		1.73	1.73	3.52	0.00

SUMMARY WEIGHTING TABLE - BEST OF SHAKESPEARE AREA ALTERNATIVES

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative 1	Alternative 2	Alternative 3	Alternative 4
2.4 Agriculture			7.00				
2.4.1 Agriculture - Canada Land Inventory Class 1, 2, 3 Land	Potential and significance of encroachment, severance of Canada Land inventory Classes 1, 2 and 3 soils	No / Low / Medium / High Effects	0.70	0.00	0.00	0.00	0.67
2.4.2 Agriculture - Farm Infrastructure	Potential and significance of: encroachment, severance, displacement; long-term alteration/disruption; nuisance impacts; to farm infrastructure (field tile drainage systems/outlets, irrigation systems, barns/silos/structures, etc.).	No / Low / Medium / High Effects	2.80	0.33	0.33	0.33	0.33
2.4.3 Agriculture - Operations on Individual Farms	Potential and significance of: encroachment, severance, displacement; long-term alteration/disruption; nuisance impacts; to in-farm field operations (planting, harvesting, grazing, nutrient management, etc.) as applicable to the following: specialty crops/cropland; dairy/livestock operations; field crop operations; high investment agricultural operations; established agricultural farm communities.	No / Low / Medium / High Effects	2.80	0.33	0.33	0.00	0.67
2.4.4 Agriculture - Transportation Linkages between Integrated Agricultural Business Units	Potential to sever/disrupt transportation linkages between integrated agricultural business units (movement between integrated agricultural business units of equipment, materials, workers, etc.)	No / Low / Medium / High Effects	0.70	0.33	0.33	0.33	0.67
		Weighted Score		2.08	2.08	1.16	3.74
2.5 Land Use / Resources			3.50				
2.5.1 First Nations' 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: encroachment, severance, displacement; long-term alteration/disruption; nuisance impacts; change to access/travel time; to First Nations' treaty rights or use of land and resources for traditional purposes.	No / Low / Medium / High Effects	0.35	0.33	0.33	0.33	0.67
2.5.2 Parks and Recreational Areas (e.g. national/provincial parks, conservation areas, municipal parks, public spaces, golf courses, trails, greenways and open space linkages)	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change in area character/ aesthetics; nuisance impacts; change to access/travel time; change to facilities/utilities/services; to parks and recreational areas.	No / Low / Medium / High Effects	2.45	0.67	0.67	0.67	0.67
2.5.3 Aggregates, Mineral-Resources	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to current/future extraction of aggregate and mineral resources.	No / Low / Medium / High Effects	0.70	1.00	1.00	0.00	1.00
		Weighted Score		2.46	2.46	1.76	2.58
2.6 Major Utility Transmission Corridors (e.g. railroads, hydro, gas, oil)			0.70				
	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to major utility transmission corridors.	No / Low / Medium / High Effects	0.70	0.67	0.33	1.00	1.00
		Weighted Score		0.47	0.23	0.70	0.70
2.7 Contaminated Property and Waste Management (e.g. landfills, hazardous waste sites, "brownfield" areas, other known contaminated sites, and high-risk contamination areas)			0.70				
	Potential and significance of: encroachment, severance, displacement, property acquisition; long-term alteration/disruption; change to access/travel time; change to facilities/utilities/services; to contaminated property and waste management.	No / Low / Medium / High Effects	0.70	0.33	0.33	0.33	0.33
		Weighted Score		0.23	0.23	0.23	0.23
2.8 Landscape Composition			2.10				
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).	No / Low / Medium / High Effects					
2.8.2 Sensitive Viewer Groups	Potential and significance of change to vistas/outlooks for sensitive viewer groups.	No / Low / Medium / High Effects	2.10	0.33	0.33	0.33	0.00
2.8.3 Scenic Value of Views/Vistas from the transportation facility	Potential and significance of views/vistas from the transportation facility.	No / Low / Medium / High Effects					
		Weighted Score		0.69	0.69	0.69	0.00
2.9 Air Quality			5.25				
2.9.2 Sensitive receptors to air pollutants and greenhouse gas emissions	Presence and potential for impacts to sensitive receptors to air pollutants and greenhouse gas emissions, including consideration of number of sensitive receptors immediately adjacent to the highway.	No / Low / Medium / High Effects	5.25	0.67	0.67	0.67	0.00
		Weighted Score		3.52	3.52	3.52	0.00
		Factored Score	**35.00**	**18.45**	**17.85**	**17.83**	**10.64**

ALTERNATIVE DESCRIPTIONS
1: Best of A plus E = A3 + E = 1-2-4-7-10-12-14
2: Best of A plus F = A3 + F = 1-2-4-7-10-12-15
3: Best of B = B1 = 1-2-4-5-11-13-15
4: Existing Highway 7&8 Alignment = 1-2-4-6-13-15

SUMMARY WEIGHTING TABLE - BEST OF SHAKESPEARE AREA ALTERNATIVES

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative 1	Alternative 2	Alternative 3	Alternative 4
3.0 CULTURAL ENVIRONMENT			20.00				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes			16.00				
3.1.1 Buildings or "Standing" Sites of Architectural or Heritage Significance or Ontario Heritage Foundation Easement Properties	Potential and significance of encroachment, severance, displacement, property acquisition, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, change to facilities / utilities/ service to buildings or "standing" sites of extreme local, provincial or national interest or Ontario Heritage Foundation easements properties.	No / Low / Medium / High Effects	8.00	0.33	0.33	0.33	0.00
3.1.2 Heritage Bridges	Potential for destruction or significant alteration of heritage bridges.	No / Low / Medium / High Effects					
3.1.3 Areas of Historic 19th Century Settlement	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, change to facilities / utilities/ service to areas of historic 19th century settlement.	No / Low / Medium / High Effects	3.00	0.33	0.33	0.33	0.00
3.1.4 Cultural Heritage Landscapes (collection of individual manmade features modifying pristine landscape)	Potential and significance of change to composition of cultural landscapes.	No / Low / Medium / High Effects	2.00	0.33	0.33	0.33	0.00
3.1.5 First Nations' Burial Sites	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, to First Nations' burial sites.	No / Low / Medium / High Effects	0.00	1.00	1.00	1.00	1.00
3.1.6 Cemeteries	Potential and significance of encroachment, severance, displacement, long-term alteration / disruption, change in area character / aesthetics, nuisance impacts, change to access / travel, change to facilities / utilities/ service to cemeteries.	No / Low / Medium / High Effects	3.00	0.67	0.67	0.67	0.67
		Weighted Score		6.30	6.30	6.30	2.01
3.2 Cultural Heritage - Archaeology			4.00				
3.2.1 Pre-Historic and Historic First Nations Sites	Potential for destruction or disturbance of prehistoric and historic First Nations archaeological sites of extreme local, provincial or national interest	No / Low / Medium / High Effects	4.00	0.33	0.33	0.33	0.33
3.2.2 Historic EuorCanadian Archaeological Sites	Potential for destruction or disturbance of historic EuroCanadian archaeological sites of extreme local, provincial or national interest	No / Low / Medium / High Effects					
		Weighted Score		1.32	1.32	1.32	1.32
		Factored Score	**20.00**	**7.62**	**7.62**	**7.62**	**3.33**

ALTERNATIVE DESCRIPTIONS

1: Best of A plus E = A3 + E = 1-2-4-7-10-12-14
2: Best of A plus F = A3 + F = 1-2-4-7-10-12-15
3: Best of B = B1 = 1-2-4-5-11-13-15
4: Existing Highway 7&8 Alignment = 1-2-4-6-13-15

SUMMARY WEIGHTING TABLE - BEST OF SHAKESPEARE AREA ALTERNATIVES

Factor / Sub-factor / Criteria	Indicator	Net Effect	Weighting	Alternative 1	Alternative 2	Alternative 3	Alternative 4
5.0 TRANSPORTATION			25.00				
5.1 Area Transportation System Capacity and Efficiency			3.75				
5.1.2 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	No / Low / Medium / High Effects	1.88	1.00	1.00	1.00	0.67
5.1.3 Efficient movement of goods	Potential to support the efficient movement of goods between communities and regions based on Level of Service (LOS) and volume to capacity (v/c) on a network, screenline and critical link basis	No / Low / Medium / High Effects	1.88	1.00	1.00	1.00	0.67
		Weighted Score		3.75	3.75	3.75	2.51
5.2 Area Transportation System Reliability / Redundancy			3.75				
	Potential to support system reliability and redundancy for travel (people and goods) between regions and communities during adverse conditions.	No / Low / Medium / High Effects	3.75	1.00	1.00	1.00	0.33
		Weighted Score		3.75	3.75	3.75	1.24
5.3 Safety			6.25				
5.3.1 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	No / Low / Medium / High Effects	2.50	1.00	1.00	1.00	0.67
5.3.2 Emergency Access	Potential to support emergency access to/from existing and/or new provincial facilities	No / Low / Medium / High Effects	1.25	1.00	1.00	1.00	1.00
5.3.3 Pedestrian, Cyclist and Snowmobile Safety within the highway right-of-way	Potential and significance of change to ease and safety of movement across the highway and within the right-of-way.	No / Low / Medium / High Effects	2.50	1.00	1.00	0.67	0.33
		Weighted Score		6.25	6.25	5.43	3.75
5.4 Mobility and Accessibility			2.50				
5.4.1 Modal integration, balance and efficiency	Potential to improve modal choice and increase mode split for person trips between communities, regions and major transit station areas based on connection to concentrations of population, travel performance indicators (LOS, v/c, travel speed) at critical screenlines and on potential to provide higher order transit service.	No / Low / Medium / High Effects	0.25	0.67	0.67	0.33	0.67
5.4.2 Linkages to Population and Employment Centres	Potential to improve linkages to population and employment centres for people and goods movement.	No / Low / Medium / High Effects	0.75	0.67	0.67	0.67	1.00
5.4.3 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)	No / Low / Medium / High Effects	0.75	0.67	0.67	0.67	0.67
5.4.4 Accommodate mobility of pedestrians, cyclists and snowmobiles	Potential to accommodate mobility of pedestrians, cyclists within critical travel corridors in urbanized areas and snowmobiles in recognized rural trails.	No / Low / Medium / High Effects	0.75	1.00	1.00	0.67	0.33
		Weighted Score		1.92	1.92	1.59	1.67
5.5 Network Compatibility			1.25				
5.5.1 Network Connectivity	Potential to improve transportation system connectivity within and to/from the analysis area.	No / Low / Medium / High Effects	1.00	1.00	1.00	1.00	1.00
5.5.2 Flexibility for Future Expansion	Potential to address future transportation needs beyond the forecasted planning horizons.	No / Low / Medium / High Effects	0.25	1.00	1.00	1.00	0.33
		Weighted Score		1.25	1.25	1.25	1.08
5.6 Engineering			2.50				
5.6.1 Constructability	Potential ease of implementation considering feasibility/difficulty of physical, property or environmental constraints.	No / Low / Medium / High Effects	2.00	0.67	0.00	0.67	0.33
5.6.2 Compliance with Design Criteria	Conformity to applicable provincial safety and design standards.	No / Low / Medium / High Effects	0.50	1.00	1.00	1.00	0.67
		Weighted Score		1.84	0.50	1.84	1.00
5.7 Traffic Operations			3.75				
	Potential for negative impact on traffic operations due to factors such as design features, private access, and transportation network connections.	No / Low / Medium / High Effects	3.75	0.67	0.67	0.33	0.00
		Weighted Score		2.51	2.51	1.24	0.00
5.8 Construction Cost (excludes property costs and engineering costs)			1.25				
	Relative road construction cost, excluding property and engineering costs.	No / Low / Medium / High Effects	1.25	0.33	0.00	0.67	0.67
		Weighted Score		1.24	0.00	2.51	2.51
		Factored Score	**25.00**	**22.51**	**19.94**	**21.36**	**13.76**

ALTERNATIVE DESCRIPTIONS

1: Best of A plus E = A3 + E = 1-2-4-7-10-12-14
2: Best of A plus F = A3 + F = 1-2-4-7-10-12-15
3: Best of B = B1 = 1-2-4-5-11-13-15
4: Existing Highway 7&8 Alignment = 1-2-4-6-13-15

SUMMARY WEIGHTING TABLE - BEST OF SHAKESPEARE AREA ALTERNATIVES
SUMMARY OF SENSITIVITY ANALYSIS - RANKING OF ALTERNATIVES

FACTORS	RATING	WEIGHT	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Evaluation Team	Initial Weights		1	3	2	4
SENSITIVITY ANALYSIS						
Natural Environment	High	50%	1	3	2	4
	Low	10%	1	3	2	4
Land Use / Socio-Economic Environment	High	85%	1	3	2	4
	Low	10%	1	3	2	4
Cultural Environment	High	50%	1	3	2	4
	Low	10%	1	3	2	4
Transportation	High	70%	1	3	2	4
	Low	10%	1	3	2	4
Stakeholder Input (SARA)	SARA Weights		1	3	2	4
Overall Ranking			1	3	2	4

ALTERNATIVE DESCRIPTIONS

1: Best of A plus E = A3 + E = 1-2-4-7-10-12-14
2: Best of A plus F = A3 + F = 1-2-4-7-10-12-15
3: Best of B = B1 = 1-2-4-5-11-13-15
4: Existing Highway 7&8 Alignment = 1-2-4-6-13-15

BEST OF SHAKESPEARE AREA ALTERNATIVES

Highway 78 Transportation Corridor FACTORS Planning and Class EA Study	Weighting	Alternative 1	2	3	4
1.0 NATURAL ENVIRONMENT	**20.00**				
1.1 Fisheries and Aquatic Ecosystems	8.00				
Weighted Score		5.36	5.36	5.36	5.36
1.2 Terrestrial Ecosystems	5.00				
Weighted Score		3.35	3.35	3.10	3.10
1.3 Groundwater	5.00				
Weighted Score		3.68	3.68	3.00	3.68
1.4 Surface Water	2.00				
Weighted Score		0.66	0.66	1.34	0.66
Factored Score	**20.00**	**13.05**	**13.05**	**12.80**	**12.80**
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	**35.00**				
2.1 Land Use Planning Policies, Goals, Objectives	3.50				
Weighted Score		2.35	2.35	2.17	2.35
2.2 Land Use / Community	7.00				
Weighted Score		4.82	4.86	4.09	1.05
2.3 Noise Sensitive Areas	5.25				
Weighted Score		1.73	1.73	3.52	0.00
2.4 Agriculture	7.00				
Weighted Score		2.06	2.06	1.16	3.74
2.5 Land Use / Resources	3.50				
Weighted Score		2.46	2.46	1.76	2.58
2.6 Major Utility Transmission Corridors	0.70				
Weighted Score		0.47	0.23	0.70	0.70
2.7 Contaminated Property and Waste Management	0.70				
Weighted Score		0.23	0.23	0.23	0.23
2.8 Landscape Composition	2.10				
Weighted Score		0.69	0.69	0.69	0.00
2.9 Air Quality	5.25				
Weighted Score		3.52	3.52	3.52	0.00
Factored Score	**35.00**	**18.45**	**17.85**	**17.83**	**10.64**
3.0 CULTURAL ENVIRONMENT	**20.00**				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	16.00				
Weighted Score		6.30	6.30	6.30	2.01
3.2 Archaeology	4.00				
Weighted Score		1.32	1.32	1.32	1.32
Factored Score	**20.00**	**7.62**	**7.62**	**7.62**	**3.33**
5.0 TRANSPORTATION	**25.00**				
5.1 Area Transportation System Capacity and Efficiency	3.75				
Weighted Score		3.75	3.75	3.75	2.51
5.2 Area Transportation System Reliability / Redundancy	3.75				
Weighted Score		3.75	3.75	3.75	1.24
5.3 Safety	6.25				
Weighted Score		6.25	6.25	5.43	3.75
5.4 Mobility and Accessibility	2.50				
Weighted Score		1.62	1.62	1.58	1.67
5.5 Network Compatibility	1.25				
Weighted Score		1.25	1.25	1.25	1.08
5.6 Engineering	2.50				
Weighted Score		1.84	0.50	1.84	1.00
5.7 Traffic Operations	3.75				
Weighted Score		2.51	2.51	1.24	0.00
5.8 Construction Cost	1.25				
Weighted Score		1.24	0.00	2.51	2.51
Factored Score	**25.00**	**22.51**	**19.94**	**21.36**	**13.76**
	100.00				
Total Alternative Score		**61.63**	**58.46**	**59.60**	**40.52**

Natural 50%

Weighting	Alternative 1	2	3	4
50.00				
20.00	13.40	13.40	13.40	13.40
12.50	8.38	8.38	7.74	7.74
12.50	9.20	9.20	7.80	9.20
5.00	1.65	1.65	3.35	1.65
50.00	**32.63**	**32.63**	**31.99**	**31.99**
22.00				
2.20	1.47	1.47	1.36	1.47
4.40	3.00	2.87	2.57	0.66
3.30	1.09	1.09	2.21	0.00
4.40	1.31	1.31	0.73	2.26
2.20	1.54	1.54	1.10	1.62
0.44	0.29	0.15	0.44	0.44
0.44	0.15	0.15	0.15	0.15
1.32	0.44	0.44	0.44	0.00
3.30	2.21	2.21	2.21	0.00
22.00	**11.59**	**11.22**	**11.21**	**6.69**
12.50				
10.00	3.94	3.94	3.94	1.26
2.50	0.83	0.83	0.83	0.83
12.50	**4.76**	**4.76**	**4.76**	**2.08**
15.50				
2.33	2.33	2.33	2.33	1.56
2.33	2.33	2.33	2.33	0.77
3.88	3.88	3.88	2.36	2.33
1.55	1.19	1.19	0.00	1.03
0.78	0.78	0.78	0.78	0.67
1.55	1.14	0.21	1.14	0.62
2.33	1.56	1.56	0.77	0.00
0.78	0.77	0.00	1.56	1.66
15.50	**13.96**	**12.36**	**13.24**	**8.53**
100.00	**62.94**	**60.97**	**61.20**	**49.28**

Natural 10%

	Weighting	Alternative 1	2	3	4	
2.5	10.00					0.5
	4.00	2.68	2.68	2.68	2.68	
	2.50	1.68	1.68	1.55	1.55	
	2.50	1.84	1.84	1.50	1.84	
	1.00	0.33	0.33	0.67	0.33	
	10.00	**6.53**	**6.53**	**6.40**	**6.40**	
0.63	39.50					1.13
	3.95	2.65	2.65	2.45	2.65	
	7.90	5.55	5.15	4.62	1.18	
	3.95	1.96	1.96	3.97	0.00	
	7.90	2.35	2.35	1.30	4.22	
	3.95	2.77	2.77	1.88	2.91	
	0.79	0.53	0.26	0.79	0.79	
	0.79	0.26	0.26	0.26	0.26	
	2.37	0.78	0.78	0.78	0.00	
	5.93	3.97	3.97	3.97	0.00	
	39.50	**20.82**	**20.15**	**20.12**	**12.00**	
0.63	22.50					1.13
	18.00	7.09	7.09	7.09	2.26	
	4.50	1.49	1.49	1.49	1.49	
	22.50	**8.57**	**8.57**	**8.57**	**3.75**	
0.62	28.00					1.12
	4.20	4.20	4.20	4.20	2.81	
	4.20	4.20	4.20	4.20	1.39	
	7.00	7.00	7.00	6.08	4.20	
	2.80	2.15	2.15	1.78	1.87	
	1.40	1.40	1.40	1.40	1.21	
	2.80	2.06	0.96	2.06	1.11	
	4.20	2.81	2.81	1.39	0.00	
	1.40	1.39	0.00	2.81	2.81	
	28.00	**25.21**	**22.33**	**23.92**	**15.41**	
	100.00	**61.13**	**57.57**	**59.01**	**37.56**	

ALTERNATIVE DESCRIPTIONS

1: Best of A plus E = A0 + E = 1-2-4-7-10-12-14
2: Best of A plus F = A0 + F = 1-2-4-7-10-12-15
3: Best of B + St = 1-2-4-5-11-13-15
4: Existing Highway 78 Alignment = 1-2-4-6-13-15

BEST OF SHAKESPEARE /Land Use / Socio-Economic 85%

Land Use / Socio-Economic 10%

Cultural 50%

Highway 7/8 Transportation Corridor FACTORS Planning and Class EA Study	Weighting	Alternative 1	2	3	4		Weighting	Alternative 1	2	3	4		Weighting	Alternative 1	2	3	4	
1.0 NATURAL ENVIRONMENT	5.00					0.25	28.00					1.4	12.50					0.625
1.1 Fisheries and Aquatic Ecosystems	2.00						11.20						5.00					
Weighted Score		1.34	1.34	1.34	1.34			7.50	7.50	7.50	7.50			3.35	3.35	3.35	3.35	
1.2 Terrestrial Ecosystems	1.25						7.00						3.13					
Weighted Score		0.84	0.84	0.77	0.77			4.69	4.69	4.33	4.33			2.09	2.09	1.93	1.93	
1.3 Groundwater	1.25						7.00						3.13					
Weighted Score		0.92	0.92	0.75	0.92			5.15	5.15	4.20	5.15			2.30	2.30	1.88	2.30	
1.4 Surface Water	0.50						2.80						1.25					
Weighted Score		0.17	0.17	0.34	0.17			0.92	0.92	1.88	0.92			0.41	0.41	0.84	0.41	
Factored Score	5.00	3.26	3.26	3.20	3.20		28.00	18.27	18.27	17.91	17.91		12.50	8.16	8.16	8.00	8.00	
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	85.00					2.42	10.00					0.29	22.00					0.63
2.1 Land Use Planning Policies, Goals, Objectives	8.50						1.00						2.20					
Weighted Score		5.70	5.70	5.27	5.70			0.67	0.67	0.62	0.67			1.47	1.47	1.36	1.47	
2.2 Land Use / Community	17.00						2.00						4.40					
Weighted Score		11.95	11.08	9.84	2.54			1.41	1.30	1.17	0.30			3.08	2.87	2.57	0.66	
2.3 Noise Sensitive Areas	12.75						1.50						3.30					
Weighted Score		4.21	4.21	8.54	0.00			0.50	0.50	1.51	0.00			1.09	1.09	2.21	0.00	
2.4 Agriculture	17.00						2.00						4.40					
Weighted Score		5.06	5.06	2.81	9.06			0.59	0.59	0.33	1.07			1.31	1.31	0.73	2.35	
2.5 Land Use / Resources	8.50						1.00						2.20					
Weighted Score		5.97	5.97	4.27	6.25			0.70	0.70	0.50	0.74			1.54	1.54	1.10	1.62	
2.6 Major Utility Transmission Corridors	1.70						0.20						0.44					
Weighted Score		1.14	0.56	1.70	1.70			0.13	0.07	0.20	0.20			0.29	0.15	0.44	0.44	
2.7 Contaminated Property and Waste Management	1.70						0.20						0.44					
Weighted Score		0.56	0.56	0.56	0.56			0.07	0.07	0.07	0.07			0.15	0.15	0.15	0.15	
2.8 Landscape Composition	5.10						0.60						1.32					
Weighted Score		1.68	1.68	1.68	0.00			0.20	0.20	0.20	0.00			0.44	0.44	0.44	0.00	
2.9 Air Quality	12.75						1.50						3.30					
Weighted Score		8.54	8.54	8.54	0.00			1.01	1.01	1.01	0.00			2.21	2.21	2.21	0.00	
Factored Score	85.00	44.80	43.35	43.30	25.83		10.00	5.27	5.10	5.09	3.04		22.00	11.59	11.22	11.21	6.69	
3.0 CULTURAL ENVIRONMENT	5.00					0.25	28.00					1.40	50.00					2.50
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	4.00						22.40						40.00					
Weighted Score		1.58	1.58	1.58	0.50			8.82	8.82	8.82	2.81			15.75	15.75	15.75	5.00	
3.2 Archaeology	1.00						5.60						10.00					
Weighted Score		0.33	0.33	0.33	0.33			1.85	1.85	1.85	1.85			3.30	3.30	3.30	3.30	
Factored Score	5.00	1.91	1.91	1.91	0.83		28.00	10.67	10.67	10.67	4.66		50.00	19.05	19.05	19.05	8.33	
5.0 TRANSPORTATION	5.00					0.2	34.00					1.36	15.50					0.62
5.1 Area Transportation System Capacity and Efficiency	0.75						5.10						2.33					
Weighted Score		0.75	0.75	0.75	0.50			5.10	5.10	5.10	3.42			2.33	2.33	2.33	1.56	
5.2 Area Transportation System Reliability / Redundancy	0.75						5.10						2.33					
Weighted Score		0.75	0.75	0.75	0.25			5.10	5.10	5.10	1.68			2.33	2.33	2.33	0.77	
5.3 Safety	1.25						8.50						3.88					
Weighted Score		1.25	1.25	1.09	0.75			8.50	8.50	7.38	5.10			3.88	3.88	3.38	2.33	
5.4 Mobility and Accessibility	0.50						3.40						1.55					
Weighted Score		0.38	0.38	0.32	0.33			2.61	2.61	2.16	2.27			1.19	1.19	0.99	1.03	
5.5 Network Compatibility	0.25						1.70						0.78					
Weighted Score		0.25	0.25	0.25	0.22			1.70	1.70	1.70	1.47			0.78	0.78	0.78	0.67	
5.6 Engineering	0.50						3.40						1.55					
Weighted Score		0.37	0.10	0.37	0.20			2.50	0.68	2.50	1.35			1.14	0.31	1.14	0.62	
5.7 Traffic Operations	0.75						5.10						2.33					
Weighted Score		0.50	0.50	0.25	0.00			3.42	3.42	1.68	0.00			1.56	1.56	0.77	0.00	
5.8 Construction Cost	0.25						1.70						0.78					
Weighted Score		0.25	0.00	0.00	0.50			1.68	0.00	3.42	3.42			0.77	0.00	1.56	1.56	
Factored Score	5.00	4.50	3.99	4.27	2.75		34.00	30.62	27.11	29.04	18.71		15.50	13.96	12.36	13.24	8.53	
Total Alternative Score	100.00	54.47	52.50	52.68	32.61		100.00	64.83	61.15	62.72	44.32		100.00	52.76	50.79	51.49	31.54	

ALTERNATIVE DESCRIPTIONS

1: Best of A plus E = A3 + E = 1-2-4-7-10-12-14
2: Best of A plus F = A3 + F = 1-2-4-7-10-12-15
3: Best of B = B1 = 1-2-4-5-11-13-15
4: Existing Highway 7&8 Alignment = 1-2-4-6-13-15

BEST OF SHAKESPEARE /Cultural 10%

FACTORS / Highway 7/8 Transportation Corridor Planning and Class EA Study	Weighting	Alternative 1	2	3	4
1.0 NATURAL ENVIRONMENT	22.50				
1.1 Fisheries and Aquatic Ecosystems	9.00				
Weighted Score		6.03	6.03	6.03	6.03
1.2 Terrestrial Ecosystems	5.63				
Weighted Score		3.77	3.77	3.48	3.48
1.3 Groundwater	5.63				
Weighted Score		4.14	4.14	3.38	4.14
1.4 Surface Water	2.25				
Weighted Score		0.74	0.74	1.51	0.74
Factored Score	22.50	14.68	14.68	14.39	14.39
2.0 LAND USE / SOCIO-ECONOMIC ENVIRONMENT	39.50				
2.1 Land Use Planning Policies, Goals, Objectives	3.95				
Weighted Score		2.65	2.65	2.45	2.65
2.2 Land Use / Community	7.90				
Weighted Score		5.55	5.15	4.62	1.18
2.3 Noise Sensitive Areas	5.93				
Weighted Score		1.96	1.96	3.87	0.00
2.4 Agriculture	7.90				
Weighted Score		2.25	2.25	1.30	4.22
2.5 Land Use / Resources	3.95				
Weighted Score		2.77	2.77	1.86	2.81
2.6 Major Utility Transmission Corridors	0.79				
Weighted Score		0.53	0.26	0.79	0.79
2.7 Contaminated Property and Waste Management	0.79				
Weighted Score		0.26	0.26	0.26	0.26
2.8 Landscape Composition	2.37				
Weighted Score		0.78	0.78	0.78	0.00
2.9 Air Quality	5.93				
Weighted Score		3.97	3.97	3.97	0.00
Factored Score	39.50	20.82	20.15	20.12	12.00
3.0 CULTURAL ENVIRONMENT	10.00				
3.1 Cultural Heritage - Built Heritage and Cultural Landscapes	8.00				
Weighted Score		3.15	3.15	3.15	1.01
3.2 Archaeology	2.00				
Weighted Score		0.66	0.66	0.66	0.66
Factored Score	10.00	3.81	3.81	3.81	1.67
5.0 TRANSPORTATION	28.00				
5.1 Area Transportation System Capacity and Efficiency	4.20				
Weighted Score		4.20	4.20	4.20	2.81
5.2 Area Transportation System Reliability / Redundancy	4.20				
Weighted Score		4.20	4.20	4.20	1.39
5.3 Safety	7.00				
Weighted Score		7.00	7.00	6.08	4.20
5.4 Mobility and Accessibility	2.80				
Weighted Score		2.15	2.15	1.78	1.67
5.5 Network Compatibility	1.40				
Weighted Score		1.40	1.40	1.40	1.21
5.6 Engineering	2.80				
Weighted Score		2.06	0.56	2.06	1.11
5.7 Traffic Operations	4.20				
Weighted Score		2.81	2.81	1.39	0.00
5.8 Construction Cost	1.40				
Weighted Score		1.39	0.00	2.81	2.81
Factored Score	28.00	25.21	22.33	23.92	15.41
Total Alternative Score	100.00	64.52	60.96	62.25	43.47

Transportation 70%

	Weighting	Alternative 1	2	3	4
1.125	8.00				
	3.20				
		2.14	2.14	2.14	2.14
	2.00				
		1.34	1.34	1.24	1.24
	2.00				
		1.47	1.47	1.20	1.47
	0.80				
		0.26	0.26	0.54	0.26
	8.00	5.22	5.22	5.12	5.12
1.12	14.00				
	1.40				
		0.94	0.94	0.87	0.94
	2.80				
		1.97	1.83	1.64	0.42
	2.10				
		0.69	0.69	1.41	0.00
	2.80				
		0.83	0.83	0.46	1.50
	1.40				
		0.98	0.98	0.70	1.03
	0.28				
		0.19	0.09	0.28	0.28
	0.28				
		0.09	0.09	0.09	0.09
	0.84				
		0.28	0.28	0.28	0.00
	2.10				
		1.41	1.41	1.41	0.00
	14.00	7.38	7.14	7.13	4.25
0.50	8.00				
	6.40				
		2.52	2.52	2.52	0.80
	1.60				
		0.53	0.53	0.53	0.53
	8.00	3.05	3.05	3.05	1.33
1.12	70.00				
	10.50				
		10.50	10.50	10.50	7.04
	10.50				
		10.50	10.50	10.50	3.47
	17.50				
		17.50	17.50	15.19	10.50
	7.00				
		5.38	5.38	4.45	4.67
	3.50				
		3.50	3.50	3.50	3.03
	7.00				
		5.15	1.40	5.15	2.79
	10.50				
		7.04	7.04	3.47	0.00
	3.50				
		3.47	0.00	7.04	7.04
	70.00	63.04	55.82	59.79	38.52
	100.00	78.68	71.23	75.09	49.23

Transportation 10%

	Weighting	Alternative 1	2	3	4
0.4	24.00				
	9.60				
		6.43	6.43	6.43	6.43
	6.00				
		4.02	4.02	3.71	3.71
	6.00				
		4.42	4.42	3.66	4.42
	2.40				
		0.79	0.79	1.61	0.79
	24.00	15.66	15.66	15.35	15.35
0.40	42.00				
	4.20				
		2.81	2.81	2.60	2.81
	8.40				
		5.91	5.48	4.91	1.26
	6.30				
		2.08	2.08	4.22	0.00
	8.40				
		2.49	2.49	1.38	4.49
	4.20				
		2.95	2.95	2.11	3.09
	0.84				
		0.56	0.28	0.84	0.84
	0.84				
		0.28	0.28	0.28	0.28
	2.52				
		0.83	0.83	0.83	0.00
	6.30				
		4.22	4.22	4.22	0.00
	42.00	22.13	21.42	21.40	12.76
0.40	24.00				
	19.20				
		7.56	7.56	7.56	2.41
	4.80				
		1.58	1.58	1.58	1.58
	24.00	9.14	9.14	9.14	4.00
2.8	10.00				
	1.50				
		1.50	1.50	1.50	1.01
	1.50				
		1.50	1.50	1.50	0.50
	2.50				
		2.50	2.50	2.17	1.50
	1.00				
		0.77	0.77	0.84	0.67
	0.50				
		0.50	0.50	0.50	0.42
	1.00				
		0.74	0.20	0.74	0.40
	1.50				
		1.01	1.01	0.50	0.00
	0.50				
		0.00	0.00	1.01	1.01
	10.00	9.01	7.97	8.54	5.50
	100.00	55.94	54.20	54.44	37.62

SAW

	Weighting	Alternative 1	2	3	4	
1.2	10.00					0.5
	4.00					
		2.68	2.68	2.68	2.68	
	2.50					
		1.68	1.68	1.55	1.55	
	2.50					
		1.84	1.84	1.50	1.84	
	1.00					
		0.33	0.33	0.67	0.33	
	10.00	6.53	6.53	6.40	6.40	
1.20	20.00					0.57
	2.00					
		1.34	1.34	1.24	1.34	
	4.00					
		2.81	2.81	2.34	0.60	
	3.00					
		0.99	0.99	2.01	0.00	
	4.00					
		1.19	1.19	0.66	2.14	
	2.00					
		1.40	1.40	1.00	1.47	
	0.40					
		0.27	0.13	0.40	0.40	
	0.40					
		0.13	0.13	0.13	0.13	
	1.20					
	3.00	0.40	0.40	0.40	0.00	
		2.01	2.01	2.01	0.00	
	20.00	10.54	10.20	10.19	6.08	
1.20	20.00					1.00
	16.00					
		6.30	6.30	6.30	2.01	
	4.00					
		1.32	1.32	1.32	1.32	
	20.00	7.62	7.62	7.62	3.33	
0.4	50.00					2
	7.50					
		7.50	7.50	7.50	5.03	
	7.50					
		7.50	7.50	7.50	2.48	
	12.50					
		12.50	12.50	10.85	7.50	
	5.00					
		3.85	3.85	3.18	3.34	
	2.50					
		2.50	2.50	2.50	2.17	
	5.00					
		3.68	1.00	3.68	1.69	
	7.50					
		5.03	5.03	2.48	0.00	
	2.50					
		2.48	0.00	5.03	5.03	
	50.00	45.03	39.87	42.71	27.52	
	100.00	69.71	64.22	66.92	43.32	

ALTERNATIVE DESCRIPTIONS

1: Best of A plus E = A3 + E = 1-2-4-7-10-12-14
2: Best of A plus F = A3 + F = 1-2-4-7-10-12-15
3: Best of B = B1 = 1-2-4-5-11-13-15
4: Existing Highway 7&8 Alignment = 1-2-4-6-13-15