

407 East Individual Environmental Assessment (IEA)
and Preliminary Design Study

**Route Refinements and
Preliminary Design Alternatives
Comparative Assessment and
Evaluation Report**

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Generation, Assessment and Evaluation of the Preliminary Design Route Refinements and Alternatives

The Technically Recommended Route (TRR) was presented to agencies, the public, and other stakeholders for comments at the third round of Public Information Centres (PICs) held in June and July 2007. In response to comments received, a number of Preliminary Design Route Refinements and Alternatives were developed and comparatively evaluated against the TRR as part of identifying the Technically Preferred Route (TPR).

Relatively minor shifts to the TRR to further avoid or mitigate potential adverse environmental effects represented Preliminary Design Route Refinements. In contrast, Preliminary Design Alternatives were generated when more than one method of implementing the proposed improvements was available with the objectives of capitalizing on transportation engineering opportunities, avoiding significant environmental features and/ or minimizing design-related adverse environmental effects.

In total, six Preliminary Design Route Refinements and ten Preliminary Design Route Alternatives were developed as follows:

Preliminary Design Route Refinements

- Simcoe Street Interchange
- Mainline from Harmony Road to Enfield Road
- Mainline in vicinity of Enfield Road and Solina Bog
- West Durham Link at Taunton Road
- East Durham Link at Highway 2
- East Durham Link at Taunton Road

Preliminary Design Alternatives

- Brock Road / Highway 7 Intersection
- Lake Ridge Road / Cochrane Street Interchanges
- Coronation Road Realignment at 407 Corridor
- Ashburn Road Realignment
- Rail Crossing north of Rossland Road (on West Durham Link)
- Halls Road vs. Coronation Road Realignment
- Lake Ridge Road Realignment at Highway 401
- Regional Road 57 Interchange
- Bethesda Road vs. Darlington-Clarke Townline Road Interchange
- Highway 35/115 Connection

The Preliminary Design Route Refinements and Alternatives were comparatively evaluated against the TRR based on the same methodology utilized in the Route Alternatives Stage. Evaluation criteria and indicators associated with each of the five factor areas were applied to both the Preliminary Design Route Refinements and Alternatives through a “net effects analysis” consisting of the following activities:

- Identify potential effects on the environment;
- Determine and apply mitigation measures; and
- Identify net effects on the environment

This information was documented in tabular form. The next step involved highlighting those criteria and indicators where there was a difference between the Preliminary Design Route Refinement/Alternative and the TRR. With these differences in mind, the Preliminary Design Route Refinement/Alternative was comparatively evaluated against the TRR and a ranking provided (i.e., More Preferred, Less Preferred). Where there were no differences identified, the Preliminary Design Route Refinement/Alternative and TRR were ranked ‘Neutral’ or the same. In all cases, the rationale/justification for the rankings was provided.

Following this exercise, the key differences between the Preliminary Design Route Refinements/Alternatives and TRR were summarized in tabular form along with the rationale for the rankings. As a final step, either the Preliminary Design Route Refinement/Alternative or TRR was selected as part of the TPR based on the overall ranking for the Factor Areas.

The Preliminary Design Route Refinements / Alternatives, the rationale for their generation and the associated comparative evaluation results are provided in the following subsections.

Route Refinement

407 Mainline at Simcoe Street Interchange

407 Mainline at Simcoe Street Interchange (Central TRR 1 & PD R1)

Rationale for Consideration

A route refinement was considered in the vicinity of the Simcoe Street Interchange to increase the separation distance between the 407 eastbound ramp terminal intersection and the Winchester Road and Simcoe Street intersection by approximately 50 m to improve traffic operations.

Decision Relevant Summary

The decision relevant criteria are summarized below. For all other criteria and indicators, there are no discernable differences between the Technically Recommended Route and the route refinement.

Natural Environment – The majority of the criteria and indicators listed under the Natural Environment Factor are comparable and there are no substantial differences between the two routes. However, the route refinement results in additional removal of a portion of a small deciduous forest patch. Therefore, although the Technically Recommended Route is slightly more preferred because it results in less vegetation removal overall, the additional removal of vegetation is relatively minor and the route refinement would be an acceptable option.

Social Environment – The route refinement is preferred as there is one fewer property impact with an equal number of residential displacements (5). The route refinement also results in increased separation between the 407 corridor and residential and agricultural properties on Winchester Road and residential properties on Bridle Road, north of Winchester Road.

Economic/Land Use Environment – The Technically Recommended Route is preferred as the route refinement will affect one additional field crop operation.

Cultural Environment – The route refinement is slightly preferred as it increases the distance between the 407 corridor and an identified resource north of Winchester on Bridle Road.

Technical Considerations – The route refinement is preferred because it will result in improved traffic operations due to the increased distance between the eastbound ramp terminal intersection and the Winchester Road intersection.

Recommendation

The route refinement, which shifts the Simcoe Street Interchange approximately 50 m to the north, is recommended.



407 Mainline at Simcoe Street Interchange
Central Table 2 – Preliminary Design Refinement Evaluation – Summary
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 1) & Preliminary Design Refinement (CENTRAL PD R1)

Factor Areas/ Evaluation Criteria / Indicators		EVALUATION RESULTS / RATIONALE	
		CENTRAL TRR 1	CENTRAL PD R1
1. NATURAL ENVIRONMENT		1 ST	2 ND
1.4 Vegetation		1 ST	2 ND
1.4.1 Effect on upland vegetation units		MORE PREFERRED	LESS PREFERRED
2. SOCIAL ENVIRONMENT		2 ND	1 ST
2.4 Property Impacts		2 ND	1 ST
2.4.1 Residential, commercial, industrial, institutional and recreational property effects:		LESS PREFERRED	MORE PREFERRED
<ul style="list-style-type: none"> • Full removal/Displacement • Frontage/Reduced frontage • Severance – Complete/Partial • Loss of Access/Access Impacted 			
3. ECONOMIC/ LAND USE ENVIRONMENT		1 ST	2 ND
3.4 Agriculture		1 ST	2 ND
3.4.4 Field crop operations affected		MORE PREFERRED	LESS PREFERRED
4. CULTURAL ENVIRONMENT		2 ND	1 ST
4.2 Built Heritage Resources		2 ND	1 ST
1.1.1. Displacement or disruption of built heritage resources		LESS PREFERRED	MORE PREFERRED
5. TECHNICAL CONSIDERATIONS		2 ND	1 ST
5.7 Traffic Operations		2 ND	1 ST
5.7.1 Impact on traffic operations		LESS PREFERRED	MORE PREFERRED
OVERALL RANKING		2 ND	1 ST

Central TRR 1 is slightly preferred due to reduced effect on small upland deciduous forest patch.

Central TRR 1 is slightly preferred as Central PD R1 removes an area of upland deciduous forest from a small, isolated forest patch on private property.

Central PD R1 is preferred as there is 1 less property impact with no increases to residential displacements. Central PD R1 also increases the separation distance between the 407 corridor and residential homes located on Bridle Road, north of Winchester Road and agricultural and residential properties located on Winchester Road.

Central PD R1 is preferred as it results in one less property impact.

Central TRR 1 is slightly preferred as it affects one less field crop operation.

Central TRR 1 is slightly preferred as it impacts one less field crop operation.

Central PD R1 is slightly preferred as it increases the separation distance between the 407 corridor and one identified resource on Bridle Road.

Central PD R1 is slightly preferred. Both alignments have displacement / disruption impacts on 3 identified resources but Central PD R1 results in an increased distance between the 407 corridor and one of the identified resources.

Central PD R1 is preferred due to increased separation distance between EB ramp terminal intersection and Winchester Road intersection.

Central PD R1 is preferred due to increased separation distance between EB ramp terminal intersection and Winchester Road intersection which will result in improved traffic operations.

Central PD R1 is preferred.

**407 Mainline at Simcoe Street Interchange
Central Table 1 – Preliminary Design Refinement Evaluation**

Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 1) & Preliminary Design Refinement (CENTRAL PD R1)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		CENTRAL TRR 1	CENTRAL PD R1
1. NATURAL ENVIRONMENT			
1.2. Groundwater			
1.2.1.	Effect on groundwater recharge areas	<ul style="list-style-type: none"> The net effect of construction on recharge volumes is negligible. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
1.2.2.	Effect on groundwater discharge areas	<ul style="list-style-type: none"> The net effect of construction on discharge volumes is negligible. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
1.2.3.	Shallow water supply wells within 500 m of the alternative	<ul style="list-style-type: none"> Fewer than 15 wells to be decommissioned. Fewer than 10 shallow wells within the buffer in high permeability soils. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
1.2.4.	Changes to groundwater quality	<ul style="list-style-type: none"> Footprint covers 11 ha of high permeability soils. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
1.3. Surface Water Quality and Quantity			
1.3.1.	Watercourse crossings and surface water features	<ul style="list-style-type: none"> 3 crossings of intermittent/ephemeral drainage features: <ul style="list-style-type: none"> Tributary D of Oshawa Creek East – an agricultural swale in a poorly defined channel Tributary E of Oshawa Creek East – a linear swale adjacent to agricultural field Tributary A2 of Oshawa Creek West – a poorly defined vegetated ditch 1 online pond within route footprint. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> 4 crossings of intermittent/ephemeral drainage features: <ul style="list-style-type: none"> Tributary D of Oshawa Creek East – an agricultural swale in a poorly defined channel Tributary E of Oshawa Creek East – a linear swale adjacent to agricultural field Tributary A2 of Oshawa Creek West – a poorly defined vegetated ditch Tributary B of Oshawa Creek West – a poorly defined vegetated ditch Longer reach of Tributary E of Oshawa Creek East crossed with addition of the N-W ramp Online pond may no be longer affected <p style="text-align: center;">NEUTRAL</p>
1.4. Fisheries and Aquatic Habitat			
1.4.1.	Degree of high sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
1.4.2.	Degree of moderate sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
1.4.3.	Degree of low sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>

**407 Mainline at Simcoe Street Interchange
Central Table 1 – Preliminary Design Refinement Evaluation**

Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 1) & Preliminary Design Refinement (CENTRAL PD R1)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		CENTRAL TRR 1	CENTRAL PD R1
1.4.4.	Degree of unconfirmed sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR.
1.5. Vegetation		NEUTRAL	NEUTRAL
1.5.1.	Effect on upland vegetation units	<ul style="list-style-type: none"> 2.11 ha removed. 0.62 ha natural forest (deciduous and mixed forest). 1.49 ha cultural (meadow, thicket, woodland, plantation). Edge removal of 0.27 ha (11%) small deciduous forest patch (WTHO-1) located adjacent to Tributary A1 of Oshawa Creek West. 	<ul style="list-style-type: none"> 2.89 ha removed. 1.4 ha natural forest (deciduous and mixed forest). 1.491 ha cultural (meadow, thicket, woodland, plantation). Most notable change is the increased removal of WTHO-1, a small and isolated upland deciduous forest patch. Results in removal of 1.09 ha (43%) of small deciduous forest patch (WTHO-1) located adjacent to Tributary A1 of Oshawa Creek West.
1.5.2.	Effect on significant vegetation communities	MORE PREFERRED	SLIGHTLY LESS PREFERRED
1.5.3.	Effect on known species of conservation concern or Species at Risk	<ul style="list-style-type: none"> None affected. No known species affected. 	<ul style="list-style-type: none"> No change from TRR. No known species affected.
1.6. Wetlands		NEUTRAL	NEUTRAL
1.6.1.	Effect on wetlands (Evaluated and Unevaluated)	<ul style="list-style-type: none"> Removal of 0.65 ha (32%) and fragmentation of unevaluated willow mineral deciduous swamp (WSIM-1) associated with Tributary A of Oshawa Creek East. This unit has moderate botanical quality and sensitivity. 	<ul style="list-style-type: none"> Removal of 0.76 ha (38%) and fragmentation of unevaluated willow mineral deciduous swamp (WSIM-1) associated with Tributary A of Oshawa Creek East. This unit has moderate botanical quality and sensitivity.
1.7. Wildlife		NEUTRAL	NEUTRAL
1.7.1.	Effect on core wildlife habitat (including indirect effects such as noise and light)	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR.
1.7.2.	Effect on specialized or sensitive wildlife habitat areas (including indirect effects such as noise and light)	<ul style="list-style-type: none"> No interior forest (or deep interior forest) identified within 500 m of route. Removal of habitat for common generalist wildlife species. 	<ul style="list-style-type: none"> No change from TRR.
1.7.3.	Effect on habitat of known species of conservation concern or Species at Risk (including indirect effects such as noise and light)	<ul style="list-style-type: none"> No known species affected. 	<ul style="list-style-type: none"> No change from TRR.

**407 Mainline at Simcoe Street Interchange
Central Table 1 – Preliminary Design Refinement Evaluation**

Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 1) & Preliminary Design Refinement (CENTRAL PD R1)

Factor Areas/ Evaluation Criteria / Indicators		CENTRAL TRR 1 NEUTRAL	Comparative Ranking of Alternatives CENTRAL PD R1 NEUTRAL
1.8. Environmentally Significant Features			
1.8.1.	Effect on identified ESAs and ANSIs	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR.
1.9. Landscape Connectivity			
1.9.1.	Effect on linkages between core natural areas and other connectivity zones	<ul style="list-style-type: none"> Tributary crossings are largely agricultural swales with variable (typically weak or no) connectivity to other natural areas. 	<ul style="list-style-type: none"> No change from TRR.
2. SOCIAL ENVIRONMENT			
2.1. Noise			
2.1.1.	Separation distance to sensitive receptors sound levels and impacts	<ul style="list-style-type: none"> Minimal number of receptors affected. 	<ul style="list-style-type: none"> No change from TRR.
2.2. Community Fabric			
2.2.1.	Encroachment on or severance of established and/or proposed settlement areas	<ul style="list-style-type: none"> No encroachment on established or proposed settlement areas. 	<ul style="list-style-type: none"> No change from TRR.
2.2.2.	Likely effects on planned/ approved community structure, as may be identified or proposed in provincial land use policies and/or regional official plans, within and east of the study area	<ul style="list-style-type: none"> No effects on planned/approved community structure. No employment lands or living area lands displaced. Route traverses Agricultural and Open Space designated lands. 	<ul style="list-style-type: none"> No change from TRR.
2.2.3.	Delivery of community services (emergency, school bus)	<ul style="list-style-type: none"> Potential increased bussing as a result of barrier effect of highway and interchanges. Emergency services may experience increased response times. Limited impact on municipal road service. 	<ul style="list-style-type: none"> No change from TRR.
2.2.4.	Urban or rural barrier effects	<ul style="list-style-type: none"> Slight barrier effect with community of Columbus and north Oshawa. 	<ul style="list-style-type: none"> No change from TRR.
2.3. Recreational Opportunities			
2.3.1.	Effect on hiking, hunting, fishing, nature viewing, facilities (golf) and educational opportunities	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR.
2.4. Property Impacts			
2.4.1.	Residential, commercial, industrial, institutional and recreational property effects: <ul style="list-style-type: none"> Full removal/Displacement 	<ul style="list-style-type: none"> 10 property impacts: <ul style="list-style-type: none"> 5 residential displacements. 	<ul style="list-style-type: none"> 9 property impacts: <ul style="list-style-type: none"> 5 residential displacements.

**407 Mainline at Simcoe Street Interchange
Central Table 1 – Preliminary Design Refinement Evaluation**

Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 1) & Preliminary Design Refinement (CENTRAL PD R1)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		CENTRAL TRR 1	CENTRAL PD R1
<ul style="list-style-type: none"> • Frontage/Reduced frontage • Severance – Complete/Partial • Loss of Access/Access Impacted 		LESS PREFERRED	MORE PREFERRED
2.5. Traffic Nuisance			
2.5.1. Potential for diversion of longer distance travel to/from local roadways	<ul style="list-style-type: none"> • Low potential for traffic infiltration in adjacent areas. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
2.6. Visual Aesthetics			
2.6.1. Total aesthetic value of visibly accessible landscape components	<ul style="list-style-type: none"> • Moderate overall net impact on receptors. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
2.7. Light			
2.7.1. Effect on light sensitive receptors	<ul style="list-style-type: none"> • Low effects on light sensitive receptors due to mitigation opportunities. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
2.8. Air Quality			
2.8.1. Separation distance to sensitive receptors, predicted concentrations and impacts	<ul style="list-style-type: none"> • Minimal number of receptors affected. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
3. ECONOMIC/ LAND USE ENVIRONMENT			
3.1. Provincial/Municipal/Private Land Use Development Strategies			
3.1.1. Degree of compatibility with municipal and regional development goals and objectives	<ul style="list-style-type: none"> • Route has moderate degree of compatibility with municipal and regional goals and objectives as route has been partially identified in the Oshawa and Durham Regional Official Plan. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
3.1.2. Capability to provide transportation service/stimulate development of major development initiatives	<ul style="list-style-type: none"> • Potential to stimulate development in north Oshawa. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
3.1.3. Compatibility with federal/provincial/municipal planning goals/objectives/policies, including principles and policy directions under development in the Greater Golden Horseshoe Growth Plan and Greenbelt Plan, the Watershed based Source Protection Planning and the proposed GTA Transportation Strategy	<ul style="list-style-type: none"> • Route is compatible with Provincial Policy Statement (PPS) (S1.6) and Greater Golden Horseshoe Growth Plan (GGHGP) because it provides connectivity between planned transportation infrastructure. It provides for significant growth and economic development and is therefore supported by the Greenbelt Plan (S.4.2). 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
3.1.4. Effects on approved private development proposals	<ul style="list-style-type: none"> • None affected. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.

**407 Mainline at Simcoe Street Interchange
Central Table 1 – Preliminary Design Refinement Evaluation**

Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 1) & Preliminary Design Refinement (CENTRAL PD R1)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		CENTRAL TRR 1	CENTRAL PD R1
3.2. Non-Farm Commercial Activities			
3.2.1. Businesses displaced	<ul style="list-style-type: none"> None displaced. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
3.2.2. Businesses with access affected	<ul style="list-style-type: none"> None affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
3.2.3. Number of employees working for businesses displaced within the right-of-way	<ul style="list-style-type: none"> None displaced. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
3.2.4. Changes (+/-) in business exposure	<ul style="list-style-type: none"> No changes. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
3.2.5. Construction impacts on businesses	<ul style="list-style-type: none"> Construction impacts may temporarily disrupt regular business operations for RV Storage, contractor yard along Winchester Road. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
3.3. Mineral Aggregate Resources			
3.3.1. Effect on licensed aggregate resource facilities	<ul style="list-style-type: none"> None affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
3.3.2. Effect on aggregate resource areas	<ul style="list-style-type: none"> None affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
3.4. Agriculture			
3.4.1. Removal or sterilization of Class 1-3 agricultural land(s)	<ul style="list-style-type: none"> Loss of Class 1 – 3 Agricultural lands 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
3.4.2. Specialty crops/cropland affected	<ul style="list-style-type: none"> None affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
3.4.3. Dairy/livestock operations affected	<ul style="list-style-type: none"> 2 Dairy or livestock operations affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
3.4.4. Field crop operations affected	<ul style="list-style-type: none"> 9 field crop operations affected. <p style="text-align: center;">MORE PREFERRED</p>		<ul style="list-style-type: none"> 10 field crop operations affected. <p style="text-align: center;">LESS PREFERRED</p>
3.4.5. Farm properties greater than 20 ha affected	<ul style="list-style-type: none"> 6 farm operations > 20 ha affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>

407 Mainline at Simcoe Street Interchange
Central Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 1) & Preliminary Design Refinement (CENTRAL PD R1)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		CENTRAL TRR 1	CENTRAL PD R1
3.4.6.	Severed parcels greater than 20 ha created	<ul style="list-style-type: none"> 4 severed parcels > 20 ha created. 	<ul style="list-style-type: none"> No change from TRR.
3.4.7.	Severed parcels less than 20 ha created	NEUTRAL	NEUTRAL
3.4.8.	High investment operations affected	<ul style="list-style-type: none"> 7 severed parcels < 20 ha created. 2 high investment operations. 	NEUTRAL
3.4.9.	Farm equipment Transportation routes affected	NEUTRAL	NEUTRAL
3.4.10.	Division of agricultural community areas	<ul style="list-style-type: none"> Potential to affect equipment transportation routes. Potential to divide agricultural community. 	NEUTRAL
3.5. Property Contamination		NEUTRAL	NEUTRAL
3.5.1.	Impact on properties in urban areas	<ul style="list-style-type: none"> No direct impacts in urban areas. 	<ul style="list-style-type: none"> No change from TRR.
3.5.2.	Impact on properties in rural areas	<ul style="list-style-type: none"> 1 property directly impacted in a rural area. 	<ul style="list-style-type: none"> No change from TRR.
3.6. Waste Management		NEUTRAL	NEUTRAL
3.6.1.	Impact on known operating and closed waste management facilities (e.g. transfer stations, stormwater treatment plants, waste disposal sites, landfills)	<ul style="list-style-type: none"> No direct impacts on operating or closed waste management facilities. 	<ul style="list-style-type: none"> No change from TRR.
4. CULTURAL ENVIRONMENT		NEUTRAL	NEUTRAL
4.1. Archaeological Features		NEUTRAL	NEUTRAL
4.1.1.	Disturbance or destruction of known significant archaeological sites	<ul style="list-style-type: none"> No known archaeological sites within route alternative. 	<ul style="list-style-type: none"> No change from TRR.
4.1.2.	Disturbance of areas of archaeological potential	<ul style="list-style-type: none"> High archaeological potential. 	<ul style="list-style-type: none"> No change from TRR.
4.2. Built Heritage Resources		NEUTRAL	NEUTRAL
4.2.1.	Displacement or disruption of built heritage resources	<ul style="list-style-type: none"> 3 identified Built Heritage Resource displaced/disrupted. 	<ul style="list-style-type: none"> 3 identified Built Heritage Resources displaced/disrupted but reduced displacement/disruption to one resource on Bridle Road.
		LESS PREFERRED	MORE PREFERRED

**407 Mainline at Simcoe Street Interchange
Central Table 1 – Preliminary Design Refinement Evaluation**

Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 1) & Preliminary Design Refinement (CENTRAL PD R1)

Factor Areas/ Evaluation Criteria / Indicators	CENTRAL TRR 1	Comparative Ranking of Alternatives CENTRAL PD R1
4.3. Cultural Landscape Resources		
4.3.1. Displacement or disruption of cultural landscape resources	<ul style="list-style-type: none"> 4 cultural heritage resources displaced/disrupted. 	<ul style="list-style-type: none"> No change from TRR.
5. TECHNICAL CONSIDERATIONS		
5.1. Overall Transportation System Performance		
5.1.1. Out of way travel	<ul style="list-style-type: none"> Direct route; no significant out of way travel. 	<ul style="list-style-type: none"> No change from TRR.
5.1.2. Support for transit services	<ul style="list-style-type: none"> High potential to attract/support transit ridership; close to urban centres. 	<ul style="list-style-type: none"> No change from TRR.
5.2. Transportation System Compatibility		
5.2.1. Transportation Network Compatibility	<ul style="list-style-type: none"> High compatibility with existing/planned road network; no significant regional/local road realignments. 	<ul style="list-style-type: none"> No change from TRR.
5.3. Transportation System Connectivity		
5.3.1. Ability of each alternative to support or connect to existing or proposed travel modes	<ul style="list-style-type: none"> Can accommodate Transitway stations at key interchange locations. 	<ul style="list-style-type: none"> No change from TRR.
5.4. Accessibility		
5.4.1. Accessibility of alternative to population and employment centres	<ul style="list-style-type: none"> High potential to improve accessibility to population and employment centres since full interchanges provided at Simcoe Street and Harmony Road. 	<ul style="list-style-type: none"> No change from TRR.
5.5. Emergency Access		
5.5.1. Impact of alternative on emergency access to adjacent lands	<ul style="list-style-type: none"> High potential to improve emergency service access/routing. 	<ul style="list-style-type: none"> No change from TRR.
5.6. Cost		
5.6.1. Examines the short and long term costs associated with each alternative	<p style="text-align: center;">NEUTRAL</p>	<p style="text-align: center;">NEUTRAL</p>

407 Mainline at Simcoe Street Interchange
Central Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 1) & Preliminary Design Refinement (CENTRAL PD R1)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		CENTRAL TRR 1	CENTRAL PD R1
5.7. Traffic Operations 5.7.1. Impact on Traffic Operations	<ul style="list-style-type: none"> Separation distance of less than 200 m between EB ramp terminal intersection and Winchester Road intersection; will negatively impacts traffic operations. 	LESS PREFERRED	<ul style="list-style-type: none"> Separation distance of more than 200 m between EB ramp terminal intersection and Winchester Road intersection; will result in improved traffic operations.
5.8. Constructability 5.8.1. Ease/Feasibility of Implementation	<ul style="list-style-type: none"> No significant constructability issues identified. 	NEUTRAL	<ul style="list-style-type: none"> Avoids potential need to relocate high voltage transmission towers within hydro corridor.

Route Refinement

407 Mainline from Harmony Road to Enfield Road

407 Mainline from Harmony Road to Enfield Road (Central TRR 2 & PD R2)

Rationale for Consideration

A route refinement was considered for the 407 Mainline between Harmony Road and Enfield Road to reduce the cut requirements, minimize impacts to the watercourse west of Harmony Road and to minimize the hydro tower relocation requirements. A route refinement was also explored to avoid the encroachment into the Oak Ridges Moraine Conservation Area.

Decision Relevant Summary

The decision relevant criteria are summarized below. For all other criteria and indicators, there are no discernable differences between the Technically Recommended Route and the route refinement.

Natural Environment – The route refinement is preferred as it does not impact any species of conservation concern, does not encroach into the Oak Ridges Moraine and impacts less wetland area and unknown sensitivity fish habitat. The route refinement does however impact more low sensitivity fish habitat.

Social Environment – The route refinement is preferred as it results in 3 fewer residential displacements. The route refinement does however result in a reduced separation distance between the corridor and sensitive receptors on the south side of the alignment but it is anticipated that potential mitigation measures for air and noise impacts would result in Central PD R2 having the least cumulative impacts.

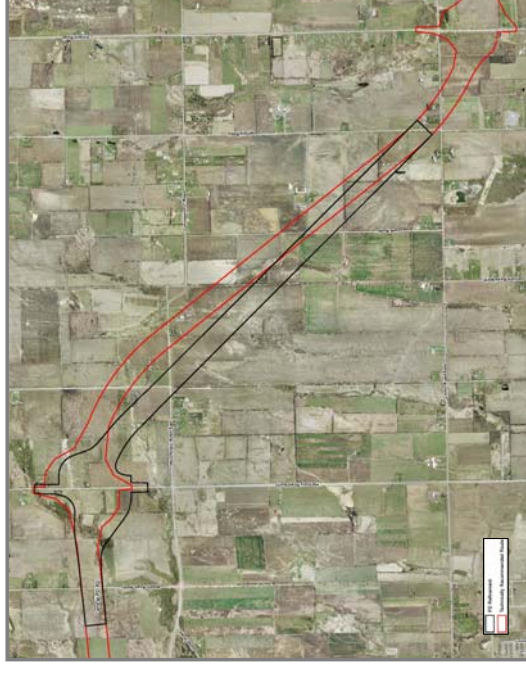
Economic/Land Use Environment – The Technically Recommended Route is preferred as it results in 2 less parcels smaller than 20 ha being created and impacts one less high investment operation.

Cultural Environment – There are no discernable differences between the Technically Recommended Route and the route refinement.

Technical Considerations – The route refinement is preferred because it will result in significantly reduced cut requirements which results in reduced footprint impacts and it eliminates the need to relocate high voltage transmission towers within the hydro corridor.

Recommendation

The route refinement, which shifts the 407 Mainline to the south between Harmony Road and Enfield Road, is recommended.



407 Mainline from Harmony Road to Enfield Road
Central Table 2 – Preliminary Design Refinement Evaluation – Summary
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 2) & Preliminary Design Refinement (CENTRAL PD R2)

Factor Areas/ Evaluation Criteria / Indicators		EVALUATION RESULTS / RATIONALE	
		CENTRAL TRR 2	CENTRAL PD R2
1. NATURAL ENVIRONMENT			
1.3 Fisheries and Aquatic Habitat			
5.8.2. Degree of low sensitivity fish habitat affected		2 ND	1 ST
1.3.4 Degree of unconfirmed sensitivity fish habitat affected		TIED 1 ST	TIED 1 ST
5.9. Vegetation			
1.4.3 Effect on known species of conservation concern or Species at Risk		MORE PREFERRED	LESS PREFERRED
		LESS PREFERRED	MORE PREFERRED
		2 ND	1 ST
		LESS PREFERRED	MORE PREFERRED
1.5 Wetlands			
1.5.1 Effect on wetlands (Evaluated and Unevaluated)		2 ND	1 ST
		LESS PREFERRED	MORE PREFERRED
1.7 Environmentally Significant Features			
1.7.1 Effect on identified ESAs and ANSIs		2 ND	1 ST
		LESS PREFERRED	MORE PREFERRED
2. SOCIAL ENVIRONMENT			
2.1 Noise			
1.4.1 Separation distance to sensitive receptors sound levels and impacts		1 ST	2 ND
		MORE PREFERRED	LESS PREFERRED
2.5 Property Impacts			
2.5.1 Residential, commercial, industrial, institutional and recreational property effects:		2 ND	1 ST
	<ul style="list-style-type: none"> • Full removal/Displacement • Frontage/Reduced frontage • Severance – Complete/Partial • Loss of Access/Access Impacted 	LESS PREFERRED	MORE PREFERRED
2.8 Air Quality			
		1 ST	2 ND

Central PD R2 is preferred as it does not impact any species of conservation concern, does not encroach into the Oak Ridges Moraine and impacts less wetland area and unknown sensitivity fish habitat than Central TRR 2. Central PD R2 does however impact more low sensitivity fish habitat.

Central TRR 2 is slightly preferred as Central PD R2 impacts a greater length of low sensitivity fish habitat.

Central PD R2 is slightly preferred as Central TRR 2 impacts a greater length of unknown sensitivity fish habitat.

Central PD R2 is preferred as it does not impact any species of conservation concern or species at risk.

Central PD R2 is preferred as it impacts less unevaluated wetlands located on the east side of Townline Road.

Central PD R2 is preferred as it does not encroach into the Oak Ridges Moraine.

Central PD R2 is preferred as it has 3 fewer residential displacements. Although Central PD R2 does reduce the separation distance between the 407 corridor and (approximately 10) sensitive receptors on the south side of the corridor, it is anticipated that potential mitigation measures for air and noise impacts would result in Central PD R2 having the least cumulative impacts.

Central TRR 2 is preferred as it increases the separation between the corridor and sensitive receptors on the south side of the corridor.

Central PD R2 is preferred as it results in 2 additional property impacts but 3 fewer residential displacements.

407 Mainline from Harmony Road to Enfield Road
Central Table 2 – Preliminary Design Refinement Evaluation – Summary
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 2) & Preliminary Design Refinement (CENTRAL PD R2)

Factor Areas/ Evaluation Criteria / Indicators		CENTRAL TRR 2	CENTRAL PD R2	EVALUATION RESULTS / RATIONALE
2.8.1	Separation distance to sensitive receptors, predicted concentrations and impacts	MORE PREFERRED	LESS PREFERRED	Central TRR 2 is preferred as it increases the separation between the corridor and sensitive receptors on the south side of the corridor.
3.	ECONOMIC/ LAND USE ENVIRONMENT	1 ST	2 ND	Central TRR 2 is preferred as it results in fewer impacts to agricultural operations, including 1 less high investment operation impacted and the creation of 2 fewer parcels less than 20 ha.
3.1	Provincial/Municipal/Private Land Use Development Strategies	2 ND	1 ST	Central PD R2 is preferred as it does not encroach into the Oak Ridges Moraine.
3.1.3	Compatibility with federal/provincial/municipal planning goals/objectives/policies, including principles and policy directions under development in the Greater Golden Horseshoe Growth Plan and Greenbelt Plan, the Watershed based Source Protection Planning and the proposed GTA Transportation Strategy	LESS PREFERRED	MORE PREFERRED	
3.4	Agriculture	1 ST	2 ND	
3.4.6	Severed parcels greater than 20 ha created	LESS PREFERRED	MORE PREFERRED	Central PD R2 is preferred as it creates 1 less parcel greater than 20 ha.
3.4.7	Severed parcels less than 20 ha created	MORE PREFERRED	LESS PREFERRED	Central TRR 2 is preferred as it creates 2 fewer parcels less than 20 ha.
3.4.8	High investment operations affected	MORE PREFERRED	LESS PREFERRED	Central TRR 2 is preferred as it impacts 1 less high investment operation.
4.	CULTURAL ENVIRONMENT	TIED 1 ST	TIED 1 ST	There are no discernable differences between Central TRR 2 and Central PD R2.
5.	TECHNICAL CONSIDERATIONS	2 ND	1 ST	Central PD R2 is preferred as it results in significantly reduced cut requirements and eliminates the need for the relocation of high voltage transmission towers in the hydro corridor.
5.8	Constructability	2 ND	1 ST	
5.8.1	Ease/Feasibility of implementation	LESS PREFERRED	MORE PREFERRED	Central PD R2 is preferred as it results in significantly reduced cut requirements and eliminates the need for the relocation of high voltage transmission towers in the hydro corridor.
OVERALL RANKING		2 ND	1 ST	Central PD R2 is preferred.

407 Mainline from Harmony Road to Enfield Road
Central Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 2) & Preliminary Design Refinement (CENTRAL PD R2)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		CENTRAL TRR 2	CENTRAL PD R2
1. NATURAL ENVIRONMENT			
5.10. Groundwater			
5.10.1. Effect on groundwater recharge areas	<ul style="list-style-type: none"> The net effect of construction on recharge volumes is negligible. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR.
5.10.2. Effect on groundwater discharge areas	<ul style="list-style-type: none"> The net effect of construction on discharge volumes is negligible. 	NEUTRAL	NEUTRAL
5.10.3. Shallow water supply wells within 500 m of the alternative	<ul style="list-style-type: none"> Fewer than 15 wells to be decommissioned. No shallow wells within the buffer in high permeability soils. 	NEUTRAL	NEUTRAL
5.10.4. Changes to groundwater quality	<ul style="list-style-type: none"> Footprint covers 12 ha of high permeability soils. 	NEUTRAL	<ul style="list-style-type: none"> Footprint covers 10 ha of high permeability soils.
5.11. Surface Water Quality and Quantity			
5.11.1. Watercourse crossings and surface water features	<ul style="list-style-type: none"> 1 crossing of a permanent watercourse (Tributary E of Oshawa Creek East). Major interchange abutting Tributary E valley. 5 intermittent crossings (Tributaries D, F, G of Oshawa Creek East; Tributaries A, D and E of Harmony Creek). At least 2 online ponds within route footprint. 	NEUTRAL	<ul style="list-style-type: none"> 1 crossing of a permanent watercourse (Tributary E of Oshawa Creek East) Interchange shifted further away from Tributary E valley 8 intermittent crossings (Tributaries D, F, G and O of Oshawa Creek East; Tributaries A, B, D and E of Harmony Creek). Additional crossings are of agricultural drainage swales. At least 2 online ponds within route footprint.
5.12. Fisheries and Aquatic Habitat			
5.12.1. Degree of high sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR.
5.12.2. Degree of moderate sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. 	NEUTRAL	NEUTRAL
5.12.3. Degree of low sensitivity fish habitat affected	<ul style="list-style-type: none"> Approximately 282 m within footprint (Tributary E of Oshawa Creek east) 	NEUTRAL	<ul style="list-style-type: none"> Approximately 344 m within footprint (Tributary E of Oshawa Creek east).
5.12.4. Degree of unconfirmed sensitivity fish habitat affected	<ul style="list-style-type: none"> Approximately 1866 m within footprint. Approximately 670 m of Tributary F of Oshawa Creek East. Approximately 404 m of Tributary G of Oshawa Creek East. 	SLIGHTLY MORE PREFERRED	<ul style="list-style-type: none"> Approximately 1582 m within footprint. Approximately 626 m of Tributary F of Oshawa Creek East. Approximately 404 m of Tributary G of Oshawa Creek East.

407 Mainline from Harmony Road to Enfield Road
Central Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 2) & Preliminary Design Refinement (CENTRAL PD R2)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		CENTRAL TRR 2	CENTRAL PD R2
5.13. Vegetation 5.13.1. Effect on upland vegetation units		<ul style="list-style-type: none"> • Approximately 590 m of Tributary A of Harmony Creek East. • Approximately 202 m of Tributary D of Harmony Creek + 2 small online ponds are within route footprint <p style="text-align: center;">SLIGHTLY LESS PREFERRED</p>	<ul style="list-style-type: none"> • Approximately 249 m of Tributary A of Harmony Creek East. • Approximately 100 m of Tributary D of Harmony Creek + 2 small online ponds are within route footprint • Approximately 203 m of Tributary O of Oshawa Creek East. <p style="text-align: center;">SLIGHTLY MORE PREFERRED</p>
		<ul style="list-style-type: none"> • 5.6 ha removed. • 3.3 ha natural forest (deciduous and mixed forest). • 2.3 ha cultural (meadow, thicket, woodland, plantation). <p>Noteworthy Details:</p> <ul style="list-style-type: none"> • Removal of 0.62 ha (8.7%) of WHAR-3, a large deciduous forest patch along the west side of Grandview Street. This unit is within the ORM. • Removal of 1.2 ha (37%) cultural thicket and cultural meadow along drainage feature (WWA-3) • Removal of 1.8 ha (90%) of fresh moist poplar forest associated with Tributary G of Oshawa Creek East. This is culturally influenced forest unit interspersed with cultural thicket. Essentially this unit is a wide hedgerow (WWA-4) • Removal of 0.91 ha (56%) of a riparian White Elm adjacent to Oshawa Creek East Tributary (WWA-5). • Full removal (0.57 ha) of hawthorn cultural savannah, an open culturally influenced area considered to be low quality (WWA-7). • Removal of 0.19 (61%) ha of cultural thicket considered to be low quality (WWA-12a) • Removal of 0.33 ha (83%) of cultural meadow considered to be of low quality (WWA-12b) • Edge removal of small coniferous forest (WWA-13) adjacent to Oshawa Creek East tributary. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> • 6.56 ha removed. • 3.49 ha natural forest (deciduous and mixed forest). • 3.07 ha cultural (meadow, thicket, woodland, plantation). <p>Noteworthy Details:</p> <ul style="list-style-type: none"> • Avoidance of a minor edge encroachment WHAR-3, a large deciduous forest patch along the west side of Grandview Street. This unit is within the ORM. • Removal of 0.32 ha (11%) cultural woodland/hedgerow (WWA-2c) • Removal of 1.7 ha (54%) cultural thicket and cultural meadow along drainage feature (WWA-3) • Full removal of 1.98 ha of fresh moist poplar forest associated with Tributary G of Oshawa Creek East. This is culturally influenced forest unit interspersed with cultural thicket. Essentially this unit is a wide hedgerow (WWA-4) • Removal of 0.96 ha (58%) of a riparian White Elm adjacent to Oshawa Creek East Tributary (WWA-5) • Full removal (0.57 ha) of hawthorn cultural savannah, an open culturally influenced area considered to be low quality (WWA-7) • Removal of 0.26 ha (81%) ha of cultural thicket considered to be low quality (WWA-12a) • Removal of 0.31 ha (78%) of cultural meadow considered to be of low quality (WWA-12b) • Edge removal of 0.22 ha (9%) of CHAR-10, a hedgerow. • Removal of 0.23 ha (9%) of a narrow willow lowland forest along Tributary D of Harmony Creek. Considered to be low to moderate quality (CHAR-3). <p style="text-align: center;">NEUTRAL</p>
	5.13.2. Effect on significant vegetation communities	<ul style="list-style-type: none"> • None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> • No change from TRR. <p style="text-align: center;">NEUTRAL</p>

407 Mainline from Harmony Road to Enfield Road
Central Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 2) & Preliminary Design Refinement (CENTRAL PD R2)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		CENTRAL TRR 2	CENTRAL PD R2
5.13.3. Effect on known species of conservation concern or Species at Risk		<ul style="list-style-type: none"> One Butternut observed in CLEA-1 (deciduous forest stand) – 15 cm diameter and in very poor condition. 	<ul style="list-style-type: none"> Vegetation unit CLEA-1 no longer affected No known species affected.
5.14. Wetlands		LESS PREFERRED	MORE PREFERRED
5.14.1. Effect on wetlands (Evaluated and Unevaluated)		<ul style="list-style-type: none"> Removal of 3.8 ha (66%) of unevaluated Red-osier mineral thicket swamp and forb mineral marsh (CHAR 11a and 11b) located along east side of Townline Road. This unit is of low to moderate quality and surrounded by cultivated field. Other riparian vegetation consists of cultural thicket dominated by buckthorn and of low quality. Full removal of 0.7 ha of meadow marsh (WWA-6) of low sensitivity (narrow unit between farm fields). 	<ul style="list-style-type: none"> Removal of 1.77 ha (31%) of unevaluated Red-osier mineral thicket swamp and forb mineral marsh (CHAR 11a and 11b) located along east side of Townline Road. This unit is of low to moderate quality and surrounded by cultivated field. Other riparian vegetation consists of cultural thicket dominated by buckthorn and of low quality. Full removal of 0.7 ha of meadow marsh (WWA-6) of low sensitivity (narrow unit between farm fields).
5.15. Wildlife		LESS PREFERRED	MORE PREFERRED
5.15.1. Effect on core wildlife habitat (including indirect effects such as noise and light)		<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR.
5.15.2. Effect on specialized or sensitive wildlife habitat areas (including indirect effects such as noise and light)		<ul style="list-style-type: none"> No interior forest (or deep interior forest) identified within 500 m of route. Reduced habitat quality in Tributary E of Oshawa Creek east (valley crossing). At least one new valley crossing with habitat that contributes to migratory wildlife movement. It is assumed that the habitat will be removed under the structures. Removal of habitat for common generalist wildlife species. 	<ul style="list-style-type: none"> No change from TRR.
5.15.3. Effect on habitat of known species of conservation concern or Species at Risk (including indirect effects such as noise and light)		NEUTRAL	NEUTRAL
5.16. Environmentally Significant Features		NEUTRAL	NEUTRAL
5.16.1. Effect on identified ESAs and ANSIs		<ul style="list-style-type: none"> Slight encroachment into Oak Ridges Moraine (ORM) 1 new Oshawa Creek East ESA crossing (valley fragmentation) – Tributary E of Oshawa Creek east valley crossing. 	<ul style="list-style-type: none"> No encroachment into Oak Ridges Moraine (ORM) 1 new Oshawa Creek East ESA crossing (valley fragmentation) – Tributary E of Oshawa Creek east valley crossing.
		LESS PREFERRED	MORE PREFERRED

407 Mainline from Harmony Road to Enfield Road
Central Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 2) & Preliminary Design Refinement (CENTRAL PD R2)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		CENTRAL TRR 2	CENTRAL PD R2
5.17. Landscape Connectivity 5.17.1. Effect on linkages between core natural areas and other connectivity zones	<ul style="list-style-type: none"> • 1 new crossing of regional corridors (Tributary E of Oshawa Creek East); crosses Tributary C and F of Oshawa Creek East system that provide local connection between smaller patches and the creek system. • Forested valley settings, increased fragmentation, reduced linkage quality. • Large bridge spans anticipated to maintain valley openness. • Other tributary crossings are largely agricultural swales with variable (typically weak or no) connectivity to other natural areas. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
6. SOCIAL ENVIRONMENT			
6.1. Noise			
6.1.1. Separation distance to sensitive receptors sound levels and impacts	<ul style="list-style-type: none"> • Greater separation distance to sensitive receptors 	MORE PREFERRED	<ul style="list-style-type: none"> • Reduced separation distance to sensitive receptors
6.2. Community Fabric			
6.2.1. Encroachment on or severance of established and/or proposed settlement areas	<ul style="list-style-type: none"> • No encroachment on established or proposed settlement areas. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
6.2.2. Likely effects on planned/ approved community structure, as may be identified or proposed in provincial land use policies and/or regional official plans, within and east of the study area	<ul style="list-style-type: none"> • No effects on planned/approved community structure. No employment lands or living area lands displaced. Route traverses Agricultural and Open Space designated lands. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
6.2.3. Delivery of community services (emergency, school bus)	<ul style="list-style-type: none"> • Potential increased bussing as a result of barrier effect of highway and interchanges. • Emergency services may experience increased response times. • Limited impact on municipal road service. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
6.2.4. Urban or rural barrier effects	<ul style="list-style-type: none"> • None affected. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
6.3. Recreational Opportunities			
6.3.1. Effect on hiking, hunting, fishing, nature viewing, facilities (golf) and educational opportunities	<ul style="list-style-type: none"> • None affected. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.

407 Mainline from Harmony Road to Enfield Road
Central Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 2) & Preliminary Design Refinement (CENTRAL PD R2)

Factor Areas/ Evaluation Criteria / Indicators	CENTRAL TRR 2 NEUTRAL	Comparative Ranking of Alternatives CENTRAL PD R2 NEUTRAL
6.4. Property Impacts 6.4.1. Residential, commercial, industrial, institutional and recreational property effects: <ul style="list-style-type: none"> • Full removal/Displacement • Frontage/Reduced frontage • Severance – Complete/Partial • Loss of Access/Access Impacted 	<ul style="list-style-type: none"> • 13 property impacts <ul style="list-style-type: none"> o 7 residential displacements. <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> • 15 property impacts <ul style="list-style-type: none"> o 4 residential displacements. <p style="text-align: center;">MORE PREFERRED</p>
6.5. Traffic Nuisance 6.5.1. Potential for diversion of longer distance travel to/from local roadways	<ul style="list-style-type: none"> • Low potential for traffic infiltration in adjacent areas. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> • No change from TRR. <p style="text-align: center;">NEUTRAL</p>
6.6. Visual Aesthetics 6.6.1. Total aesthetic value of visibly accessible landscape components	<ul style="list-style-type: none"> • Moderate overall net impact on receptors. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> • No change from TRR. <p style="text-align: center;">NEUTRAL</p>
6.7. Light 6.7.1. Effect on light sensitive receptors	<ul style="list-style-type: none"> • Low effects on light sensitive receptors due to mitigation opportunities. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> • No change from TRR. <p style="text-align: center;">NEUTRAL</p>
6.8. Air Quality 6.8.1. Separation distance to sensitive receptors, predicted concentrations and impacts	<ul style="list-style-type: none"> • Greater separation distance to sensitive receptors <p style="text-align: center;">MORE PREFERRED</p>	<ul style="list-style-type: none"> • Reduced separation distance to sensitive receptors <p style="text-align: center;">LESS PREFERRED</p>
7. ECONOMIC/ LAND USE ENVIRONMENT 7.1. Provincial/Municipal/Private Land Use Development Strategies 7.1.1. Degree of compatibility with municipal and regional development goals and objectives	<ul style="list-style-type: none"> • Route has moderate degree of compatibility with municipal and regional goals and objectives as route has been partially identified in the Oshawa, Clarington and Durham Regional Official Plan. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> • No change from TRR. <p style="text-align: center;">NEUTRAL</p>
7.1.2. Capability to provide transportation service/stimulate development of major development initiatives	<ul style="list-style-type: none"> • Potential to stimulate development in north Oshawa. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> • No change from TRR. <p style="text-align: center;">NEUTRAL</p>

407 Mainline from Harmony Road to Enfield Road
Central Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 2) & Preliminary Design Refinement (CENTRAL PD R2)

Factor Areas/ Evaluation Criteria / Indicators	CENTRAL TRR 2	Comparative Ranking of Alternatives CENTRAL PD R2
7.1.3. Compatibility with federal/provincial/municipal planning goals/objectives/policies, including principles and policy directions under development in the Greater Golden Horseshoe Growth Plan and Greenbelt Plan, the Watershed based Source Protection Planning and the proposed GTA Transportation Strategy	<ul style="list-style-type: none"> Route is compatible with Provincial Policy Statement (PPS) (S1.6) and Greater Golden Horseshoe Growth Plan (GGHGP) because it provides connectivity between planned transportation infrastructure. It provides for significant growth and economic development and is therefore supported by the Greenbelt Plan (S.4.2). But, the route does encroach into Oak Ridges Moraine Conservation Area. 	<ul style="list-style-type: none"> Route is compatible with Provincial Policy Statement (PPS) (S1.6) and Greater Golden Horseshoe Growth Plan (GGHGP) because it provides connectivity between planned transportation infrastructure. It provides for significant growth and economic development and is therefore supported by the Greenbelt Plan (S.4.2) and, the route does not encroach into Oak Ridges Moraine Conservation Area. <p style="text-align: center;">MORE PREFERRED</p>
7.1.4. Effects on approved private development proposals	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
7.2. Non-Farm Commercial Activities		
7.2.1. Businesses displaced	<ul style="list-style-type: none"> None displaced. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
7.2.2. Businesses with access affected	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
7.2.3. Number of employees working for businesses displaced within the right-of-way	<ul style="list-style-type: none"> None displaced. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
7.2.4. Changes (+/-) in business exposure	<ul style="list-style-type: none"> No changes. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
7.2.5. Construction impacts on businesses	<ul style="list-style-type: none"> Construction impacts may temporarily disrupt regular business operations for RV Storage, contractor yard along Winchester Road. 	<ul style="list-style-type: none"> Construction impacts may temporarily disrupt regular business operations for RV Storage, contractor yard along Winchester Road. May be need for buffering/mitigation as alignment is in close proximity to operation. <p style="text-align: center;">NEUTRAL</p>
7.3. Mineral Aggregate Resources		
7.3.1. Effect on licensed aggregate resource facilities	<ul style="list-style-type: none"> None affected 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
7.3.2. Effect on aggregate resource areas	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
7.4. Agriculture		
7.4.1. Removal or sterilization of Class 1-3 agricultural land(s)	<ul style="list-style-type: none"> Loss of Class 1-3 Agricultural lands. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
7.4.2. Specialty crops/cropland affected	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>

407 Mainline from Harmony Road to Enfield Road
Central Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 2) & Preliminary Design Refinement (CENTRAL PD R2)

Factor Areas/ Evaluation Criteria / Indicators	CENTRAL TRR 2 NEUTRAL	Comparative Ranking of Alternatives CENTRAL PD R2 NEUTRAL
7.4.3. Dairy/livestock operations affected	<ul style="list-style-type: none"> 2 Dairy/ livestock operations affected. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
7.4.4. Field crop operations affected	<ul style="list-style-type: none"> 21 field crop operations affected. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
7.4.5. Farm properties greater than 20 ha affected	<ul style="list-style-type: none"> 13 farm operations > 20 ha affected. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
7.4.6. Severed parcels greater than 20 ha created	<ul style="list-style-type: none"> 9 severed parcels > 20 ha created. 	<ul style="list-style-type: none"> 8 severed parcels > 20 ha created. <p style="text-align: center;">NEUTRAL</p>
7.4.7. Severed parcels less than 20 ha created	<ul style="list-style-type: none"> 3 severed parcels < 20 ha created. 	<ul style="list-style-type: none"> 5 severed parcels < 20 ha created. <p style="text-align: center;">MORE PREFERRED</p>
7.4.8. High investment operations affected	<ul style="list-style-type: none"> 1 high investment operation affected. 	<ul style="list-style-type: none"> 2 high investment operations affected. <p style="text-align: center;">LESS PREFERRED</p>
7.4.9. Farm equipment Transportation routes affected	<ul style="list-style-type: none"> Potential to affect equipment transportation routes. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">LESS PREFERRED</p>
7.4.10. Division of agricultural community areas	<ul style="list-style-type: none"> Potential to affect agricultural community. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
7.5. Property Contamination		
7.5.1. Impact on properties in urban areas	<ul style="list-style-type: none"> No direct impacts in urban areas. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
7.5.2. Impact on properties in rural areas	<ul style="list-style-type: none"> 1 property directly impacted in a rural area. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
7.6. Waste Management		
7.6.1. Impact on known operating and closed waste management facilities (e.g. transfer stations, stormwater treatment plants, waste disposal sites, landfills)	<ul style="list-style-type: none"> No direct impacts on operating or closed waste management facilities. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>

407 Mainline from Harmony Road to Enfield Road
Central Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 2) & Preliminary Design Refinement (CENTRAL PD R2)

Factor Areas/ Evaluation Criteria / Indicators	CENTRAL TRR 2	Comparative Ranking of Alternatives CENTRAL PD R2 NEUTRAL
8. CULTURAL ENVIRONMENT		
8.1. Archaeological Features		
8.1.1. Disturbance or destruction of known significant archaeological sites	<ul style="list-style-type: none"> No known archaeological sites within route alternative. 	<ul style="list-style-type: none"> No change from TRR.
8.1.2. Disturbance of areas of archaeological potential	<ul style="list-style-type: none"> High archaeological potential. 	<ul style="list-style-type: none"> No change from TRR.
8.2. Built Heritage Resources		
8.2.1. Displacement or disruption of built heritage resources	<ul style="list-style-type: none"> No identified Cultural Heritage Resources. 	<ul style="list-style-type: none"> No change from TRR.
8.3. Cultural Landscape Resources		
8.3.1. Displacement or disruption of cultural landscape resources	<ul style="list-style-type: none"> 12 resources displaced/disrupted. 	<ul style="list-style-type: none"> No change from TRR.
9. TECHNICAL CONSIDERATIONS		
9.1. Overall Transportation System Performance		
9.1.1. Out of way travel	<ul style="list-style-type: none"> Direct route, no significant out of way travel. 	<ul style="list-style-type: none"> No change from TRR.
9.1.2. Support for transit services	<ul style="list-style-type: none"> High potential to attract/support transit ridership, close to urban centres. 	<ul style="list-style-type: none"> No change from TRR.
9.2. Transportation System Compatibility		
9.2.1. Transportation Network Compatibility	<ul style="list-style-type: none"> High compatibility with existing/planned road network, no significant regional/local road realignments. 	<ul style="list-style-type: none"> No change from TRR.
9.3. Transportation System Connectivity		
9.3.1. Ability of each alternative to support or connect to existing or proposed travel modes	<ul style="list-style-type: none"> Can accommodate Transitway stations at key interchange locations. 	<ul style="list-style-type: none"> No change from TRR.

407 Mainline from Harmony Road to Enfield Road
Central Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 2) & Preliminary Design Refinement (CENTRAL PD R2)

Factor Areas/ Evaluation Criteria / Indicators	CENTRAL TRR 2	Comparative Ranking of Alternatives CENTRAL PD R2
9.4. Accessibility 9.4.1. Accessibility of alternative to population and employment centres	<ul style="list-style-type: none"> High potential to improve accessibility to population and employment centres since full interchanges provided at Simcoe Street and Harmony Road. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
9.5. Emergency Access 9.5.1. Impact of alternative on emergency access to adjacent lands	<ul style="list-style-type: none"> High potential to improve emergency service access/routing. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
9.6. Cost 9.6.1. Examines the short and long term costs associated with each alternative		NEUTRAL
9.7. Traffic Operations 9.7.1. Impact on Traffic Operations	<ul style="list-style-type: none"> High potential for good traffic operations due to interchange configuration and 407 alignment. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
9.8. Constructability 9.8.1. Ease/Feasibility of Implementation	<ul style="list-style-type: none"> Requires cut of approximately 25 m in vicinity of Harmony Road. Requires relocation of numerous high voltage transmission towers (minimum of six) in hydro corridor 	<ul style="list-style-type: none"> Requires cut of approximately 8 m in vicinity of Harmony Road. Eliminates relocation of high voltage transmission towers in hydro corridor <p style="text-align: center;">LESS PREFERRED</p> <p style="text-align: center;">MORE PREFERRED</p>

Route Refinement

407 Mainline at Enfield Road Interchange / Solina Bog

407 Mainline at Enfield Road Interchange / Solina Bog (Central TRR 3 & PD R3)

Rationale for Consideration

A route refinement was considered in the vicinity of the Solina Bog, which involved shifting the 407 Mainline to the north in the vicinity of the bog, to minimize impacts on this unique groundwater feature.

Decision Relevant Summary

The decision relevant criteria are summarized below. For all other criteria and indicators, there are no discernable differences between the Technically Recommended Route and the route refinement.

Natural Environment – The route refinement is preferred as it results in a greater separation distance from the Solina (Bog) Wetland complex, an area of specialized and/ or sensitive wildlife habitat reducing potential indirect effects and providing greater opportunity for mitigation.

Social Environment – The Technically Recommended Route is preferred as it results in 3 fewer property impacts and 3 fewer residential displacements. In addition, the Technically Recommended Route results in a greater separation distance between the 407 corridor and sensitive receptors on the northeast side of the alignment.

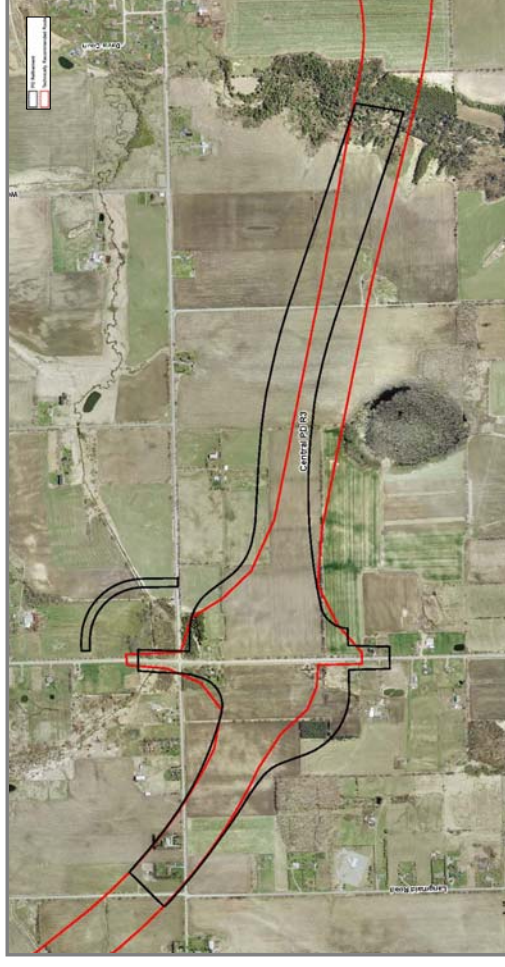
Economic/Land Use Environment – The Technically Recommended Route results in fewer impacts to agricultural operations, however it does result in the displacement of 1 business.

Cultural Environment – There are no discernable differences between the Technically Recommended Route and the route refinement.

Technical Considerations – There are no discernable differences between the Technically Recommended Route and the route refinement.

Recommendation

The route refinement, which shifts the 407 Mainline approximately 70 m to the north in the vicinity of the Solina Bog, is recommended.



407 Mainline at Enfield Road Interchange / Solina Bog
Central Table 2 – Preliminary Design Refinement Evaluation – Summary
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 3) & Preliminary Design Refinement (CENTRAL PD R3)

Factor Areas/ Evaluation Criteria / Indicators		EVALUATION RESULTS / RATIONALE	
		CENTRAL TRR 3	CENTRAL PD R3
1. NATURAL ENVIRONMENT			
1.4 Groundwater			
9.8.2. Changes to groundwater quality		2 ND	1 ST
		2 ND	1 ST
		LESS PREFERRED	MORE PREFERRED
1.2 Surface Water Quality and Quantity			
1.2.1 Watercourse crossings and surface water features		1 ST	2 ND
		MORE PREFERRED	LESS PREFERRED
9.9. Fisheries and Aquatic Habitat			
1.5.3 Degree of moderate sensitivity fish habitat affected		1 ST	2 ND
		MORE PREFERRED	LESS PREFERRED
1.6 Wildlife			
1.6.1 Effect on specialized or sensitive wildlife habitat areas (including indirect effects such as noise and light)		2 ND	1 ST
		LESS PREFERRED	MORE PREFERRED
2. SOCIAL ENVIRONMENT			
2.2 Noise			
1.4.2 Separation distance to sensitive receptors sound levels and impacts		1 ST	2 ND
		MORE PREFERRED	LESS PREFERRED
2.6 Property Impacts			
2.6.1 Residential, commercial, industrial, institutional and recreational property effects:		1 ST	2 ND
		MORE PREFERRED	LESS PREFERRED
	<ul style="list-style-type: none"> • Full removal/Displacement • Frontage/Reduced frontage • Severance – Complete/Partial • Loss of Access/Access Impacted 		
2.8 Air Quality			
2.8.1 Separation distance to sensitive receptors, predicted concentrations and impacts		1 ST	2 ND
		MORE PREFERRED	LESS PREFERRED

Central PD R3 is preferred because it increases the distance between the 407 corridor and the Solina Bog Wetland Complex, an area of specialized and / or sensitive wildlife habitat and a unique groundwater feature. It does however impact a greater length of fish habitat and impacts two additional surface water features.

Central PD R3 is preferred as it is further from groundwater feature, Solina Bog Wetland Complex.

Central TRR 3 is preferred as it impacts 2 fewer surface water features.

Central TRR 3 is preferred as it impacts less moderate quality fish habitat.

Central PD R3 is preferred as it reduces indirect impacts to the Solina Bog, a specialized / sensitive habitat area and increases separation distance between the 407 corridor and the feature, providing greater opportunity / space for mitigation measures.

Central TRR 3 is preferred as it has 3 fewer property impacts and 3 fewer residential displacements. In addition, Central TRR 3 has a greater separation distance between the 407 corridor and sensitive receptors on the northeast side of the alignment.

Central TRR 3 is preferred as it increases the separation between the corridor and sensitive receptors on the northeast side of the corridor.

Central TRR 3 is preferred as it results in 3 fewer property impacts and 3 fewer residential displacements.

Central TRR 3 is preferred as it increases the separation between the corridor and sensitive receptors on the northeast side of the corridor.

407 Mainline at Enfield Road Interchange / Solina Bog
Central Table 2 – Preliminary Design Refinement Evaluation – Summary
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 3) & Preliminary Design Refinement (CENTRAL PD R3)

Factor Areas/ Evaluation Criteria / Indicators		EVALUATION RESULTS / RATIONALE	
		CENTRAL TRR 3	CENTRAL PD R3
3. ECONOMIC/ LAND USE ENVIRONMENT			
9.10. Non-Farm Commercial Activities		TIED 1 ST	TIED 1 ST
9.10.1. Businesses displaced		2 ND LESS PREFERRED	1 ST MORE PREFERRED
3.4 Agriculture			
3.4.1	Removal or sterilization of Class 1-3 agricultural land(s)	1 ST MORE PREFERRED	2 ND LESS PREFERRED
9.10.2.	Field crop operations affected	MORE PREFERRED	LESS PREFERRED
3.4.6	Farm properties greater than 20 ha affected	MORE PREFERRED	LESS PREFERRED
3.4.6	Severed parcels greater than 20 ha created	LESS PREFERRED	MORE PREFERRED
3.4.7	Severed parcels less than 20 ha created	MORE PREFERRED	LESS PREFERRED
4. CULTURAL ENVIRONMENT			
		TIED 1 ST	TIED 1 ST
5. TECHNICAL CONSIDERATIONS			
OVERALL RANKING		2 ND	1 ST
		Central TRR 3 results in fewer impacts to agricultural operations, however it does result in the displacement of 1 business. Central PD R3 is preferred as it will potentially result in no business displacements. Central TRR 3 is slightly preferred as it results in less loss of agricultural lands Class 1 – 3. Central TRR 3 is preferred as it impacts 1 less field crop operation. Central TRR 3 is preferred as it impacts 1 less parcel greater than 20 ha. Central PD R3 is preferred as it creates 1 less parcel greater than 20 ha in size. Central TRR 3 is preferred as it creates 2 less parcels less than 20 ha in size. There are no discernable differences between Central TRR 3 and Central PD R3. There are no discernable differences between Central TRR 3 and Central PD R3. Central PD R3 is preferred.	

407 Mainline at Enfield Road Interchange / Solina Bog
Central Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 3) & Preliminary Design Refinement (CENTRAL PD R3)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		CENTRAL TRR 3	CENTRAL PD R3
1. NATURAL ENVIRONMENT			
9.11. Groundwater			
9.11.1. Effect on groundwater recharge areas		<ul style="list-style-type: none"> The net effect of construction on recharge volumes is negligible. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
9.11.2. Effect on groundwater discharge areas		<ul style="list-style-type: none"> The net effect of construction on discharge volumes is negligible. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
9.11.3. Shallow water supply wells within 500 m of the alternative		<ul style="list-style-type: none"> Fewer than 15 wells to be decommissioned. Fewer than 10 shallow wells within the buffer in high permeability soils. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
9.11.4. Changes to groundwater quality		<ul style="list-style-type: none"> Footprint covers 4 ha of high permeability soils. Route is less than 50 m from the Solina Wetland Complex. <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> Footprint covers 4 ha of high permeability soils. Route is more than 50 m from the Solina Wetland Complex. <p style="text-align: center;">MORE PREFERRED</p>
9.12. Surface Water Quality and Quantity			
9.12.1. Watercourse crossings and surface water features		<ul style="list-style-type: none"> 2 surface water features affected comprised of: <ul style="list-style-type: none"> 1 high sensitivity surface water feature 1 moderate sensitivity surface water feature <p style="text-align: center;">MORE PREFERRED</p>	<ul style="list-style-type: none"> 4 surface water features affected comprised of: <ul style="list-style-type: none"> 1 high sensitivity surface water feature 3 moderate sensitivity surface water features <p style="text-align: center;">LESS PREFERRED</p>
9.13. Fisheries and Aquatic Habitat			
9.13.1. Degree of high sensitivity fish habitat affected		<ul style="list-style-type: none"> Of the high sensitivity streams, 200 m would be spanned <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
9.13.2. Degree of moderate sensitivity fish habitat affected		<ul style="list-style-type: none"> 78 m of moderate sensitivity fish habitat will require culvert crossings <p style="text-align: center;">MORE PREFERRED</p>	<ul style="list-style-type: none"> 118 m of moderate sensitivity fish habitat will require culvert crossings <p style="text-align: center;">LESS PREFERRED</p>
9.13.3. Degree of low sensitivity fish habitat affected		<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
9.13.4. Degree of unconfirmed sensitivity fish habitat affected		<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
9.14. Vegetation			
9.14.1. Effect on upland vegetation units		<ul style="list-style-type: none"> 4.7 ha of upland vegetation removed. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> 5.6 ha of upland vegetation removed. <p style="text-align: center;">NEUTRAL</p>

407 Mainline at Enfield Road Interchange / Solina Bog
Central Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 3) & Preliminary Design Refinement (CENTRAL PD R3)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		CENTRAL TRR 3	CENTRAL PD R3
9.14.2. Effect on significant vegetation communities		• None affected.	• No change from TRR.
9.14.3. Effect on known species of conservation concern or Species at Risk		NEUTRAL	NEUTRAL
9.15. Wetlands		NEUTRAL	NEUTRAL
9.15.1. Effect on wetlands (Evaluated and Unevaluated)		<ul style="list-style-type: none"> 3.2 ha of total wetland area removed (0.6 ha evaluated wetland; 2.6 ha unevaluated wetland) Potential indirect effects to Solina Bog with respect to water quality 	<ul style="list-style-type: none"> 4.5 ha of wetland area removed (0.6 evaluated wetland; 3.9 unevaluated wetland) Potential indirect effects to Solina Bog with respect to water quality
9.16. Wildlife		NEUTRAL	NEUTRAL
9.16.1. Effect on core wildlife habitat (including indirect effects such as noise and light)		• 3 ha core wildlife habitat removed	• No change from TRR.
9.16.2. Effect on specialized or sensitive wildlife habitat areas (including indirect effects such as noise and light)		<ul style="list-style-type: none"> 2 ha interior forest removed. 0.01 ha of specialized or sensitive wildlife habitat removed. Potential indirect effects to adjacent specialized or sensitive wildlife habitat to Solina Bog 	<ul style="list-style-type: none"> 2 ha interior forest removed. 0.2 ha removal of specialized or sensitive wildlife habitat removed. Reduced potential indirect effects to adjacent specialized or sensitive wildlife habitat (Solina Bog) Increased opportunities for mitigation (e.g. buffering and SWM)
9.16.3. Effect on habitat of known species of conservation concern or Species at Risk (including indirect effects such as noise and light)		• None	• No change from TRR.
9.17. Environmentally Significant Features		LESS PREFERRED	MORE PREFERRED
9.17.1. Effect on identified ESAs and ANSIs		• No ANSIs affected	• No change from TRR.
		• 1 section of 1 ESA affected (Solina Woods ESA is severed)	
9.18. Landscape Connectivity		NEUTRAL	NEUTRAL
9.18.1. Effect on linkages between core natural areas and other connectivity zones		• No linkages between core areas present	• No change from TRR.
10. SOCIAL ENVIRONMENT		NEUTRAL	NEUTRAL
10.1. Noise		NEUTRAL	NEUTRAL
10.1.1. Separation distance to sensitive receptors sound levels and impacts		• Greater separation distance to sensitive receptors	• Reduced separation distance to sensitive receptors
10.2. Community Fabric		MORE PREFERRED	LESS PREFERRED

407 Mainline at Enfield Road Interchange / Solina Bog
Central Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 3) & Preliminary Design Refinement (CENTRAL PD R3)

Factor Areas/ Evaluation Criteria / Indicators	CENTRAL TRR 3	Comparative Ranking of Alternatives CENTRAL PD R3
10.2.1. Encroachment on or severance of established and/or proposed settlement areas	<ul style="list-style-type: none"> No encroachment on established or proposed settlement areas. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
10.2.2. Likely effects on planned/ approved community structure, as may be identified or proposed in provincial land use policies and/or regional official plans, within and east of the study area	<ul style="list-style-type: none"> No effects on planned/approved community structure. No employment lands or living area lands displaced. Route traverses Agricultural and Open Space designated lands. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
10.2.3. Delivery of community services (emergency, school bus)	<ul style="list-style-type: none"> Potential increased bussing as a result of barrier effect of highway and interchanges. Emergency services may experience increased response times. Limited impact on municipal road service. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
10.2.4. Urban or rural barrier effects	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
10.3. Recreational Opportunities		
10.3.1. Effect on hiking, hunting, fishing, nature viewing, facilities (golf) and educational opportunities	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
10.4. Property Impacts		
10.4.1. Residential, commercial, industrial, institutional and recreational property effects: <ul style="list-style-type: none"> Full removal/Displacement Frontage/Reduced frontage Severance – Complete/Partial Loss of Access/Access Impacted 	<ul style="list-style-type: none"> A total of 14 property impacts <ul style="list-style-type: none"> 5 residential displacement. <p style="text-align: center;">MORE PREFERRED</p>	<ul style="list-style-type: none"> A total of 17 property impacts <ul style="list-style-type: none"> 8 residential displacements. <p style="text-align: center;">LESS PREFERRED</p>
10.5. Traffic Nuisance		
10.5.1. Potential for diversion of longer distance travel to/from local roadways	<ul style="list-style-type: none"> Low potential for traffic infiltration in adjacent areas. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
10.6. Visual Aesthetics		
10.6.1. Total aesthetic value of visibly accessible landscape components	<ul style="list-style-type: none"> Moderate overall net impact on receptors. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
10.7. Light		
10.7.1. Effect on light sensitive receptors	<ul style="list-style-type: none"> Low effects on light sensitive receptors due to mitigation opportunities. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>

407 Mainline at Enfield Road Interchange / Solina Bog
Central Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 3) & Preliminary Design Refinement (CENTRAL PD R3)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		CENTRAL TRR 3	CENTRAL PD R3
10.8. Air Quality	10.8.1. Separation distance to sensitive receptors, predicted concentrations and impacts	<ul style="list-style-type: none"> Greater separation distance to sensitive receptors <p style="text-align: center;">MORE PREFERRED</p>	<ul style="list-style-type: none"> Reduced separation distance to sensitive receptors <p style="text-align: center;">LESS PREFERRED</p>
11. ECONOMIC/ LAND USE ENVIRONMENT			
11.1. Provincial/Municipal/Private Land Use Development Strategies			
	11.1.1. Degree of compatibility with municipal and regional development goals and objectives	<ul style="list-style-type: none"> Route has moderate degree of compatibility with municipal and regional goals and objectives as route has been partially identified in the Clarington and Durham Regional Official Plans. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
	11.1.2. Capability to provide transportation service/stimulate development of major development initiatives	<ul style="list-style-type: none"> No potential to stimulate development in north Clarington (Greenbelt area). <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
	11.1.3. Compatibility with federal/provincial/municipal planning goals/objectives/policies, including principles and policy directions under development in the Greater Golden Horseshoe Growth Plan and Greenbelt Plan, the Watershed based Source Protection Planning and the proposed GTA Transportation Strategy	<ul style="list-style-type: none"> Route is compatible with Provincial Policy Statement (PPS) (S1,6) and Greater Golden Horseshoe Growth Plan (GGHGP) because it provides connectivity between planned transportation infrastructure. It provides for significant growth and economic development and is therefore supported by the Greenbelt Plan (S.4.2). <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
	11.1.4. Effects on approved private development proposals	<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
11.2. Non-Farm Commercial Activities			
	11.2.1. Businesses displaced	<ul style="list-style-type: none"> 1 business is displaced. <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> Potentially no displacement of businesses. <p style="text-align: center;">MORE PREFERRED</p>
	11.2.2. Businesses with access affected	<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
	11.2.3. Number of employees working for businesses displaced within the right-of-way	<ul style="list-style-type: none"> Unknown number of employees displaced. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
	11.2.4. Changes (+/-) in business exposure	<ul style="list-style-type: none"> No changes. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>

407 Mainline at Enfield Road Interchange / Solina Bog
Central Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 3) & Preliminary Design Refinement (CENTRAL PD R3)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		CENTRAL TRR 3	CENTRAL PD R3
11.2.5. Construction impacts on businesses		<ul style="list-style-type: none"> Construction impacts may temporarily disrupt regular business operations for RV Storage, contractor yard along Winchester Road. 	<ul style="list-style-type: none"> No change from TRR.
11.3. Mineral Aggregate Resources		NEUTRAL	NEUTRAL
11.3.1. Effect on licensed aggregate resource facilities		<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR.
11.3.2. Effect on aggregate resource areas		<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR.
11.4. Agriculture			
11.4.1. Removal or sterilization of Class 1-3 agricultural land(s)		<ul style="list-style-type: none"> Loss of agricultural Class 1 – 3 lands. <p style="text-align: center;">SLIGHTLY MORE PREFERRED</p>	<ul style="list-style-type: none"> Slightly greater loss of agricultural Class 1 – 3 lands. <p style="text-align: center;">SLIGHTLY LESS PREFERRED</p>
11.4.2. Specialty crops/cropland affected		<ul style="list-style-type: none"> No specialty crops/cropland affected <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
11.4.3. Dairy/livestock operations affected		<ul style="list-style-type: none"> 3 Dairy or livestock operations. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
11.4.4. Field crop operations affected		<ul style="list-style-type: none"> 18 field crop operations affected. <p style="text-align: center;">MORE PREFERRED</p>	<ul style="list-style-type: none"> 19 field crop operations affected. <p style="text-align: center;">LESS PREFERRED</p>
11.4.5. Farm properties greater than 20 ha affected		<ul style="list-style-type: none"> 8 farm properties > 20 ha affected. <p style="text-align: center;">MORE PREFERRED</p>	<ul style="list-style-type: none"> 9 farm properties > 20 ha affected. <p style="text-align: center;">LESS PREFERRED</p>
11.4.6. Severed parcels greater than 20 ha created		<ul style="list-style-type: none"> 4 severed parcels > 20 ha created. <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> 3 severed parcels > 20 ha created. <p style="text-align: center;">MORE PREFERRED</p>
11.4.7. Severed parcels less than 20 ha created		<ul style="list-style-type: none"> 4 severed parcels < 20 ha created. <p style="text-align: center;">MORE PREFERRED</p>	<ul style="list-style-type: none"> 6 severed parcels < 20 ha created. <p style="text-align: center;">LESS PREFERRED</p>
11.4.8. High investment operations affected		<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
11.4.9. Farm equipment Transportation routes affected		<ul style="list-style-type: none"> Potential to affect equipment transportation routes. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>

407 Mainline at Enfield Road Interchange / Solina Bog
Central Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 3) & Preliminary Design Refinement (CENTRAL PD R3)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		CENTRAL TRR 3 NEUTRAL	CENTRAL PD R3 NEUTRAL
11.4.10.	Division of agricultural community areas	<ul style="list-style-type: none"> Potential to affect agricultural community. 	<ul style="list-style-type: none"> No change from TRR.
11.5. Property Contamination		NEUTRAL	NEUTRAL
11.5.1.	Impact on properties in urban areas	<ul style="list-style-type: none"> No direct impacts in urban areas. 	<ul style="list-style-type: none"> No change from TRR.
11.5.2.	Impact on properties in rural areas	NEUTRAL	NEUTRAL
11.6. Waste Management		NEUTRAL	NEUTRAL
11.6.1.	Impact on known operating and closed waste management facilities (e.g. transfer stations, stormwater treatment plants, waste disposal sites, landfills)	<ul style="list-style-type: none"> No direct impacts on operating or closed waste management facilities. 	<ul style="list-style-type: none"> No change from TRR.
12. CULTURAL ENVIRONMENT		NEUTRAL	NEUTRAL
12.1. Archaeological Features			
12.1.1.	Disturbance or destruction of known significant archaeological sites	<ul style="list-style-type: none"> No known archaeological sites within route alternative. 	<ul style="list-style-type: none"> No change from TRR.
12.1.2.	Disturbance of areas of archaeological potential	NEUTRAL	NEUTRAL
12.2. Built Heritage Resources		NEUTRAL	NEUTRAL
12.2.1.	Displacement or disruption of built heritage resources	<ul style="list-style-type: none"> No identified Built Heritage Resources. 	<ul style="list-style-type: none"> No change from TRR.
12.3. Cultural Landscape Resources		NEUTRAL	NEUTRAL
12.3.1.	Displacement or disruption of cultural landscape resources	<ul style="list-style-type: none"> 8 resources displaced or disrupted. 	<ul style="list-style-type: none"> No change from TRR.
13. TECHNICAL CONSIDERATIONS		NEUTRAL	NEUTRAL
13.1. Overall Transportation System Performance			
13.1.1.	Out of way travel	<ul style="list-style-type: none"> Direct route, no significant out of way travel. 	<ul style="list-style-type: none"> No change from TRR.
13.1.2.	Support for transit services	NEUTRAL	NEUTRAL
		<ul style="list-style-type: none"> High potential to attract/support transit ridership; close to urban centres. 	<ul style="list-style-type: none"> No change from TRR.

407 Mainline at Enfield Road Interchange / Solina Bog
Central Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (CENTRAL TRR 3) & Preliminary Design Refinement (CENTRAL PD R3)

Factor Areas/ Evaluation Criteria / Indicators	CENTRAL TRR 3	Comparative Ranking of Alternatives CENTRAL PD R3
13.2. Transportation System Compatibility 13.2.1. Transportation Network Compatibility	NEUTRAL	NEUTRAL
	<ul style="list-style-type: none"> High compatibility with existing/planned road network; no significant regional/local road realignments. 	<ul style="list-style-type: none"> No change from TRR.
13.3. Transportation System Connectivity 13.3.1. Ability of each alternative to support or connect to existing or proposed travel modes	NEUTRAL	NEUTRAL
	<ul style="list-style-type: none"> Can accommodate Transitway stations at key interchange locations. 	<ul style="list-style-type: none"> No change from TRR.
13.4. Accessibility 13.4.1. Accessibility of alternative to population and employment centres	NEUTRAL	NEUTRAL
	<ul style="list-style-type: none"> High potential to improve accessibility to population and employment centres since full interchanges provided at Simcoe Street and Harmony Road. 	<ul style="list-style-type: none"> No change from TRR.
13.5. Emergency Access 13.5.1. Impact of alternative on emergency access to adjacent lands	NEUTRAL	NEUTRAL
	<ul style="list-style-type: none"> High potential to improve emergency service access/routing. 	<ul style="list-style-type: none"> No change from TRR.
13.6. Cost 13.6.1. Examines the short and long term costs associated with each alternative	NEUTRAL	NEUTRAL
13.7. Traffic Operations 13.7.1. Impact on Traffic Operations	NEUTRAL	NEUTRAL
	<ul style="list-style-type: none"> High potential for good traffic operations due to interchange configuration and 407 alignment. 	<ul style="list-style-type: none"> No change from TRR.
13.8. Constructability 13.8.1. Ease/Feasibility of Implementation	NEUTRAL	NEUTRAL
	<ul style="list-style-type: none"> No significant constructability issues identified. 	<ul style="list-style-type: none"> No change from TRR.

Route Refinement

West Durham Link at Taunton Road

West Durham Link at Taunton Road (West TRR 1 & PD R1)

Rationale for Consideration

A route refinement was considered in the vicinity of the Taunton Road Interchange to increase the separation distance between the East Durham Link ramp terminal intersection and the Lake Ridge Road intersection, to minimize impacts on the high voltage transmission towers in the hydro corridor and to examine opportunities to reduce impacts on an existing business in the area.

Decision Relevant Summary

The decision relevant criteria are summarized below. For all other criteria and indicators, there are no discernable differences between the Technically Recommended Route and the route refinement.

Natural Environment – The Technically Recommended Route is slightly preferred as it impacts less area of low quality fish habitat, unevaluated wetland and upland vegetation.

Social Environment – The route refinement is preferred as it results in 2 fewer residential displacements and 2 fewer property impacts. It does however result in a reduced separation distance between the 407 corridor and sensitive receptors on the east side of the alignment but it is anticipated that potential mitigation measures for air and noise impacts would result in the route refinement having the least cumulative impacts.

Economic/Land Use Environment – The route refinement is preferred as it will result in no business displacements. However, it does result in impacts to one additional agricultural parcel less than 20 ha in size.

Cultural Environment – There are no discernable differences between the Technically Recommended Route and the route refinement.

Technical Considerations – The route refinement is preferred due to the increased separation distance between the SB ramp terminal intersection and the Lake Ridge Road intersection. In addition, the route refinement eliminates the need for the relocation of high voltage transmission towers in the hydro corridor.

Recommendation

The route refinement, which shifts the West Durham Link approximately 50 m to the east in the vicinity of Taunton Road, is recommended.



West Durham Link at Taunton Road
West Table 2 – Preliminary Design Refinement Evaluation – Summary
Comparative Evaluation of Technically Recommended Route (WEST TRR 1) & Preliminary Design Refinement (WEST PD R1)

Factor Areas/Evaluation Criteria / Indicators		EVALUATION RESULTS / RATIONALE	
		WEST TRR 1	WEST PD R1
1. NATURAL ENVIRONMENT			
1.3 Fisheries and Aquatic Habitat			
1.3.3	Degree of low sensitivity fish habitat affected	1 ST MORE PREFERRED	2 ND LESS PREFERRED
West TRR 1 is slightly preferred as it impacts less area of low quality fish habitat, unevaluated wetland and upland vegetation.			
1.4 Vegetation			
1.4.1	Effect on upland vegetation units	1 ST MORE PREFERRED	2 ND LESS PREFERRED
West TRR 1 is preferred as it impacts less area of low quality fish habitat.			
1.4.3	Effect on known species of conservation concern or Species at Risk	1 ST EQUALLY PREFERRED	2 ND LESS PREFERRED
West TRR 1 is preferred as it impacts less area of upland vegetation units. Though West TRR 1 impacts no known species of conservation or SAR, impacts by West PD R1 to such species are unknown. Potential impacts associated with West PD R1 are also suspected to be on samples in severe decline of health. Mitigation measures associated with impacts to species may actually result in a positive gain.			
1.5 Wetlands			
1.5.1	Effect on wetlands (Evaluated and Unevaluated)	1 ST MORE PREFERRED	2 ND LESS PREFERRED
West TRR 1 is preferred as it impacts less area of unevaluated wetlands.			
2. SOCIAL ENVIRONMENT			
2.1 Noise			
2.1.1	Separation distance to sensitive receptors sound levels and impacts	2 ND MORE PREFERRED	1 ST LESS PREFERRED
West TRR 1 is preferred as it increases the separation between the corridor and sensitive receptors on the northeast side of the corridor.			
2.4 Property Impacts			
2.6.2	Residential, commercial, industrial, institutional and recreational property effects: <ul style="list-style-type: none"> • Full removal/Displacement • Frontage/Reduced frontage • Severance – Complete/Partial • Loss of Access/Access Impacted 	2 ND LESS PREFERRED	1 ST MORE PREFERRED
West PD R1 is preferred as it results in 2 fewer property impacts and 2 fewer residential displacements.			
2.8 Air Quality			
2.8.1	Separation distance to sensitive receptors, predicted concentrations and impacts	2 ND MORE PREFERRED	1 ST LESS PREFERRED
West TRR 1 is preferred as it increases the separation between the corridor and sensitive receptors on the northeast side of the corridor.			
3. ECONOMIC/ LAND USE ENVIRONMENT			
3.2 Non-Farm Commercial Activities			
3.2.1	Businesses displaced	2 ND LESS PREFERRED	1 ST MORE PREFERRED
West PD R1 is preferred as it will result in no business displacements. West PD R1 is preferred as it will result in no business displacements. However, it does result in impacts to one additional agricultural parcel less than 20 ha in size.			

West Durham Link at Taunton Road
West Table 2 – Preliminary Design Refinement Evaluation – Summary
Comparative Evaluation of Technically Recommended Route (WEST TRR 1) & Preliminary Design Refinement (WEST PD R1)

Factor Areas/ Evaluation Criteria / Indicators		EVALUATION RESULTS / RATIONALE	
		WEST TRR 1	WEST PD R1
3.2.3	Number of employees working for businesses displaced within the right-of-way	LESS PREFERRED 1 ST	MORE PREFERRED 2 ND
3.4	Agriculture		
3.4.5	Farm properties greater than 20 ha affected	MORE PREFERRED TIED 1 ST	LESS PREFERRED TIED 1 ST
4. CULTURAL ENVIRONMENT			
5. TECHNICAL CONSIDERATIONS			
5.8	Traffic Operations	2 ND	1 ST
5.7.1	Impact on traffic operations	LESS PREFERRED 1 ST	MORE PREFERRED 2 ND
5.8	Constructability		
5.8.1	Ease/Feasibility of implementation	LESS PREFERRED 2 ND	MORE PREFERRED 1 ST
OVERALL RANKING		2 ND	1 ST

West PD R1 is preferred as it will result in no employee displacements.

West TRR 1 is preferred as it impacts 1 less parcel greater than 20 ha.

There are no discernable differences between West TRR 1 and West PD R1, neither is. West PD R1 is preferred due to increased separation distance between SB ramp terminal intersection and Lake Ridge Road intersection and it eliminates the need for the relocation of high voltage transmission towers in the hydro corridor.

West PD R1 is preferred due to increased separation distance between SB ramp terminal intersection and Lake Ridge Road intersection which will result in improved traffic operations.

West PD R1 is preferred as it eliminates the need for the relocation of high voltage transmission towers in the hydro corridor and better accommodates the Taunton Road profile revisions associated with the grade separation at WDL.

West PD R1 is preferred.

West Durham Link at Taunton Road
West Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (WEST TRR 1) & Preliminary Design Refinement (WEST PD R1)

Factor Areas/ Evaluation Criteria / Indicators		WEST TRR 1	Comparative Ranking of Alternatives	WEST PD R1	
1. NATURAL ENVIRONMENT					
13.9. Groundwater					
13.9.1. Effect on groundwater recharge areas		<ul style="list-style-type: none"> The net effect of construction on recharge volumes is negligible. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
13.9.2. Effect on groundwater discharge areas		<ul style="list-style-type: none"> The net effect of construction on discharge volumes is negligible. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
13.9.3. Shallow water supply wells within 500 m of the alternative		<ul style="list-style-type: none"> Fewer than 15 wells to be decommissioned. 10-30 shallow wells in high permeability buffer area. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
13.9.4. Changes to groundwater quality		<ul style="list-style-type: none"> Footprint covers 76 ha of high permeability soils. 	NEUTRAL	<ul style="list-style-type: none"> Footprint covers 80 ha of high permeability soils. 	NEUTRAL
13.10. Surface Water Quality and Quantity					
13.10.1. Watercourse crossings and surface water features		<ul style="list-style-type: none"> 2 crossings of intermittent watercourses (Tributaries B and O of Lynde Creek) Long reach of Tributary B within mainline and Rossland Road interchange footprint At least 1 online pond within footprint 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
13.11. Fisheries and Aquatic Habitat					
13.11.1. Degree of high sensitivity fish habitat affected		<ul style="list-style-type: none"> None affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
13.11.2. Degree of moderate sensitivity fish habitat affected		<ul style="list-style-type: none"> None affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
13.11.3. Degree of low sensitivity fish habitat affected		<ul style="list-style-type: none"> 731 m (Tributary B of Lynde Creek). Long oblique crossing of Tributary B north of Taunton and long reach encompassed by Rossland Road interchange. 	MORE PREFERRED	<ul style="list-style-type: none"> 985 m (Tributary B of Lynde Creek). Long oblique crossing of Tributary B north of Taunton and long reach encompassed by Rossland Road interchange. 	LESS PREFERRED
13.11.4. Degree of unconfirmed sensitivity fish habitat affected		<ul style="list-style-type: none"> 42 m (Tributary O). 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
13.12. Vegetation					
13.12.1. Effect on upland vegetation units		<ul style="list-style-type: none"> 9.58 ha total. 	NEUTRAL	<ul style="list-style-type: none"> 14.34 ha total. 	NEUTRAL

West Durham Link at Taunton Road

West Table 1 – Preliminary Design Refinement Evaluation

Comparative Evaluation of Technically Recommended Route (WEST TRR 1) & Preliminary Design Refinement (WEST PD R1)

Factor Areas/ Evaluation Criteria / Indicators	WEST TRR 1	Comparative Ranking of Alternatives	WEST PD R1
13.12.2. Effect on significant vegetation communities	<ul style="list-style-type: none"> 7.58 ha natural forest (meadow, thicket, woodland, plantation). 2 ha cultural. <p>Noteworthy Details:</p> <ul style="list-style-type: none"> Removal of 0.18 ha (29%) THAL-4, a hedgerow between farm fields, within the hydro corridor. Edge removal of 1.6 ha (34%) of moderate quality fresh-moist lowland forest with an inclusion of cultural meadow (THAL-2a) Removal of 0.38 ha (15%) and fragmentation of moderate quality Sugar Maple forest (THAL-2b) that becomes fresh-moist in the east half of the unit with increased groundcover. One regionally rare species for Durham Region (Canada Waterleaf) observed. Edge removal of 0.58 ha (12.8%) of cultural meadow (TLAK-5). Removal of 3.9 ha (41%) and fragmentation of deciduous forest (RLAK-4). Edge removal of 0.89 ha (7%) low quality meadow marsh and cultural meadow (RLAK-5a). Recent clearing and farm field expansion. Removal of 1.73 ha (36%) of moderate quality mature Hemlock forest (RLAK-1f). Black Maple is present in this unit (rare in Durham Region). Removal of 0.35 (33%) of low quality coniferous plantation (RLAK-1b). <p style="text-align: center;">MORE PREFERRED</p>	<ul style="list-style-type: none"> 12.44 ha natural forest (meadow, thicket, woodland, plantation). 1.9 ha cultural. <p>Noteworthy Details:</p> <ul style="list-style-type: none"> Removal of 0.62 ha (99%) THAL-4, a hedgerow between farm fields, within the hydro corridor. Edge removal of 1.6 ha (34%) of moderate quality fresh-moist lowland forest with an inclusion of cultural meadow (THAL-2a) Removal of 1.1 ha (44%) and fragmentation of moderate quality Sugar Maple forest (THAL-2b) that becomes fresh-moist in the east half of the unit with increased groundcover. One regionally rare species for Durham Region (Canada Waterleaf) observed. Edge removal of 0.58 ha (12.8%) of cultural meadow (TLAK-5). Removal of 5.3 ha (56%) and fragmentation of deciduous forest (RLAK-4). Edge removal of 0.89 ha (7%) low quality meadow marsh and cultural meadow (RLAK-5a). Recent clearing and farm field expansion. Removal of 1.9 ha (40%) of moderate quality mature Hemlock forest (RLAK-1f). Black Maple is present in this unit (rare in Durham Region). Removal of 0.35 (33%) of low quality coniferous plantation (RLAK-1b). <p style="text-align: center;">LESS PREFERRED</p>	
13.12.3. Risk	<ul style="list-style-type: none"> None affected. None affected. <p style="text-align: center;">NEUTRAL</p>		<ul style="list-style-type: none"> No change from TRR. Results in greater removal of vegetation from THAL-2b, a unit with a high number of Butternut – all appear to be in severe decline. It is not known if the encroachment will result in removal of Butternut. This will be verified during the 2008 field season. <p style="text-align: center;">NEUTRAL</p>
13.13. Wetlands			
13.13.1. Effect on wetlands (Evaluated and Unevaluated)	<ul style="list-style-type: none"> 6.42 ha of unevaluated wetlands removed. Removal of 0.19 ha (3.7%) of moderate quality mosaic of meadow marsh, red-osier thicket swamp and cultural meadow (THAL-1). This narrow shallow valley has some seepage on the slopes and includes a moderate quality seepage area with few invasive plant species. Removal of 3.12 ha (84%) of low to moderate quality mosaic of Red-osier organic thicket swamp and meadow marsh with an inclusion of fresh-moist Aspen forest and cultural thicket (TLAK-6) Removal of 1.74 ha (53%) of low quality meadow marsh along watercourse (THL-6a). Edge removal of 0.27 ha (8.8%) of high quality mid-aged maple swamp. This unit has high diversity and 3 rare species for Durham Region (RLAK-1a) <p style="text-align: center;">NONE</p>	<ul style="list-style-type: none"> 4.47 ha of unevaluated wetlands removed. Removal of 0.40 ha (7.8%) of moderate quality mosaic of meadow marsh, red-osier thicket swamp and cultural meadow (THAL-1). This narrow shallow valley has some seepage on the slopes and includes a moderate quality seepage area with few invasive plant species. Removal of 2.15 ha (58%) of low to moderate quality mosaic of Red-osier organic thicket swamp and meadow marsh with an inclusion of fresh-moist Aspen forest and cultural thicket (TLAK-6) Removal of 0.27 (8.8%) of low quality meadow marsh along watercourse (THAL-6a). Edge removal of 0.27 ha (8.8%) of high quality mid-aged maple swamp. This unit has high diversity and 3 rare species for Durham Region (RLAK-1a) <p style="text-align: center;">UNCONFIRMED</p>	

West Durham Link at Taunton Road
West Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (WEST TRR 1) & Preliminary Design Refinement (WEST PD R1)

Factor Areas/ Evaluation Criteria / Indicators		WEST TRR 1	Comparative Ranking of Alternatives	WEST PD R1
		<ul style="list-style-type: none"> Full removal of 1.1 ha (9%) of moderate quality mid-aged to mature deciduous swamp with cultural thicket inclusion. <p style="text-align: center;">MORE PREFERRED</p>		<ul style="list-style-type: none"> Full removal of 1.1 ha (9%) of moderate quality mid-aged to mature deciduous swamp with cultural thicket inclusion. <p style="text-align: center;">LESS PREFERRED</p>
13.14. Wildlife				
13.14.1.	Effect on core wildlife habitat (including indirect effects such as noise and light)	Lowered habitat quality in RLAK due to Halls Road realignment.	NEUTRAL	No change from TRR.
13.14.2.	Effect on specialized or sensitive wildlife habitat areas (including indirect effects such as noise and light)	Some habitat removal for area sensitive species but in many cases affected habitat areas are isolated and small.	NEUTRAL	No change from TRR.
13.14.3.	Effect on habitat of known species of conservation concern or Species at Risk (including indirect effects such as noise and light)	None affected.	NEUTRAL	No change from TRR.
13.15. Environmentally Significant Features				
13.15.1.	Effect on identified ESAs and ANSIs	At least 3 crossings/encroachment of Westerly Creek Valleys ESA.	NEUTRAL	Similar effects to Westerly Creek Valley ESA, just in slightly different locations
13.16. Landscape Connectivity				
13.16.1.	Effect on linkages between core natural areas and other connectivity zones	Tributary B valley offers weak local linkage opportunities. Removes or alters portions of the Tributary O – a weak local linkage.	NEUTRAL	Similar effects to weak local linkages along Tributaries B and O, just in slightly different locations.
14. SOCIAL ENVIRONMENT				
14.1. Noise				
14.1.1.	Separation distance to sensitive receptors sound levels and impacts	Lower amount of receptors and greater separation distance	MORE PREFERRED	LESS PREFERRED
14.2. Community Fabric				
14.2.1.	Encroachment on or severance of established and/or proposed settlement areas	Encroachment on proposed future growth area in Whitby. Limited severance.	NEUTRAL	No change from TRR.
14.2.2.	Likely effects on planned/ approved community structure, as may be identified or proposed in provincial land use policies and/or regional official plans, within and east of the study area	Removal of some identified future growth area in Whitby.	NEUTRAL	No change from TRR.
14.2.3.	Delivery of community services (emergency, school bus)	Potential increased bussing as a result of barrier effect of highway and	NEUTRAL	No change from TRR.

West Durham Link at Taunton Road
West Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (WEST TRR 1) & Preliminary Design Refinement (WEST PD R1)

Factor Areas/ Evaluation Criteria / Indicators	WEST TRR 1	Comparative Ranking of Alternatives	WEST PD R1	
	<ul style="list-style-type: none"> interchange. Emergency services may experience increased response times. Increased maintenance of Halls Road realignment. Potential transit needs for new alignment. Moderate impact on municipal road services. 	NEUTRAL	NEUTRAL	
14.2.4. Urban or rural barrier effects	<ul style="list-style-type: none"> Current development- Minor barrier created with Almond Village and subdivisions in Ajax and Almond Village and Whitby. Barrier created between growth area north of Dundas. Barrier created between proposed growth areas at Rossland Road, north to Lyndebrook Road. 		<ul style="list-style-type: none"> No change from TRR. 	
14.3. Recreational Opportunities	NEUTRAL	NEUTRAL	NEUTRAL	
14.3.1. Effect on hiking, hunting, fishing, nature viewing, facilities (golf) and educational opportunities	<ul style="list-style-type: none"> No recreational amenities are affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	
14.4. Property Impacts	NEUTRAL	NEUTRAL	NEUTRAL	
14.4.1. Residential, commercial, industrial, institutional and recreational property effects: <ul style="list-style-type: none"> Full removal/Displacement Frontage/Reduced frontage Severance – Complete/Partial Loss of Access/Access Impacted 	<ul style="list-style-type: none"> A total of 20 property impacts <ul style="list-style-type: none"> 9 residential displacements. 	LESS PREFERRED	<ul style="list-style-type: none"> A total of 18 property impacts <ul style="list-style-type: none"> 7 residential displacements. 	MORE PREFERRED
14.5. Traffic Nuisance	LESS PREFERRED	LESS PREFERRED	MORE PREFERRED	
14.5.1. Potential for diversion of longer distance travel to/from local roadways	<ul style="list-style-type: none"> None affected 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
14.6. Visual Aesthetics	NEUTRAL	NEUTRAL	NEUTRAL	
14.6.1. Total aesthetic value of visibly accessible landscape components	<ul style="list-style-type: none"> None affected 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
14.7. Light	NEUTRAL	NEUTRAL	NEUTRAL	
14.7.1. Effect on light sensitive receptors	<ul style="list-style-type: none"> Low effects on light sensitive receptors due to mitigation opportunities. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
14.8. Air Quality	NEUTRAL	NEUTRAL	NEUTRAL	
14.8.1. Separation distance to sensitive receptors, predicted concentrations and impacts	<ul style="list-style-type: none"> Lower amount of receptors and greater separation distance 	MORE PREFERRED	<ul style="list-style-type: none"> 2 receptors have reduced separation due to the realignment. 	LESS PREFERRED

West Durham Link at Taunton Road
West Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (WEST TRR 1) & Preliminary Design Refinement (WEST PD R1)

Factor Areas/ Evaluation Criteria / Indicators		WEST TRR 1	Comparative Ranking of Alternatives	WEST PD R1		
15. ECONOMIC/ LAND USE ENVIRONMENT						
15.1. Provincial/Municipal/Private Land Use Development Strategies 15.1.1. Degree of compatibility with municipal and regional development goals and objectives 15.1.2. Capability to provide transportation service/stimulate development of major development initiatives 15.1.3. Compatibility with federal/provincial/municipal planning goals/objectives/policies, including principles and policy directions under development in the Greater Golden Horseshoe Growth Plan and Greenbelt Plan, the Watershed based Source Protection Planning and the proposed GTA Transportation Strategy 15.1.4. Effects on approved private development proposals		<ul style="list-style-type: none"> Moderate degree of compatibility with regional goals and objectives. Slightly effects employment lands in Ajax. Allows for contiguous development potential in growth area. Regional OPA 114 removes link from schedule. 	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL		
		NEUTRAL	<ul style="list-style-type: none"> Moderate potential to stimulate employment/living area growth in Whitby. 	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL	
		NEUTRAL	<ul style="list-style-type: none"> Compatible with PPS (S1, 6) and GGHP because it provides connectivity between planned transportation infrastructure. Durham ROPA 114 (not yet in effect) removes the west link from the Official Plan. Consumes significant lands in OPA 114 Future Growth Area. 	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL	
		NEUTRAL	<ul style="list-style-type: none"> Will affect submitted residential plans of subdivision in Whitby. 	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL	
		NEUTRAL			NEUTRAL	
15.2. Non-Farm Commercial Activities						
15.2.1. Businesses displaced 15.2.2. Businesses with access affected 15.2.3. Number of employees working for businesses displaced within the right-of-way 15.2.4. Changes (+/-) in business exposure 15.2.5. Construction impacts on businesses		<ul style="list-style-type: none"> Arns Topsoil displaced. 	<ul style="list-style-type: none"> No businesses displaced. 	<ul style="list-style-type: none"> No businesses displaced. 	<p style="text-align: center;">MORE PREFERRED</p>	
		LESS PREFERRED	<ul style="list-style-type: none"> No businesses with access affected. 	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL	
		NEUTRAL	<ul style="list-style-type: none"> Less than 15 employees displaced. 	<ul style="list-style-type: none"> No employees displaced. 	<ul style="list-style-type: none"> No employees displaced. 	<p style="text-align: center;">MORE PREFERRED</p>
		<p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> Devils' Den Golf facility may have increased business exposure as well as storage facility at Highway 7. 	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL	
		NEUTRAL	<ul style="list-style-type: none"> Construction impacts may temporarily disrupt regular business operations. 	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL	

West Durham Link at Taunton Road
West Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (WEST TRR 1) & Preliminary Design Refinement (WEST PD R1)

Factor Areas/ Evaluation Criteria / Indicators		WEST TRR 1	Comparative Ranking of Alternatives	WEST PD R1
15.3. Mineral Aggregate Resources				
15.3.1. Effect on licensed aggregate resource facilities		<ul style="list-style-type: none"> No effect on licensed aggregate resource facilities. 	NEUTRAL	NEUTRAL
15.3.2. Effect on aggregate resource areas		<ul style="list-style-type: none"> No effect on aggregate resource areas. 	NEUTRAL	NEUTRAL
15.4. Agriculture				
15.4.1. Removal or sterilization of Class 1-3 agricultural land(s)		<ul style="list-style-type: none"> Loss of Class 1 – 3 Agricultural lands 	NEUTRAL	NEUTRAL
15.4.2. Specialty crops/cropland affected		<ul style="list-style-type: none"> 2 specialty crop operations affected. 	NEUTRAL	NEUTRAL
15.4.3. Dairy/livestock operations affected		<ul style="list-style-type: none"> 3 dairy/livestock operations affected. 	NEUTRAL	NEUTRAL
15.4.4. Field crop operations affected		<ul style="list-style-type: none"> 7 field crop operations affected. 	NEUTRAL	NEUTRAL
15.4.5. Farm properties greater than 20 ha affected		<ul style="list-style-type: none"> 14 farm properties affected. 	MORE PREFERRED	LESS PREFERRED
15.4.6. Severed parcels greater than 20 ha created		<ul style="list-style-type: none"> 2 parcels created 	NEUTRAL	NEUTRAL
15.4.7. Severed parcels less than 20 ha created		<ul style="list-style-type: none"> 2 parcels created. 	NEUTRAL	NEUTRAL
15.4.8. High investment operations affected		<ul style="list-style-type: none"> 3 high investment operations. 	NEUTRAL	NEUTRAL
15.4.9. Farm equipment Transportation routes affected		<ul style="list-style-type: none"> Potential to affect transportation routes. 	NEUTRAL	NEUTRAL
15.4.10. Division of agricultural community areas		<ul style="list-style-type: none"> Potential for division of agricultural community. 	NEUTRAL	NEUTRAL
15.5. Property Contamination				
15.5.1. Impact on properties in urban areas		<ul style="list-style-type: none"> No direct impacts in urban areas. 	NEUTRAL	NEUTRAL
15.5.2. Impact on properties in rural areas		<ul style="list-style-type: none"> 2 properties will be directly impacted in rural areas. 	NEUTRAL	NEUTRAL

West Durham Link at Taunton Road
West Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (WEST TRR 1) & Preliminary Design Refinement (WEST PD R1)

Factor Areas/ Evaluation Criteria / Indicators		WEST TRR 1	Comparative Ranking of Alternatives WEST PD R1
15.6. Waste Management		NEUTRAL	NEUTRAL
15.6.1. Impact on known operating and closed waste management facilities (e.g. transfer stations, stormwater treatment plants, waste disposal sites, landfills)	<ul style="list-style-type: none"> No direct impacts to operating or closed waste management facilities. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR.
16. CULTURAL ENVIRONMENT			
16.1. Archaeological Features			
16.1.1. Disturbance or destruction of known significant archaeological sites	<ul style="list-style-type: none"> One archaeological site (AlGr-46 Aboriginal undetermined findspot) within route alternative. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR.
16.1.2. Disturbance of areas of archaeological potential	<ul style="list-style-type: none"> Greater than 50% of route has archaeological potential. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR.
16.2. Built Heritage Resources			
16.2.1. Displacement or disruption of built heritage resources	<ul style="list-style-type: none"> None displaced or disrupted. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR.
16.3. Cultural Landscape Resources			
16.3.1. Displacement or disruption of cultural landscape resources	<ul style="list-style-type: none"> 4 cultural resources displaced/disrupted. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR.
17. TECHNICAL CONSIDERATIONS			
17.1. Overall Transportation System Performance			
17.1.1. Out of way travel	<ul style="list-style-type: none"> Route length: 10.5 kilometres. Direct route. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR.
17.1.2. Support for transit services	<ul style="list-style-type: none"> Dedicated transitway and transit stations. Close to Ajax, Whitby and Pickering. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR.
17.2. Transportation System Compatibility			
17.2.1. Transportation Network Compatibility	<ul style="list-style-type: none"> Shorter realignments required for Highway 401. Longer realignments required for local roads. No additional ROW required for Halls Road. Desirable spacing between Salem Road interchange and West Link interchange on Highway 401. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR.

West Durham Link at Taunton Road
West Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (WEST TRR 1) & Preliminary Design Refinement (WEST PD R1)

Factor Areas/ Evaluation Criteria / Indicators	WEST TRR 1	Comparative Ranking of Alternatives	WEST PD R1
17.3. Transportation System Connectivity			
17.3.1. Ability of each alternative to support or connect to existing or proposed travel modes	<ul style="list-style-type: none"> Highly compatible with existing/planned road network. Requires realignment of 1.6 km of Coronation Road. Requires realignment of 5.2 km of Halls Road. Requires realignment of 3.2 km of Highway 401. 	NEUTRAL	NEUTRAL
17.4. Accessibility			
17.4.1. Accessibility of alternative to population and employment centres	<ul style="list-style-type: none"> Transit stations designated at key interchanges. 	NEUTRAL	NEUTRAL
17.5. Emergency Access			
17.5.1. Impact of alternative on emergency access to adjacent lands	<ul style="list-style-type: none"> Partial interchange provided at Lake Ridge Road to/from Highway 407E westbound. Response times will be shortened for EMS vehicles using the West Link. Response times for most non-West Link trips will remain the same. 	NEUTRAL	NEUTRAL
17.6. Cost			
17.6.1. Examines the short and long term costs associated with each alternative		NEUTRAL	NEUTRAL
17.7. Traffic Operations			
17.7.1. Impact on Traffic Operations	<ul style="list-style-type: none"> Separation distance of approximately 200 m between SB ramp terminal intersection and Lake Ridge Road intersection will negatively impact traffic operations. 	LESS PREFERRED	MORE PREFERRED
17.8. Constructability			
17.8.1. Ease/Feasibility of Implementation	<ul style="list-style-type: none"> Requires relocation of numerous high voltage transmission towers in hydro corridor. Taunton Road profile revisions associated with grade separation at WDL extend into Lake Ridge Road intersection 	LESS PREFERRED	MORE PREFERRED

Route Refinement

East Durham Link at Highway 2

East Durham Link at Highway 2 (East TRR 1 & PD R1)

Rationale for Consideration

A route refinement was considered in the vicinity of the Highway 2 Interchange to minimize impacts on the wetland in the northeast quadrant of the interchange and to increase the separation distance between the East Durham Link ramp terminal intersections and the adjacent local road intersection.

Decision Relevant Summary

The decision relevant criteria are summarized below. For all other criteria and indicators, there are no discernable differences between the Technically Recommended Route and the route refinement.

Natural Environment – The route refinement is preferred as it impacts less area of upland vegetation, less wetland area (evaluated and unevaluated) and less area of specialized and/or sensitive wildlife habitat.

Social Environment – The route refinement is preferred as there are 7 fewer property impacts and 3 fewer residential displacements.

Economic/Land Use Environment – The Technically Recommended Route and the route refinement are comparable. The Technically Recommended Route results in 2 fewer impacts to field crop operations while the route refinement results in reduced impacts to one specialty crop operation.

Cultural Environment – There are no discernable differences between the Technically Recommended Route and the route refinement.

Technical Considerations – The route refinement is preferred as it results in improved separation between the local road intersections and the East Durham Link ramp terminal intersections.

Recommendation

The route refinement, which shifts the East Durham Link approximately 50 m to the west in the vicinity of the Highway 2 Interchange, is recommended.



East Durham Link at Highway 2
East Table 2 – Preliminary Design Refinement Evaluation – Summary
Comparative Evaluation of Technically Recommended Route (EAST TRR 1) & Preliminary Design Refinement (EAST PD R1)

Factor Areas/Evaluation Criteria / Indicators		EVALUATION RESULTS / RATIONALE	
		EAST TRR 1	EAST PD R1
1. NATURAL ENVIRONMENT		2 ND	1 ST
1.5 Vegetation		East PD R1 is preferred as it impacts less area of upland vegetation, less wetland area (evaluated and unevaluated) and less area of specialized and/or sensitive wildlife habitat.	
1.4.1 Effect on upland vegetation units		2 ND LESS PREFERRED	1 ST MORE PREFERRED
1.7 Wetlands		East PD R1 is preferred as it impacts less area of upland vegetation.	
1.5.1 Effect on wetlands (Evaluated and Unevaluated)		2 ND LESS PREFERRED	1 ST MORE PREFERRED
1.6 Wildlife		2 ND	1 ST
1.6.2 Effect on specialized or sensitive wildlife habitat areas (including indirect effects such as noise and light)		LESS PREFERRED	MORE PREFERRED
2. SOCIAL ENVIRONMENT		2 ND	1 ST
2.7 Property Impacts		East PD R1 is preferred as it impacts less area of specialized and / or sensitive wildlife habitat.	
2.7.1 Residential, commercial, industrial, institutional and recreational property effects:		2 ND	1 ST
<ul style="list-style-type: none"> • Full removal/Displacement • Frontage/Reduced frontage • Severance – Complete/Partial • Loss of Access/Access Impacted 		LESS PREFERRED	MORE PREFERRED
3. ECONOMIC/ LAND USE ENVIRONMENT		TIED 1 ST	TIED 1 ST
3.2 Agriculture		East TRR 1 results in 2 fewer impacts to field crop operations while East PD R1 results in reduced impacts to one specialty crop operation.	
3.4.2 Specialty crops/cropland affected		TIED 1 ST LESS PREFERRED	TIED 1 ST MORE PREFERRED
3.4.4 Field crop operations affected		MORE PREFERRED	LESS PREFERRED
4. CULTURAL ENVIRONMENT		TIED 1 ST	TIED 1 ST
5. TECHNICAL CONSIDERATIONS		There are no discernable differences between East TRR 1 and East PD R1.	
5.7 Traffic Operations		2 ND	1 ST
5.7.1 Impact on Traffic Operations		LESS PREFERRED	MORE PREFERRED
OVERALL RANKING		2 ND	1 ST
		East PD R1 is preferred.	

East Durham Link at Highway 2

East Table 1 – Preliminary Design Refinement Evaluation

Comparative Evaluation of Technically Recommended Route (EAST TRR 1) & Preliminary Design Refinement (EAST PD R1)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		EAST TRR 1	EAST PD R1
1. NATURAL ENVIRONMENT			
17.9. Groundwater			
17.9.1. Effect on groundwater recharge areas		<ul style="list-style-type: none"> The net effect of construction on recharge volumes is negligible. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
17.9.2. Effect on groundwater discharge areas		<ul style="list-style-type: none"> The net effect of construction on discharge volumes is negligible. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
17.9.3. Shallow water supply wells within 500 m of the alternative		<ul style="list-style-type: none"> Fewer than 15 wells to be decommissioned. 25 or more shallow wells within high permeability buffer areas. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
17.9.4. Changes to groundwater quality		<ul style="list-style-type: none"> Footprint covers 49 ha of high permeability soils. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> Footprint covers 47 ha of high permeability soils. <p style="text-align: center;">NEUTRAL</p>
17.10. Surface Water Quality and Quantity			
17.10.1. Watercourse crossings and surface water features		<ul style="list-style-type: none"> 7 surface water features affected comprised of: <ul style="list-style-type: none"> 1 high quality surface water feature. 4 low quality surface water features. 2 ephemeral / agricultural swales. 0 ponds. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> 8 surface water features affected comprised of: <ul style="list-style-type: none"> 1 high quality surface water feature. 4 low quality surface water features. 2 ephemeral / agricultural swales. 1 pond. <p style="text-align: center;">NEUTRAL</p>
17.11. Fisheries and Aquatic Habitat			
17.11.1. Degree of high sensitivity fish habitat affected		<ul style="list-style-type: none"> 170 m of high sensitivity fish habitat would be spanned <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
17.11.2. Degree of moderate sensitivity fish habitat affected		<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
17.11.3. Degree of low sensitivity fish habitat affected		<ul style="list-style-type: none"> 674 m of Low Sensitivity Fish Habitat will require culvert crossings. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> 830 m of Low Sensitivity Fish Habitat will require culvert crossings. <p style="text-align: center;">NEUTRAL</p>
17.11.4. Degree of unconfirmed sensitivity fish habitat affected		<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
17.12. Vegetation			
17.12.1. Effect on upland vegetation units		<ul style="list-style-type: none"> 24 ha of upland vegetation removed No high quality vegetation units affected. <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> 16 ha of upland vegetation removed No high quality vegetation units affected. <p style="text-align: center;">MORE PREFERRED</p>

East Durham Link at Highway 2

East Table 1 – Preliminary Design Refinement Evaluation

Comparative Evaluation of Technically Recommended Route (EAST TRR 1) & Preliminary Design Refinement (EAST PD R1)

Factor Areas/ Evaluation Criteria/ Indicators		Comparative Ranking of Alternatives	
		EAST TRR 1	EAST PD R1
17.12.2.	Effect on significant vegetation communities	<ul style="list-style-type: none"> No Provincially Significant Vegetation Communities removed, encroached or severed. 	<ul style="list-style-type: none"> No change from TRR.
17.12.3. Risk	Effect on known species of conservation concern or Species at Risk	NEUTRAL	NEUTRAL
17.13. Wetlands		NEUTRAL	NEUTRAL
17.13.1.	Effect on wetlands (Evaluated and Unevaluated)	<ul style="list-style-type: none"> 5.6 ha of total wetland area removed (2.4 ha evaluated and 3.2 ha unevaluated wetland). <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> 1.0 ha of total wetland area removed (0.04 ha evaluated and 0.96 ha unevaluated wetland). <p style="text-align: center;">MORE PREFERRED</p>
17.14. Wildlife		NEUTRAL	NEUTRAL
17.14.1.	Effect on core wildlife habitat (including indirect effects such as noise and light)	<ul style="list-style-type: none"> 5.8 ha core removed; no interior habitat removed. 	<ul style="list-style-type: none"> 5 ha core removed; no interior habitat removed.
17.14.2.	Effect on specialized or sensitive wildlife habitat areas (including indirect effects such as noise and light)	<ul style="list-style-type: none"> 3 ha SSWH removed Potential indirect effects to remaining portion of the habitat area <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> 0.7 ha SSWH removed Potential indirect effects to remaining portion of the habitat area <p style="text-align: center;">MORE PREFERRED</p>
17.14.3.	Effect on habitat of known species of conservation concern or Species at Risk (including indirect effects such as noise and light)	<ul style="list-style-type: none"> No SAR species or potential avian SARA habitat. 	<ul style="list-style-type: none"> No change from TRR.
17.15. Environmentally Significant Features		NEUTRAL	NEUTRAL
17.15.1.	Effect on identified ESAs and ANSIs	<ul style="list-style-type: none"> 1 section of 1 ESA affected (Courtoise Wetlands) 	<ul style="list-style-type: none"> No change from TRR.
17.16. Landscape Connectivity		NEUTRAL	NEUTRAL
17.16.1.	Effect on linkages between core natural areas and other connectivity zones	<ul style="list-style-type: none"> 1 high quality linkage is severed 	<ul style="list-style-type: none"> No change from TRR.
18. SOCIAL ENVIRONMENT FACTOR RANKING		NEUTRAL	NEUTRAL
18.1. Noise		NEUTRAL	NEUTRAL
18.1.1.	Separation distance to sensitive receptors sound levels and impacts	<ul style="list-style-type: none"> Similar separation distances between receptors 	<ul style="list-style-type: none"> No change from TRR.
18.2. Community Fabric		NEUTRAL	NEUTRAL
18.2.1.	Encroachment on or severance of established and/or proposed settlement areas	<ul style="list-style-type: none"> Impact on rural development at Nash Road and Dundas Road. 	<ul style="list-style-type: none"> No change from TRR.

East Durham Link at Highway 2

East Table 1 – Preliminary Design Refinement Evaluation

Comparative Evaluation of Technically Recommended Route (EAST TRR 1) & Preliminary Design Refinement (EAST PD R1)

Factor Areas/ Evaluation Criteria/ Indicators		EAST TRR 1	Comparative Ranking of Alternatives EAST PD R1
18.2.2. Likely effects on planned/ approved community structure, as may be identified or proposed in provincial land use policies and/or regional official plans, within and east of the study area		<ul style="list-style-type: none"> None affected. 	NEUTRAL
18.2.3. Delivery of community services (emergency, school bus)		<ul style="list-style-type: none"> Potential increased bussing as a result of barrier effect of highway and interchanges. Emergency services may experience increased response times. Limited impact on municipal road services. 	NEUTRAL
18.2.4. Urban or rural barrier effects		<ul style="list-style-type: none"> Current development-minor barrier effect created between linear development along Nash Road, Highway 2, and residential clusters. Barrier between Courtice and the rest of Clarington. 	NEUTRAL
18.3. Recreational Opportunities		NEUTRAL	NEUTRAL
18.3.1. Effect on hiking, hunting, fishing, nature viewing, facilities (golf) and educational opportunities		<ul style="list-style-type: none"> None affected. 	NEUTRAL
18.4. Property Impacts		NEUTRAL	NEUTRAL
18.4.1. Residential, commercial, industrial, institutional and recreational property effects: <ul style="list-style-type: none"> Full removal/Displacement Frontage/Reduced frontage Severance – Complete/Partial Loss of Access/Access Impacted 		<ul style="list-style-type: none"> 46 Property impacts <ul style="list-style-type: none"> 20 residential displacements. 	<p style="text-align: center; font-weight: bold;">LESS PREFERRED</p> <p style="text-align: center; font-weight: bold;">MORE PREFERRED</p>
18.5. Traffic Nuisance		NEUTRAL	NEUTRAL
18.5.1. Potential for diversion of longer distance travel to/from local roadways		<ul style="list-style-type: none"> Low potential for traffic infiltration. 	NEUTRAL
18.6. Visual Aesthetics		NEUTRAL	NEUTRAL
18.6.1. Total aesthetic value of visibly accessible landscape components		<ul style="list-style-type: none"> Least overall net visual effect on communities. 	NEUTRAL
18.7. Light		NEUTRAL	NEUTRAL
18.7.1. Effect on light sensitive receptors		<ul style="list-style-type: none"> Low effects on light sensitive receptors due to mitigation opportunities. 	NEUTRAL
18.8. Air Quality		NEUTRAL	NEUTRAL
18.8.1. Separation distance to sensitive receptors, predicted concentrations and impacts		<ul style="list-style-type: none"> Similar separation distances between receptors 	NEUTRAL

East Durham Link at Highway 2

East Table 1 – Preliminary Design Refinement Evaluation

Comparative Evaluation of Technically Recommended Route (EAST TRR 1) & Preliminary Design Refinement (EAST PD R1)

Factor Areas/ Evaluation Criteria/ Indicators		Comparative Ranking of Alternatives	
		EAST TRR 1	EAST PD R1
19. ECONOMIC/ LAND USE ENVIRONMENT	19.1. Provincial/Municipal/Private Land Use Development Strategies		
	19.1.1. Degree of compatibility with municipal and regional development goals and objectives	<ul style="list-style-type: none"> • Portion of link identified in the Durham Regional Official Plan, partially compatible with Clarington OP. 	<ul style="list-style-type: none"> • No change from TRR.
	19.1.2. Capability to provide transportation service/stimulate development of major development initiatives	<ul style="list-style-type: none"> • Opportunity for development of employment lands. 	<ul style="list-style-type: none"> • No change from TRR.
	19.1.3. Compatibility with federal/provincial/municipal planning goals/objectives/policies, including principles and policy directions under development in the Greater Golden Horseshoe Growth Plan and Greenbelt Plan, the Watershed based Source Protection Planning and the proposed GTA Transportation Strategy	<ul style="list-style-type: none"> • Route is compatible with PPS (S1.6) and GGHP. • Provides connectivity between planned transportation infrastructure. • Provides for significant growth and economic development and is therefore supported by the Greenbelt Plan (S.4.2). • Durham ROPA 114 removes the east link from the Official Plan. • Minimal impact on OPA 114 Future Growth Area. 	<ul style="list-style-type: none"> • No change from TRR.
	19.1.4. Effects on approved private development proposals	<ul style="list-style-type: none"> • None affected. 	<ul style="list-style-type: none"> • No change from TRR.
19.2. Non-Farm Commercial Activities	19.2.1. Businesses displaced	<ul style="list-style-type: none"> • Two manufacturing companies, one auto service and one driving range displaced. 	<ul style="list-style-type: none"> • No change from TRR.
	19.2.2. Businesses with access affected	<ul style="list-style-type: none"> • None affected. 	<ul style="list-style-type: none"> • No change from TRR.
	19.2.3. Number of employees working for businesses displaced within the right-of-way	<ul style="list-style-type: none"> • More than 25 employees displaced. 	<ul style="list-style-type: none"> • No change from TRR.
	19.2.4. Changes (+/-) in business exposure	<ul style="list-style-type: none"> • 4 home occupations with increased exposure. 	<ul style="list-style-type: none"> • No change from TRR.
	19.2.5. Construction impacts on businesses	<ul style="list-style-type: none"> • Construction impacts may temporarily disrupt regular business operations. 	<ul style="list-style-type: none"> • No change from TRR.
19.3. Mineral Aggregate Resources	19.3.1. Effect on licensed aggregate resource facilities	<ul style="list-style-type: none"> • None affected. 	<ul style="list-style-type: none"> • No change from TRR.

East Durham Link at Highway 2 East Table 1 – Preliminary Design Refinement Evaluation Comparative Evaluation of Technically Recommended Route (EAST TRR 1) & Preliminary Design Refinement (EAST PD R1)

Factor Areas/ Evaluation Criteria / Indicators		EAST TRR 1	Comparative Ranking of Alternatives EAST PD R1
19.3.2. Effect on aggregate resource areas		<ul style="list-style-type: none"> None affected. 	NEUTRAL
19.4. Agriculture			
19.4.1. Removal or sterilization of Class 1-3 agricultural land(s)		<ul style="list-style-type: none"> Loss of Class 1 – 3 agricultural lands. 	NEUTRAL
19.4.2. Specialty crops/cropland affected		<ul style="list-style-type: none"> 3 specialty crop operations affected. 	NEUTRAL
19.4.3. Dairy/livestock operations affected		<ul style="list-style-type: none"> None affected. 	MORE PREFERRED
19.4.4. Field crop operations affected		<ul style="list-style-type: none"> 9 field crop operations affected. 	NEUTRAL
19.4.5. Farm properties greater than 20 ha affected		<ul style="list-style-type: none"> 4 farm properties affected. 	MORE PREFERRED LESS PREFERRED
19.4.6. Severed parcels greater than 20 ha created		<ul style="list-style-type: none"> 4 parcels created. 	NEUTRAL
19.4.7. Severed parcels less than 20 ha created		<ul style="list-style-type: none"> 1 parcel created. 	NEUTRAL
19.4.8. High investment operations affected		<ul style="list-style-type: none"> 2 high investment operations affected. 	NEUTRAL
19.4.9. Farm equipment Transportation routes affected		<ul style="list-style-type: none"> Potential for affects to transportation routes. 	NEUTRAL
19.4.10. Division of agricultural community areas		<ul style="list-style-type: none"> Potential for division of agricultural community. 	NEUTRAL
19.5. Property Contamination			
19.5.1. Impact on properties in urban areas		<ul style="list-style-type: none"> 2 properties directly impacted in urban areas. 	NEUTRAL
19.5.2. Impact on properties in rural areas		<ul style="list-style-type: none"> No direct impacts in rural areas. 	NEUTRAL
19.6. Waste Management			
19.6.1. Impact on known operating and closed waste management facilities (e.g. transfer stations, stormwater treatment plants, waste disposal sites, landfills)		<ul style="list-style-type: none"> No impacts on operating or closed waste management facilities. 	NEUTRAL

East Durham Link at Highway 2

East Table 1 – Preliminary Design Refinement Evaluation

Comparative Evaluation of Technically Recommended Route (EAST TRR 1) & Preliminary Design Refinement (EAST PD R1)

Factor Areas/ Evaluation Criteria / Indicators		EAST TRR 1	Comparative Ranking of Alternatives EAST PD R1
20. CULTURAL ENVIRONMENT			
20.1. Archaeological Features			
20.1.1. Disturbance or destruction of known significant archaeological sites	<ul style="list-style-type: none"> No archaeological sites are within this route alternative. 	NEUTRAL	NEUTRAL
20.1.2. Disturbance of areas of archaeological potential	<ul style="list-style-type: none"> Greater than 50% of route has archaeological potential. 	NEUTRAL	NEUTRAL
20.2. Built Heritage Resources			
20.2.1. Displacement or disruption of built heritage resources	<ul style="list-style-type: none"> 1 Resource displaced /disrupted 	NEUTRAL	NEUTRAL
20.3. Cultural Landscape Resources			
20.3.1. Displacement or disruption of cultural landscape resources	<ul style="list-style-type: none"> 8 Resources displaced /disrupted 	LESS PREFERRED	MORE PREFERRED
21. TECHNICAL CONSIDERATIONS			
21.1. Overall Transportation System Performance			
21.1.1. Out of way travel	<ul style="list-style-type: none"> Direct route. 	NEUTRAL	NEUTRAL
21.1.2. Support for transit services	<ul style="list-style-type: none"> Close to urban centres in the south. 	NEUTRAL	NEUTRAL
21.2. Transportation System Compatibility			
21.2.1. Transportation Network Compatibility	<ul style="list-style-type: none"> High compatibility with existing and planned network. 	NEUTRAL	NEUTRAL
21.3. Transportation System Connectivity			
21.3.1. Ability of each alternative to support or connect to existing or proposed travel modes	<ul style="list-style-type: none"> Transitway Stations at all interchanges, plus Bloor Street. 	NEUTRAL	NEUTRAL
21.4. Accessibility			
21.4.1. Accessibility of alternative to population and employment centres	<ul style="list-style-type: none"> Full interchange at Hwy 2, partial at Taunton – allows full interchange at Enfield Road. 	NEUTRAL	NEUTRAL
21.5. Emergency Access			
21.5.1. Impact of alternative on emergency access to adjacent lands	<ul style="list-style-type: none"> High potential to improve emergency access/ routing. 	NEUTRAL	NEUTRAL
21.6. Cost			
21.6.1. Examines the short and long term costs associated with each alternative		NEUTRAL	NEUTRAL

East Durham Link at Highway 2
East Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (EAST TRR 1) & Preliminary Design Refinement (EAST PD R1)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		EAST TRR 1	EAST PD R1
21.7. Traffic Operations 21.7.1. Impact on Traffic Operations		<ul style="list-style-type: none"> • High potential for good traffic operations due to interchange configuration and 407 alignment. • Realignment of Solina Road and Hancock Road may be required to provide sufficient separation distance between local road intersections and East Durham Link ramp terminal intersections <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> • High potential for good traffic operations due to interchange configuration and 407 alignment. • Improved separation distance between local road intersections and East Durham Link ramp terminal intersections; only requires realignment of Hancock Road. <p style="text-align: center;">MORE PREFERRED</p>
21.8. Constructability 21.8.1. Ease/Feasibility of Implementation		<ul style="list-style-type: none"> • No significant constructability issues identified. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> • No change from TRR. <p style="text-align: center;">NEUTRAL</p>

Route Refinement

East Durham Link at Taunton Road

East Durham Link at Taunton Road (East TRR 2 & PD R2)

Rationale for Consideration

A route refinement was considered in the vicinity of the Taunton Road Interchange to further reduce impacts on the wetland complex to the west and to improve the freeway to freeway interchange configuration to reduce footprint impacts.

Decision Relevant Summary

The decision relevant criteria are summarized below. For all other criteria and indicators, there are no discernable differences between the Technically Recommended Route and the route refinement.

Natural Environment – The route refinement is preferred as it impacts less area of upland vegetation, impacts no high quality vegetation units, impacts less wetland area (evaluated and unevaluated) and areas of specialized and/or sensitive wildlife habitat and crosses fewer sections of an ESA.

Social Environment – The Technically Recommended Route is slightly preferred as it has 3 fewer residential displacements but does result in an equal number of property impacts as the route refinement. The Technically Recommended Route does however result in a reduced separation distance between sensitive receptors and the 407 corridor.

Economic/Land Use Environment – The route refinement is preferred as it impacts 1 less specialty crop operation and 1 less field crop operation.

Cultural Environment – The Technically Recommended Route is slightly preferred as it results in 2 fewer direct impacts to cultural heritage resources. It does however impact these resources indirectly.

Technical Considerations – There are no discernable differences between the Technically Recommended Route and the route refinement.

Recommendation

The route refinement, which shifts the East Durham Link approximately 70 m to the east in the vicinity of the Taunton Road Interchange, is recommended.



East Durham Link at Taunton Road
East Table 2 – Preliminary Design Refinement Evaluation – Summary
Comparative Evaluation of Technically Recommended Route (EAST TRR 2) & Preliminary Design Refinement (EAST PD R2)

Factor Areas/ Evaluation Criteria / Indicators		EVALUATION RESULTS / RATIONALE	
		EAST TRR 2	EAST PD R2
3. ECONOMIC/ LAND USE ENVIRONMENT		2 ND	1 ST
3.4 Agriculture		2 ND	1 ST
3.4.2 Specialty crops/cropland affected		LESS PREFERRED	MORE PREFERRED
3.4.4 Field crop operations affected		LESS PREFERRED	MORE PREFERRED
4. CULTURAL ENVIRONMENT		1 ST	2 ND
21.10. Cultural Landscape Resources		1 ST	2 ND
21.10.1. Displacement or disruption of cultural landscape resources		MORE PREFERRED	LESS PREFERRED
5. TECHNICAL CONSIDERATIONS		TIED 1 ST	TIED 1 ST
OVERALL RANKING		2 ND	1 ST

East PD R2 is preferred as it results in 1 less impact to both specialty crop operations and field crop operations.

East PD R2 is preferred as it impacts 1 less specialty crop operation.

East PD R2 is preferred as it impacts 1 less field crop operation.

East TRR 2 is slightly preferred as it results in fewer direct impacts to cultural heritage resources.

East TRR 2 is slightly preferred as impacts to two cultural landscape resources are more direct with the East PD R2 alignment.

There are no discernable differences between East TRR 2 and East PD R2.

East PD R2 is preferred.

East Durham Link at Taunton Road
East Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (EAST TRR 2) & Preliminary Design Refinement (EAST PD R2)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		EAST TRR 2	EAST PD R2
1. NATURAL ENVIRONMENT			
21.11. Groundwater			
21.11.1.	Effect on groundwater recharge areas	<ul style="list-style-type: none"> The net effect of construction on recharge volumes is negligible. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
21.11.2.	Effect on groundwater discharge areas	<ul style="list-style-type: none"> The net effect of construction on discharge volumes is negligible. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
21.11.3.	Shallow water supply wells within 500 m of the alternative	<ul style="list-style-type: none"> Fewer than 15 wells to be decommissioned. Fewer than 10 shallow wells within high permeability buffer areas. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
21.11.4.	Changes to groundwater quality	<ul style="list-style-type: none"> Footprint covers 68 ha of high permeability soils <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> Footprint covers 55 ha of high permeability soils <p style="text-align: center;">NEUTRAL</p>
21.12. Surface Water Quality and Quantity			
21.12.1.	Watercourse crossings and surface water features	<ul style="list-style-type: none"> 4 surface water features affected comprised of: <ul style="list-style-type: none"> - 2 high sensitivity surface water features - 2 ephemeral / agricultural swales <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> 5 surface water features affected comprised of: <ul style="list-style-type: none"> - 2 high sensitivity surface water features - 3 ephemeral / agricultural swales <p style="text-align: center;">NEUTRAL</p>
21.13. Fisheries and Aquatic Habitat			
21.13.1.	Degree of high sensitivity fish habitat affected	<ul style="list-style-type: none"> Of the high sensitivity streams, 392 m would be spanned and 170 m would be crossed using culverts. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> Of the high sensitivity streams, 260 m would be spanned and 170 m would be crossed using culverts. <p style="text-align: center;">NEUTRAL</p>
21.13.2.	Degree of moderate sensitivity fish habitat affected	<ul style="list-style-type: none"> No effect on moderate sensitivity fish habitat <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
21.13.3.	Degree of low sensitivity fish habitat affected	<ul style="list-style-type: none"> 20 m of Unconfirmed Low Sensitivity Fish Habitat will require culvert crossings. <p style="text-align: center;">MORE PREFERRED</p>	<ul style="list-style-type: none"> 410 m of Unconfirmed Low Sensitivity Fish Habitat will require culvert crossings. <p style="text-align: center;">LESS PREFERRED</p>
21.13.4.	Degree of unconfirmed sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
21.14. Vegetation			
21.14.1.	Effect on upland vegetation units	<ul style="list-style-type: none"> 9.9 ha of upland vegetation removed 1 high quality vegetation units affected. <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> 5 ha of upland vegetation removed No high quality vegetation units affected. <p style="text-align: center;">MORE PREFERRED</p>
21.14.2.	Effect on significant vegetation communities	<ul style="list-style-type: none"> No Provincially Significant Vegetation Communities removed, encroached or severed. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>

East Durham Link at Taunton Road
East Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (EAST TRR 2) & Preliminary Design Refinement (EAST PD R2)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		EAST TRR 2	EAST PD R2
21.14.3.	Effect on known species of conservation concern or Species at Risk	<ul style="list-style-type: none"> No Species at Risk or Conservation Concern removed. 	<ul style="list-style-type: none"> No change from TRR.
21.15. Wetlands		NEUTRAL	NEUTRAL
21.15.1.	Effect on wetlands (Evaluated and Unevaluated)	<ul style="list-style-type: none"> 8.4 ha of total wetland area removed (2 ha evaluated wetland; 6.4 ha unevaluated wetland). <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> 2.9 ha of total wetland area removed (0.3 ha evaluated wetland; 2.6 ha unevaluated wetland). <p style="text-align: center;">MORE PREFERRED</p>
21.16. Wildlife			
21.16.1.	Effect on core wildlife habitat (including indirect effects such as noise and light)	<ul style="list-style-type: none"> 4.5 ha of core area removed No interior forest habitat removed <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> 2.9 ha of core area removed No interior forest habitat removed <p style="text-align: center;">MORE PREFERRED</p>
21.16.2.	Effect on specialized or sensitive wildlife habitat areas (including indirect effects such as noise and light)	<ul style="list-style-type: none"> No SSWH removed. 	<ul style="list-style-type: none"> No change from TRR.
21.16.3.	Effect on habitat of known species of conservation concern or Species at Risk (including indirect effects such as noise and light)	<ul style="list-style-type: none"> No SAR species or potential avian SARA habitat. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
21.17. Environmentally Significant Features			
21.17.1.	Effect on identified ESAs and ANSIs	<ul style="list-style-type: none"> No ANSIs affected 3 sections of 1 ESA affected (Upper Black Creek) <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> No ANSIs affected 1 section of 1 ESA affected (Upper Black Creek) <p style="text-align: center;">MORE PREFERRED</p>
21.18. Landscape Connectivity			
21.18.1.	Effect on linkages between core natural areas and other connectivity zones	<ul style="list-style-type: none"> No linkages between core areas present <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
22. SOCIAL ENVIRONMENT			
22.1. Noise			
22.1.1.	Separation distance to sensitive receptors sound levels and impacts	<ul style="list-style-type: none"> Reduced separation distances between receptors <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> Greater separation distances between receptors <p style="text-align: center;">MORE PREFERRED</p>
22.2. Community Fabric			
22.2.1.	Encroachment on or severance of established and/or proposed settlement areas	<ul style="list-style-type: none"> Impact on rural development at Taunton Road. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
22.2.2.	Likely effects on planned/ approved community structure, as may be identified or proposed in provincial land use policies and/or regional official plans, within and east of the study area	<ul style="list-style-type: none"> Impact on Solina and 2 new subdivisions. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
22.2.3.	Delivery of community services (emergency, school bus)	<ul style="list-style-type: none"> Potential increased bussing as a result of barrier effect of highway and interchanges. Emergency services may experience increased response times. Limited impact on municipal road services. 	<ul style="list-style-type: none"> No change from TRR.

East Durham Link at Taunton Road
East Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (EAST TRR 2) & Preliminary Design Refinement (EAST PD R2)

Factor Areas/ Evaluation Criteria / Indicators		EAST TRR 2		Comparative Ranking of Alternatives		EAST PD R2	
	22.2.4. Urban or rural barrier effects		NEUTRAL	<ul style="list-style-type: none"> Current development-minor barrier effect created between linear development along Nash Road, Highway 2, and residential clusters. Barrier between Courtice and the rest of Clarington. 		NEUTRAL	<ul style="list-style-type: none"> No change from TRR.
	22.3. Recreational Opportunities 22.3.1. Effect on hiking, hunting, fishing, nature viewing, facilities (golf) and educational opportunities		NEUTRAL	<ul style="list-style-type: none"> None affected. 		NEUTRAL	<ul style="list-style-type: none"> No change from TRR.
	22.4. Property Impacts 22.4.1. Residential, commercial, industrial, institutional and recreational property effects: <ul style="list-style-type: none"> Full removal/Displacement Frontage/Reduced frontage Severance – Complete/Partial Loss of Access/Access Impacted 		<ul style="list-style-type: none"> 18 Property impacts <ul style="list-style-type: none"> 5 residential displacements. <p style="text-align: center;">MORE PREFERRED</p>	<ul style="list-style-type: none"> 18 Property impacts <ul style="list-style-type: none"> 8 residential displacements. <p style="text-align: center;">LESS PREFERRED</p>		NEUTRAL	NEUTRAL
	22.5. Traffic Nuisance 22.5.1. Potential for diversion of longer distance travel to/from local roadways		NEUTRAL	<ul style="list-style-type: none"> Low potential for traffic infiltration. 		NEUTRAL	<ul style="list-style-type: none"> No change from TRR.
	22.6. Visual Aesthetics 22.6.1. Total aesthetic value of visibly accessible landscape components		NEUTRAL	<ul style="list-style-type: none"> Least overall net visual effect on communities. 		NEUTRAL	<ul style="list-style-type: none"> No change from TRR.
	22.7. Light 22.7.1. Effect on light sensitive receptors		NEUTRAL	<ul style="list-style-type: none"> Low effects on light sensitive receptors due to mitigation opportunities. 		NEUTRAL	<ul style="list-style-type: none"> No change from TRR.
	22.8. Air Quality 22.8.1. Separation distance to sensitive receptors, predicted concentrations and impacts		<ul style="list-style-type: none"> Reduced separation distances between receptors <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> Greater separation distances between receptors <p style="text-align: center;">MORE PREFERRED</p>		NEUTRAL	NEUTRAL
	23. ECONOMIC/ LAND USE ENVIRONMENT 23.1. Provincial/Municipal/Private Land Use Development Strategies 23.1.1. Degree of compatibility with municipal and regional development goals and objectives		NEUTRAL	<ul style="list-style-type: none"> Portion of link identified in the Durham Regional Official Plan, partially compatible with Clarington OP. 		NEUTRAL	<ul style="list-style-type: none"> No change from TRR.
	23.1.2. Capability to provide transportation service/stimulate development of major development initiatives		NEUTRAL	<ul style="list-style-type: none"> Opportunity for development of employment lands. 		NEUTRAL	<ul style="list-style-type: none"> No change from TRR.

East Durham Link at Taunton Road
East Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (EAST TRR 2) & Preliminary Design Refinement (EAST PD R2)

Factor Areas/ Evaluation Criteria / Indicators	EAST TRR 2 NEUTRAL	Comparative Ranking of Alternatives EAST PD R2 NEUTRAL
23.1.3. Compatibility with federal/provincial/municipal planning goals/objectives/policies, including principles and policy directions under development in the Greater Golden Horseshoe Growth Plan and Greenbelt Plan, the Watershed based Source Protection Planning and the proposed GTA Transportation Strategy	<ul style="list-style-type: none"> Route is compatible with PPS (S1.6) and GGHP. Provides connectivity between planned transportation infrastructure. Provides for significant growth and economic development and is therefore supported by the Greenbelt Plan (S.4.2). Durham ROPA 114 (not in effect yet) removes the east link from the Official Plan. Minimal impact on OPA 114 Future Growth Area. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
23.1.4. Effects on approved private development proposals	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
23.2. Non-Farm Commercial Activities		
23.2.1. Businesses displaced	<ul style="list-style-type: none"> Two manufacturing companies, one auto service and one driving range displaced. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
23.2.2. Businesses with access affected	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
23.2.3. Number of employees working for businesses displaced within the right-of-way	<ul style="list-style-type: none"> More than 25 employees displaced. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
23.2.4. Changes (+/-) in business exposure	<ul style="list-style-type: none"> 4 home occupations with increased exposure. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
23.2.5. Construction impacts on businesses	<ul style="list-style-type: none"> Construction impacts may temporarily disrupt regular business operations. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
23.3. Mineral Aggregate Resources		
23.3.1. Effect on licensed aggregate resource facilities	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
23.3.2. Effect on aggregate resource areas	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
23.4. Agriculture		
23.4.1. Removal or sterilization of Class 1-3 agricultural land(s)	<ul style="list-style-type: none"> Loss of Class 1 – 3 agricultural lands. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
23.4.2. Specialty crops/cropland affected	<ul style="list-style-type: none"> 2 specialty crop operations affected. <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> 1 specialty crop operation affected. <p style="text-align: center;">MORE PREFERRED</p>

East Durham Link at Taunton Road
East Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (EAST TRR 2) & Preliminary Design Refinement (EAST PD R2)

Factor Areas/ Evaluation Criteria / Indicators	EAST TRR 2	Comparative Ranking of Alternatives	EAST PD R2
23.4.3. Dairy/livestock operations affected	<ul style="list-style-type: none"> • 3 dairy/ livestock operations affected. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
23.4.4. Field crop operations affected	<ul style="list-style-type: none"> • 13 field crop operations affected. 	LESS PREFERRED	<ul style="list-style-type: none"> • 12 field crop operations affected.
23.4.5. Farm properties greater than 20 ha affected	<ul style="list-style-type: none"> • 10 farm properties affected. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
23.4.6. Severed parcels greater than 20 ha created	<ul style="list-style-type: none"> • 6 parcels created. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
23.4.7. Severed parcels less than 20 ha created	<ul style="list-style-type: none"> • 9 parcels created. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
23.4.8. High investment operations affected	<ul style="list-style-type: none"> • 2 high investment operations affected. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
23.4.9. Farm equipment Transportation routes affected	<ul style="list-style-type: none"> • Potential to affect transportation routes. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
23.4.10. Division of agricultural community areas	<ul style="list-style-type: none"> • Potential for division of agricultural community. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
23.5. Property Contamination			
23.5.1. Impact on properties in urban areas	<ul style="list-style-type: none"> • No direct impacts in urban areas. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
23.5.2. Impact on properties in rural areas	<ul style="list-style-type: none"> • No direct impacts in rural areas. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
23.6. Waste Management			
23.6.1. Impact on known operating and closed waste management facilities (e.g. transfer stations, stormwater treatment plants, waste disposal sites, landfills)	<ul style="list-style-type: none"> • No direct impacts to operating or closed waste management facilities. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
24. CULTURAL ENVIRONMENT			
24.1. Archaeological Features			
24.1.1. Disturbance or destruction of known significant archaeological sites	<ul style="list-style-type: none"> • No archaeological sites are within this route alternative. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
24.1.2. Disturbance of areas of archaeological potential	<ul style="list-style-type: none"> • Greater than 50% of route has archaeological potential. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.
24.2. Built Heritage Resources			
24.2.1. Displacement or disruption of built heritage resources	<ul style="list-style-type: none"> • None displaced or disrupted. 	NEUTRAL	<ul style="list-style-type: none"> • No change from TRR.

East Durham Link at Taunton Road
East Table 1 – Preliminary Design Refinement Evaluation
Comparative Evaluation of Technically Recommended Route (EAST TRR 2) & Preliminary Design Refinement (EAST PD R2)

Factor Areas/ Evaluation Criteria / Indicators		EAST TRR 2 NEUTRAL	Comparative Ranking of Alternatives EAST PD R2 NEUTRAL
24.3. Cultural Landscape Resources		NEUTRAL	NEUTRAL
24.3.1. Displacement or disruption of cultural landscape resources	<ul style="list-style-type: none"> 6 resources directly displaced/disrupted. 2 resources indirectly displaced/disrupted 	SLIGHTLY MORE PREFERRED	SLIGHTLY LESS PREFERRED
25. TECHNICAL CONSIDERATIONS			
25.1. Overall Transportation System Performance			
25.1.1. Out of way travel	<ul style="list-style-type: none"> Direct route. 	NEUTRAL	NEUTRAL
25.1.2. Support for transit services	<ul style="list-style-type: none"> Close to urban centres in the south. 	NEUTRAL	NEUTRAL
25.2. Transportation System Compatibility			
25.2.1. Transportation Network Compatibility	<ul style="list-style-type: none"> High compatibility with existing and planned network. 	NEUTRAL	NEUTRAL
25.3. Transportation System Connectivity			
25.3.1. Ability of each alternative to support or connect to existing or proposed travel modes	<ul style="list-style-type: none"> Transitway Stations at all interchanges, plus Bloor Street. 	NEUTRAL	NEUTRAL
25.4. Accessibility			
25.4.1. Accessibility of alternative to population and employment centres	<ul style="list-style-type: none"> Full interchange at Hwy 2, partial at Taunton – allows full interchange at Enfield Road. 	NEUTRAL	NEUTRAL
25.5. Emergency Access			
25.5.1. Impact of alternative on emergency access to adjacent lands	<ul style="list-style-type: none"> High potential to improve emergency access/ routing. 	NEUTRAL	NEUTRAL
25.6. Cost			
25.6.1. Examines the short and long term costs associated with each alternative		NEUTRAL	NEUTRAL
25.7. Traffic Operations			
25.7.1. Impact on Traffic Operations	<ul style="list-style-type: none"> High potential for good traffic operations due to interchange configuration and 407 alignment. 	NEUTRAL	NEUTRAL
25.8. Constructability			
25.8.1. Ease/Feasibility of Implementation	<ul style="list-style-type: none"> No significant constructability issues identified. 	NEUTRAL	NEUTRAL

Preliminary Design Alternative

Brock Road / Highway 7 Intersection

Brock Road / Highway 7 Intersection Preliminary Design Alternative Evaluation

Two alternatives were considered for the future realigned Brock Road and Highway 7 Intersection:

- Alternative 1: Highway 7 grade separated at Brock Road; connecting road provided
- Alternative 2: At-grade intersection at Brock Road and Highway 7

Alternative 2 was preferred as technically it provided greater opportunities for improved connectivity between Highway 7 and realigned Brock Road. Alternative 2 also reduces impacts to the natural, social, agricultural and cultural environments by reducing footprint impacts.

The effects associated with the Brock Road / Highway 7 intersection were documented through the impact assessment work.

Preliminary Design Alternative
Lake Ridge Road / Cochrane Street Interchange

Lake Ridge Road / Cochrane Street Interchanges

West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (West TRR A2) & Preliminary Design Alternative (West PD A2)

Factor Areas/ Evaluation Criteria/ Indicators		Comparative Ranking of Alternatives	
		West TRR A2 Partial interchanges at Lake Ridge Road and at Cochrane Street	West PD A2 (PREFERRED) Full interchange at Lake Ridge Road; no interchange at Cochrane Street
1. NATURAL ENVIRONMENT			
25.9. Groundwater			
25.9.1. Effect on groundwater recharge areas	<ul style="list-style-type: none"> The net effect of construction on recharge volumes is negligible. 	NEUTRAL	NEUTRAL
25.9.2. Effect on groundwater discharge areas	<ul style="list-style-type: none"> The net effect of construction on discharge volumes is negligible. 	NEUTRAL	NEUTRAL
25.9.3. Shallow water supply wells within 500 m of the alternative	<ul style="list-style-type: none"> Fewer than 10 wells to be decommissioned. 5 shallow wells within high permeability buffer areas. 	NEUTRAL	NEUTRAL
25.9.4. Changes to groundwater quality	<ul style="list-style-type: none"> Footprint covers 6 ha of high permeability soils. 	NEUTRAL	NEUTRAL
25.10. Surface Water Quality and Quantity			
25.10.1. Watercourse crossings and surface water features	<ul style="list-style-type: none"> At least 1 crossing (but likely multiple crossings with interchange ramps) of an intermittent watercourse – Tributary I of Lynde Creek which is highly sensitive. 	LESS PREFERRED	MORE PREFERRED
25.11. Fisheries and Aquatic Habitat			
25.11.1. Degree of high sensitivity fish habitat affected	<ul style="list-style-type: none"> Encompasses almost 300 m of highly sensitive habitat in the partial interchange footprint. This would likely result in multiple crossings of Tributary I of Lynde Creek; confirmed Redside Dace habitat. 	LESS PREFERRED	MORE PREFERRED
25.11.2. Degree of moderate sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. 	NEUTRAL	NEUTRAL
25.11.3. Degree of low sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. 	NEUTRAL	NEUTRAL
25.11.4. Degree of unconfirmed sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. 	NEUTRAL	NEUTRAL

Lake Ridge Road / Cochrane Street Interchanges

West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (West TRR A2) & Preliminary Design Alternatives (West PD A2)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		West TRR A2 Partial interchanges at Lake Ridge Road and at Cochrane Street	West PD A2 (PREFERRED) Full interchange at Lake Ridge Road; no interchange at Cochrane Street
25.12. Vegetation			
25.12.1.	Effect on upland vegetation units	<ul style="list-style-type: none"> Results in the removal of 0.13 ha (3.7%) of a culturally influenced, narrow lowland deciduous forest along the east bank of Tributary A of Lynde Creek. 	<ul style="list-style-type: none"> No change from TRR.
25.12.2.	Effect on significant vegetation communities	NEUTRAL	NEUTRAL
25.12.3.	Risk	NEUTRAL	NEUTRAL
25.12.3.	Effect on known species of conservation concern or Species at Risk	NEUTRAL	NEUTRAL
25.13. Wetlands			
25.13.1.	Effect on wetlands (Evaluated and Unevaluated)	<ul style="list-style-type: none"> Results in the removal of 0.47 ha (8%) of a narrow meadow marsh riparian community along the tributary just south of Highway 7. Results in the removal of approximately 0.18 ha of unevaluated shallow water and mineral marsh (unit WCOC-2). 	<ul style="list-style-type: none"> Results slightly less removal (0.43 ha) of a narrow meadow marsh riparian community along the tributary just south of Highway 7. Avoids direct impacts to unit WCOC-2.
		SLIGHTLY LESS PREFERRED	SLIGHTLY MORE PREFERRED
25.14. Wildlife			
25.14.1.	Effect on core wildlife habitat (including indirect effects such as noise and light)	<ul style="list-style-type: none"> No core wildlife habitat or interior forest habitat within 500 m of the alternative. 	<ul style="list-style-type: none"> No change from TRR.
25.14.2.	Effect on specialized or sensitive wildlife habitat areas (including indirect effects such as noise and light)	NEUTRAL	NEUTRAL
25.14.3.	Effect on habitat of known species of conservation concern or Species at Risk (including indirect effects such as noise and light)	NEUTRAL	NEUTRAL
25.15. Environmentally Significant Features			
25.15.1.	Effect on identified ESAs and ANSIs	NEUTRAL	NEUTRAL
25.15.1.	Effect on identified ESAs and ANSIs	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR.
25.16. Landscape Connectivity			
25.16.1.	Effect on linkages between core natural areas and other connectivity zones	<ul style="list-style-type: none"> One crossing of Tributary I of Lynde Creek identified as a potential local wildlife corridor. 	<ul style="list-style-type: none"> No change from TRR.
26. SOCIAL ENVIRONMENT			
26.1. Noise			
26.1.1.	Separation distance to sensitive receptors sound levels and impacts	<ul style="list-style-type: none"> Similar separation distances between receptors. 	<ul style="list-style-type: none"> No change from TRR.
		NEUTRAL	NEUTRAL

Lake Ridge Road / Cochrane Street Interchanges

West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (West TRR A2) & Preliminary Design Alternatives (West PD A2)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives		
		West TRR A2 Partial interchanges at Lake Ridge Road and at Cochrane Street	West PD A2 (PREFERRED) Full interchange at Lake Ridge Road; no interchange at Cochrane Street	
26.2. Community Fabric				
26.2.1. Encroachment on or severance of established and/or proposed settlement areas	<ul style="list-style-type: none"> None Affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
26.2.2. Likely effects on planned/ approved community structure, as may be identified or proposed in provincial land use policies and/or regional official plans, within and east of the study area	<ul style="list-style-type: none"> None Affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
26.2.3. Delivery of community services (emergency, school bus)	<ul style="list-style-type: none"> Potential increased bussing as a result of barrier effect of highway route. Emergency services may experience increased response times. Limited impact on municipal road services. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
26.2.4. Urban or rural barrier effects	<ul style="list-style-type: none"> No barrier effects. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
26.3. Recreational Opportunities				
26.3.1. Effect on hiking, hunting, fishing, nature viewing, facilities (golf) and educational opportunities	<ul style="list-style-type: none"> None Affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
26.4. Property Impacts				
26.4.1. Residential, commercial, industrial, institutional and recreational property effects: <ul style="list-style-type: none"> Full removal/Displacement Frontage/Reduced frontage Severance – Complete/Partial Loss of Access/Access Impacted 	<ul style="list-style-type: none"> 3 property impacts. 1 residential displacement. <p style="text-align: center;">MORE PREFERRED</p>		<ul style="list-style-type: none"> 5 property impacts. 3 residential displacements. <p style="text-align: center;">LESS PREFERRED</p>	
26.5. Traffic Nuisance				
26.5.1. Potential for diversion of longer distance travel to/from local roadways	<ul style="list-style-type: none"> None affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
26.6. Visual Aesthetics				
26.6.1. Total aesthetic value of visibly accessible landscape components	<ul style="list-style-type: none"> None affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
26.7. Light				
26.7.1. Effect on light sensitive receptors	<ul style="list-style-type: none"> Low effects on light sensitive receptors due to mitigation opportunities. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
26.8. Air Quality				
26.8.1. Separation distance to sensitive receptors, predicted concentrations and impacts	<ul style="list-style-type: none"> Similar separation distances between receptors. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL

Lake Ridge Road / Cochrane Street Interchanges
West Table 1 – Preliminary Design Alternative Evaluation
Comparative Evaluation of Technically Recommended Route (West TRR A2) & Preliminary Design Alternatives (West PD A2)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		West TRR A2 Partial interchanges at Lake Ridge Road and at Cochrane Street	West PD A2 (PREFERRED) Full interchange at Lake Ridge Road; no interchange at Cochrane Street
27. ECONOMIC/ LAND USE ENVIRONMENT			
27.1. Provincial/Municipal/Private Land Use Development Strategies			
27.1.1. Degree of compatibility with municipal and regional development goals and objectives	• Moderate degree of compatibility with regional goals and objectives NEUTRAL	• No change from TRR. NEUTRAL	
27.1.2. Capability to provide transportation service/stimulate development of major development initiatives	• Moderate level of development. NEUTRAL	• No change from TRR. NEUTRAL	
27.1.3. Compatibility with federal/provincial/municipal planning goals/objectives/policies, including principles and policy directions under development in the Greater Golden Horseshoe Growth Plan and Greenbelt Plan, the Watershed based Source Protection Planning and the proposed GTA Transportation Strategy	• Route is partially compatible with PPS, GGHP, Greenbelt Plan. NEUTRAL	• No change from TRR. NEUTRAL	
27.1.4. Effects on approved private development proposals	• None affected. NEUTRAL	• No change from TRR. NEUTRAL	
27.2. Non-Farm Commercial Activities			
27.2.1. Businesses displaced	• None displaced. NEUTRAL	• No change from TRR. NEUTRAL	
27.2.2. Businesses with access affected	• None affected. NEUTRAL	• No change from TRR. NEUTRAL	
27.2.3. Number of employees working for businesses displaced within the right-of-way	• None displaced. NEUTRAL	• No change from TRR. NEUTRAL	
27.2.4. Changes (+/-) in business exposure	• No changes. NEUTRAL	• No change from TRR. NEUTRAL	
27.2.5. Construction impacts on businesses	• Construction impacts may temporarily disrupt regular business operations. NEUTRAL	• No change from TRR. NEUTRAL	
27.3. Mineral Aggregate Resources			
27.3.1. Effect on licensed aggregate resource facilities	• None affected. NEUTRAL	• No change from TRR. NEUTRAL	
27.3.2. Effect on aggregate resource areas	• None affected. NEUTRAL	• No change from TRR. NEUTRAL	
27.4. Agriculture			
27.4.1. Removal or sterilization of Class 1-3 agricultural land(s)	• Similar loss of Class 1 – 3 Agricultural lands. NEUTRAL	• No change from TRR. NEUTRAL	

Lake Ridge Road / Cochrane Street Interchanges

West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (West TRR A2) & Preliminary Design Alternatives (West PD A2)

Factor Areas/ Evaluation Criteria / Indicators	West TRR A2 Partial interchanges at Lake Ridge Road and at Cochrane Street	Comparative Ranking of Alternatives West PD A2 (PREFERRED) Full interchange at Lake Ridge Road; no interchange at Cochrane Street
27.4.2. Specialty crops/cropland affected	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
27.4.3. Dairy/livestock operations affected	<ul style="list-style-type: none"> 1 dairy / livestock operation affected. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
27.4.4. Field crop operations affected	<ul style="list-style-type: none"> 6 field crop operations affected. 	<ul style="list-style-type: none"> 9 field crop operations affected. <p style="text-align: center;">NEUTRAL</p>
27.4.5. Farm properties greater than 20 ha affected	<ul style="list-style-type: none"> 4 farm properties affected. 	<ul style="list-style-type: none"> 7 farm properties affected. <p style="text-align: center;">LESS PREFERRED</p>
27.4.6. Severed parcels greater than 20 ha affected	<ul style="list-style-type: none"> 4 parcels created. 	<ul style="list-style-type: none"> 6 parcels created. <p style="text-align: center;">LESS PREFERRED</p>
27.4.7. Severed parcels less than 20 ha affected	<ul style="list-style-type: none"> 2 parcels created. 	<ul style="list-style-type: none"> 4 parcels created. <p style="text-align: center;">LESS PREFERRED</p>
27.4.8. High investment operations affected	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">LESS PREFERRED</p>
27.4.9. Farm equipment Transportation routes affected	<ul style="list-style-type: none"> Limitations to transportation routes similar on all routes. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
27.4.10. Division of agricultural community areas	<ul style="list-style-type: none"> Division of agricultural community areas similar on all routes. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
27.5. Property Contamination		
27.5.1. Impact on properties in urban areas	<ul style="list-style-type: none"> No direct footprint impacts in urban areas are identified. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
27.5.2. Impact on properties in rural areas	<ul style="list-style-type: none"> No direct footprint impacts in rural areas are identified. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
27.6. Waste Management		
27.6.1. Impact on known operating and closed waste management facilities (e.g. transfer stations, stormwater treatment plants, waste disposal sites, landfills)	<ul style="list-style-type: none"> No direct footprint impacts on known operating or closed waste management facilities are identified. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>

Lake Ridge Road / Cochrane Street Interchanges

West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (West TRR A2) & Preliminary Design Alternatives (West PD A2)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
28. CULTURAL ENVIRONMENT		West TRR A2 Partial interchanges at Lake Ridge Road and at Cochrane Street	West PD A2 (PREFERRED) Full interchange at Lake Ridge Road; no interchange at Cochrane Street
28.1. Archaeological Features	28.1.1. Disturbance or destruction of known significant archaeological sites	<ul style="list-style-type: none"> No known sites within route alternative. 	<ul style="list-style-type: none"> No change from TRR.
28.1.2. Disturbance of areas of archaeological potential		<ul style="list-style-type: none"> High archaeological potential. <p style="text-align: center;">MORE PREFERRED</p>	<ul style="list-style-type: none"> Alternative involves slightly larger area of high archaeological potential. <p style="text-align: center;">LESS PREFERRED</p>
28.2. Built Heritage Resources	28.2.1. Displacement or disruption of built heritage resources	<ul style="list-style-type: none"> No identified built heritage resources displaced/disrupted. 	<ul style="list-style-type: none"> No change from TRR.
28.3. Cultural Landscape Resources	28.3.1. Displacement or disruption of cultural landscape resources	<ul style="list-style-type: none"> 4 identified cultural landscape resources displaced / disrupted. <p style="text-align: center;">MORE PREFERRED</p>	<ul style="list-style-type: none"> 7 identified cultural landscape resources displaced / disrupted. <p style="text-align: center;">LESS PREFERRED</p>
29. TECHNICAL CONSIDERATIONS			
29.1. Overall Transportation System Performance	29.1.1. Out of way travel	<ul style="list-style-type: none"> Direct route; no significant out of way travel. 	<ul style="list-style-type: none"> No change from TRR.
29.1.2. Support for transit services		<ul style="list-style-type: none"> High potential to attract/support transit ridership, close to urban centres. 	<ul style="list-style-type: none"> No change from TRR.
29.2. Transportation System Compatibility	29.2.1. Transportation Network Compatibility	<ul style="list-style-type: none"> High compatibility with existing and planned network. 	<ul style="list-style-type: none"> No change from TRR.
29.3. Transportation System Connectivity	29.3.1. Ability of each alternative to support or connect to existing or proposed travel modes	<ul style="list-style-type: none"> Transit stations designated at key interchanges. 	<ul style="list-style-type: none"> No change from TRR.
29.4. Accessibility	29.4.1. Accessibility of alternative to population and employment centres	<ul style="list-style-type: none"> High potential to improve accessibility to population and employment centres. 	<ul style="list-style-type: none"> No change from TRR.
29.5. Emergency Access	29.5.1. Impact of alternative on emergency access to adjacent lands	<ul style="list-style-type: none"> High potential to improve emergency service access/routing. 	<ul style="list-style-type: none"> No change from TRR.

Lake Ridge Road / Cochrane Street Interchanges
West Table 1 – Preliminary Design Alternative Evaluation
Comparative Evaluation of Technically Recommended Route (West TRR A2) & Preliminary Design Alternatives (West PD A2)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		West TRR A2 Partial interchanges at Lake Ridge Road and at Cochrane Street	West PD A2 (PREFERRED) Full interchange at Lake Ridge Road; no interchange at Cochrane Street
29.6. Cost	29.6.1. Examines the short and long term costs associated with each alternative	NEUTRAL	NEUTRAL
29.7. Traffic Operations	29.7.1. Impact on Traffic Operations	<ul style="list-style-type: none"> Moderate potential for good traffic operations with provision of partial interchanges at Lake Ridge Road and Cochrane Street. <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> High potential for good traffic operations with provision of full moves interchange at Lake Ridge Road. <p style="text-align: center;">MORE PREFERRED</p>
29.8. Constructability	29.8.1. Ease /Feasibility of Implementation	<ul style="list-style-type: none"> Challenges associated with proximity of Cochrane Street interchange to Highway 7 and freeway-to-freeway interchange. <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> No significant constructability issues identified. <p style="text-align: center;">MORE PREFERRED</p>

**Preliminary Design Alternative
Coronation Road Realignment at 407 Corridor**

Coronation Road Realignment at 407 Corridor

West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (West TRR A6) & Preliminary Design Alternative (West PD A6)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		West TRR A6 Larger realignment footprint for Coronation Road	West PD A6 (PREFERRED) Smaller realignment footprint for Coronation Road
1. NATURAL ENVIRONMENT			
29.9. Groundwater			
29.9.1. Effect on groundwater recharge areas	<ul style="list-style-type: none"> The net effect of construction on recharge volumes is negligible. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR.
29.9.2. Effect on groundwater discharge areas	<ul style="list-style-type: none"> The net effect of construction on discharge volumes is negligible. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR.
29.9.3. Shallow water supply wells within 500 m of the alternative	<ul style="list-style-type: none"> Fewer than 5 wells to be decommissioned. No shallow wells within high permeability buffer areas. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR.
29.9.4. Changes to groundwater quality	<ul style="list-style-type: none"> Footprint covers 9 ha of high permeability soils. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR.
29.10. Surface Water Quality and Quantity			
29.10.1. Watercourse crossings and surface water features	<ul style="list-style-type: none"> 1 crossing of a permanent watercourse (West Lynde Creek) that is highly sensitive. 3 crossings of intermittent/ephemeral watercourses, (Tributaries of West Lynde Creek) with low sensitivity. 1 pond within footprint. 	NEUTRAL	<ul style="list-style-type: none"> The pond on the east side of Coronation, north of Highway 7 will no longer be affected.
29.11. Fisheries and Aquatic Habitat			
29.11.1. Degree of high sensitivity fish habitat affected	<ul style="list-style-type: none"> Approximately 180 m of West Lynde Creek encompassed within route footprint. Habitat for Brook Trout confirmed within the crossing location. 	SLIGHTLY MORE PREFERRED	<ul style="list-style-type: none"> Approximately 235 m of West Lynde Creek encompassed within route footprint. Habitat for Brook Trout confirmed within the crossing location. It is not certain whether the difference in stream length encompassed by route is an artifact of the shape files used in the analysis or if it truly reflects additional stream length to be crossed.
29.11.2. Degree of moderate sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR.

Coronation Road Realignment at 407 Corridor

West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (West TRR A6) & Preliminary Design Alternative (West PD A6)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		West TRR A6 Larger realignment footprint for Coronation Road	West PD A6 (PREFERRED) Smaller realignment footprint for Coronation Road
29.11.3.	Degree of low sensitivity fish habitat affected	<ul style="list-style-type: none"> Approximately 700 m of Tributary F of West Lynde Creek is encompassed by the route footprint. Approximately 1170 m of Tributary D is encompassed by the route footprint. <p style="text-align: center;">SLIGHTLY LESS PREFERRED</p>	<ul style="list-style-type: none"> Approximately 515 m of Tributary F of West Lynde Creek is encompassed by the route footprint. Slightly less of this watercourse is crossed due to a shift in the Coronation Street alignment, north of the freeway. Approximately 1115 m of Tributary D is encompassed by the route footprint. The reduced footprint is partially due to the Alternative tying back into existing Coronation Street before the creek crossing. <p style="text-align: center;">SLIGHTLY MORE PREFERRED</p>
29.11.4.	Degree of unconfirmed sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
29.12. Vegetation	Effect on upland vegetation units	<ul style="list-style-type: none"> Results in removal of vegetation from a total of 4 vegetation units, mainly associated with large West Lynde Creek valley and two smaller valleys associated with Tributaries D and F of West Lynde Creek. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> Generally results in the same vegetation removals as TRR with minor differences based on a slightly refined route footprint generated for the Alternative. These differences are negligible and do not affect the comparison of the TRR and Alternative A6-1. <p style="text-align: center;">NEUTRAL</p>
29.12.2.	Effect on significant vegetation communities	<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
29.12.3. Risk	Effect on known species of conservation concern or Species at Risk	<ul style="list-style-type: none"> 1 Butternut was observed in WCOR-1. Condition, size and exact location are to be confirmed in 2008. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
29.13. Wetlands	Effect on wetlands (Evaluated and Unevaluated)	<ul style="list-style-type: none"> Results in removal of 1.2 ha (37%) of unevaluated wetland from a low quality mineral meadow marsh riparian community along Tributary F of Lynde Creek. <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> Results in very minor edge removal (< 0.1 ha) removal of unevaluated wetland from a low quality mineral meadow marsh riparian community along Tributary F of Lynde Creek. <p style="text-align: center;">MORE PREFERRED</p>
29.14. Wildlife	Effect on core wildlife habitat (including indirect effects such as noise and light)	<ul style="list-style-type: none"> Interior forest is present approximately 250 m north of the West Lynde Creek valley crossing. No direct removal of interior habitat. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>

Coronation Road Realignment at 407 Corridor

West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (West TRR A6) & Preliminary Design Alternative (West PD A6)

Factor Areas/ Evaluation Criteria / Indicators	West TRR A6 Larger realignment footprint for Coronation Road	Comparative Ranking of Alternatives West PD A6 (PREFERRED) Smaller realignment footprint for Coronation Road
29.14.2. Effect on specialized or sensitive wildlife habitat areas (including indirect effects such as noise and light)	<ul style="list-style-type: none"> Potential for deer winter cover in the cedar dominated forest of the West Lynde Creek valley north and south of the route. Potential for reduced habitat as a result of increased noise. Route crossing is through a conifer dominated valley and adjacent upland forest. Quality of habitat removed is relatively high. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
29.14.3. Effect on habitat of known species of conservation concern or Species at Risk (including indirect effects such as noise and light)	<ul style="list-style-type: none"> No know effect. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
29.15. Environmentally Significant Features 29.15.1. Effect on identified ESAs and ANSIs	<ul style="list-style-type: none"> 1 crossing of the Lynde Valley – Iroquois Beach ESA along West Lynde Creek. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
29.16. Landscape Connectivity 29.16.1. Effect on linkages between core natural areas and other connectivity zones	<ul style="list-style-type: none"> 1 crossing of a high quality regionally important wildlife corridor (west Lynde Creek) and crossings of 2 potential local linkages associated with tributaries of West Lynde Creek. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
30. SOCIAL ENVIRONMENT		
30.1. Noise 30.1.1. Separation distance to sensitive receptors sound levels and impacts	<ul style="list-style-type: none"> Similar separation distances between receptors. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
30.2. Community Fabric 30.2.1. Encroachment on or severance of established and/or proposed settlement areas	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
30.2.2. Likely effects on planned/ approved community structure, as may be identified or proposed in provincial land use policies and/or regional official plans, within and east of the study area	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
30.2.3. Delivery of community services (emergency, school bus)	<ul style="list-style-type: none"> Potential increased bussing as a result of barrier effect of highway link. Emergency services may experience increased response times. Limited impact on municipal road services. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
30.2.4. Urban or rural barrier effects	<ul style="list-style-type: none"> No barrier effects. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>

Coronation Road Realignment at 407 Corridor
West Table 1 – Preliminary Design Alternative Evaluation
Comparative Evaluation of Technically Recommended Route (West TRR A6) & Preliminary Design Alternative (West PD A6)

Factor Areas/ Evaluation Criteria / Indicators		West TRR A6 Larger realignment footprint for Coronation Road	Comparative Ranking of Alternatives West PD A6 (PREFERRED) Smaller realignment footprint for Coronation Road
30.3. Recreational Opportunities	30.3.1. Effect on hiking, hunting, fishing, nature viewing, facilities (golf) and educational opportunities	• None affected.	• No change from TRR. NEUTRAL
30.4. Property Impacts	30.4.1. Residential, commercial, industrial, institutional and recreational property effects: <ul style="list-style-type: none"> • Full removal/Displacement • Frontage/Reduced frontage • Severance – Complete/Partial • Loss of Access/Access Impacted 	• 12 property impacts. • 3 residential displacements. MORE PREFERRED	• 12 property impacts. • 4 residential displacements. LESS PREFERRED
30.5. Traffic Nuisance	30.5.1. Potential for diversion of longer distance travel to/from local roadways	• None affected.	• No change from TRR. NEUTRAL
30.6. Visual Aesthetics	30.6.1. Total aesthetic value of visibly accessible landscape components	• None affected.	• No change from TRR. NEUTRAL
30.7. Light	30.7.1. Effect on light sensitive receptors	• Low effects on light sensitive receptors due to mitigation opportunities.	• No change from TRR. NEUTRAL
30.8. Air Quality	30.8.1. Separation distance to sensitive receptors, predicted concentrations and impacts	• Similar separation distances between receptors.	• No change from TRR. NEUTRAL
31. ECONOMIC/ LAND USE ENVIRONMENT			
31.1. Provincial/Municipal/Private Land Use Development Strategies	31.1.1. Degree of compatibility with municipal and regional development goals and objectives	• Moderate degree of compatibility with regional goals and objectives.	• No change from TRR. NEUTRAL
	31.1.2. Capability to provide transportation service/stimulate development of major development initiatives	• Moderate level of development.	• No change from TRR. NEUTRAL
	31.1.3. Compatibility with federal/provincial/municipal planning goals/objectives/policies, including principles and policy directions under development in the Greater Golden Horseshoe Growth Plan and Greenbelt Plan, the Watershed based Source Protection Planning and the proposed GTA Transportation Strategy	• Route is partially compatible with PPS, GGHGP, Greenbelt Plan.	• No change from TRR. NEUTRAL
	31.1.4. Effects on approved private development proposals	• None affected.	• No change from TRR. NEUTRAL

Coronation Road Realignment at 407 Corridor

West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (West TRR A6) & Preliminary Design Alternative (West PD A6)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		West TRR A6 Larger realignment footprint for Coronation Road	West PD A6 (PREFERRED) Smaller realignment footprint for Coronation Road
31.2. Non-Farm Commercial Activities	31.2.1. Businesses displaced	<ul style="list-style-type: none"> • None displaced. 	<ul style="list-style-type: none"> • No change from TRR. <p style="text-align: center;">NEUTRAL</p>
	31.2.2. Businesses with access affected	<ul style="list-style-type: none"> • None affected. 	<ul style="list-style-type: none"> • No change from TRR. <p style="text-align: center;">NEUTRAL</p>
	31.2.3. Number of employees working for businesses displaced within the right-of-way	<ul style="list-style-type: none"> • None displaced. 	<ul style="list-style-type: none"> • No change from TRR. <p style="text-align: center;">NEUTRAL</p>
	31.2.4. Changes (+/-) in business exposure	<ul style="list-style-type: none"> • No changes. 	<ul style="list-style-type: none"> • No change from TRR. <p style="text-align: center;">NEUTRAL</p>
	31.2.5. Construction impacts on businesses	<ul style="list-style-type: none"> • Construction impacts may temporarily disrupt regular business operations. 	<ul style="list-style-type: none"> • No change from TRR. <p style="text-align: center;">NEUTRAL</p>
31.3. Mineral Aggregate Resources			
	31.3.1. Effect on licensed aggregate resource facilities	<ul style="list-style-type: none"> • None affected. 	<ul style="list-style-type: none"> • No change from TRR. <p style="text-align: center;">NEUTRAL</p>
	31.3.2. Effect on aggregate resource areas	<ul style="list-style-type: none"> • None affected. 	<ul style="list-style-type: none"> • No change from TRR. <p style="text-align: center;">NEUTRAL</p>
31.4. Agriculture			
	31.4.1. Removal or sterilization of Class 1-3 agricultural land(s)	<ul style="list-style-type: none"> • Similar loss of Class 1 – 3 Agricultural lands. 	<ul style="list-style-type: none"> • No change from TRR. <p style="text-align: center;">NEUTRAL</p>
	31.4.2. Specialty crops/cropland affected	<ul style="list-style-type: none"> • None affected. 	<ul style="list-style-type: none"> • 1 specialty crop operation affected. <p style="text-align: center;">LESS PREFERRED</p>
	31.4.3. Dairy/livestock operations affected	<ul style="list-style-type: none"> • None affected. 	<ul style="list-style-type: none"> • No change from TRR. <p style="text-align: center;">NEUTRAL</p>
	31.4.4. Field crop operations affected	<ul style="list-style-type: none"> • 8 field crop operations affected. 	<ul style="list-style-type: none"> • No change from TRR. <p style="text-align: center;">NEUTRAL</p>
	31.4.5. Farm properties greater than 20 ha affected	<ul style="list-style-type: none"> • 5 farm properties affected. 	<ul style="list-style-type: none"> • No change from TRR. <p style="text-align: center;">NEUTRAL</p>

Coronation Road Realignment at 407 Corridor

West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (West TRR A6) & Preliminary Design Alternative (West PD A6)

Factor Areas/Evaluation Criteria / Indicators		Comparative Ranking of Alternatives		
		West TRR A6 Larger realignment footprint for Coronation Road	West PD A6 (PREFERRED) Smaller realignment footprint for Coronation Road	
31.4.6. Severed parcels greater than 20 ha affected		<ul style="list-style-type: none"> 3 parcels created. 	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
31.4.7. Severed parcels less than 20 ha affected		<ul style="list-style-type: none"> 8 parcels created. 	<ul style="list-style-type: none"> 7 parcels created. 	NEUTRAL
31.4.8. High investment operations affected		<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> 1 high investment operation affected. 	MORE PREFERRED
31.4.9. Farm equipment Transportation routes affected		<ul style="list-style-type: none"> Limitations to transportation routes similar on all routes. 	<ul style="list-style-type: none"> No change from TRR. 	LESS PREFERRED
31.4.10. Division of agricultural community areas		<ul style="list-style-type: none"> Division of agricultural community areas similar on all routes. 	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
31.5. Property Contamination				NEUTRAL
31.5.1. Impact on properties in urban areas		<ul style="list-style-type: none"> No direct footprint impacts in urban areas are identified. 	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
31.5.2. Impact on properties in rural areas		<ul style="list-style-type: none"> No direct footprint impacts in rural areas are identified. 	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
31.6. Waste Management				NEUTRAL
31.6.1. Impact on known operating and closed waste management facilities (e.g. transfer stations, stormwater treatment plants, waste disposal sites, landfills)		<ul style="list-style-type: none"> No direct footprint impacts on known operating or closed waste management facilities are identified. 	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
32. CULTURAL ENVIRONMENT				NEUTRAL
32.1. Archaeological Features				NEUTRAL
32.1.1. Disturbance or destruction of known significant archaeological sites		<ul style="list-style-type: none"> No known archaeological sites within route alternative. 	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
32.1.2. Disturbance of areas of archaeological potential		<ul style="list-style-type: none"> High archaeological potential. 	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL
32.2. Built Heritage Resources				NEUTRAL
32.2.1. Displacement or disruption of built heritage resources		<ul style="list-style-type: none"> 2 identified cultural heritage resources displaced/disrupted. 	<ul style="list-style-type: none"> No change from TRR. 	NEUTRAL

Coronation Road Realignment at 407 Corridor
West Table 1 – Preliminary Design Alternative Evaluation
Comparative Evaluation of Technically Recommended Route (West TRR A6) & Preliminary Design Alternative (West PD A6)

Factor Areas/Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		West TRR A6 Larger realignment footprint for Coronation Road	West PD A6 (PREFERRED) Smaller realignment footprint for Coronation Road
32.3. Cultural Landscape Resources	32.3.1. Displacement or disruption of cultural landscape resources	4 identified cultural heritage resources displaced/disrupted. NEUTRAL	No change from TRR. NEUTRAL
33. TECHNICAL CONSIDERATIONS			
33.1. Overall Transportation System Performance			
33.1.1. Out of way travel			
33.1.2. Support for transit services			
33.2. Transportation System Compatibility			
33.2.1. Transportation Network Compatibility			
33.3. Transportation System Connectivity			
33.3.1. Ability of each alternative to support or connect to existing or proposed travel modes			
33.4. Accessibility			
33.4.1. Accessibility of alternative to population and employment centres			
33.5. Emergency Access			
33.5.1. Impact of alternative on emergency access to adjacent lands			
33.6. Cost			
33.6.1. Examines the short and long term costs associated with each alternative			
33.7. Traffic Operations			
33.7.1. Impact on Traffic Operations			
33.8. Constructability			
33.8.1. Ease / Feasibility of Implementation			

**Preliminary Design Alternative
Ashburn Road Realignment**

Ashburn Road Realignment West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Preliminary Design Alternative (West PD A3-1) & Preliminary Design Alternative (West PD A3-2)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		West PD A3-1 Realign Ashburn Road to the west, connect to Highway 7 east of Cochrane Street	West PD A3-2 (PREFERRED) Realign Ashburn Road to the west, connect to Cochrane Street
1. NATURAL ENVIRONMENT			
33.9. Groundwater			
33.9.1. Effect on groundwater recharge areas	<ul style="list-style-type: none"> The net effect of construction on recharge volumes is negligible. 	NEUTRAL	<ul style="list-style-type: none"> No change from PD A3-1.
33.9.2. Effect on groundwater discharge areas	<ul style="list-style-type: none"> The net effect of construction on discharge volumes is negligible. 	NEUTRAL	<ul style="list-style-type: none"> No change from PD A3-1.
33.9.3. Shallow water supply wells within 500 m of the alternative	<ul style="list-style-type: none"> No wells to be decommissioned. Fewer than 10 shallow wells within high permeability buffer areas. 	NEUTRAL	<ul style="list-style-type: none"> No change from PD A3-1.
33.9.4. Changes to groundwater quality	<ul style="list-style-type: none"> Footprint covers 1 ha of high permeability soils. 	NEUTRAL	<ul style="list-style-type: none"> Footprint covers 3 ha of high permeability soils.
33.10. Surface Water Quality and Quantity			
33.10.1. Watercourse crossings and surface water features	<ul style="list-style-type: none"> 1 crossings of an intermittent watercourse – Tributary 1 of Lynde Creek which is highly sensitive. 	NEUTRAL	<ul style="list-style-type: none"> No change from PD A3-1.
33.11. Fisheries and Aquatic Habitat			
33.11.1. Degree of high sensitivity fish habitat affected	<ul style="list-style-type: none"> Crossing encompasses approximately 60 m of Tributary 1 of Lynde Creek due to the oblique crossing angle. This watercourse is confirmed Redside Dace habitat, which will likely constrain the ability to realign the creek at the crossing. 	LESS PREFERRED	<ul style="list-style-type: none"> Crossing encompasses approximately 38 m of Tributary 1 of Lynde Creek due to a more perpendicular crossing angle. The crossing still encompasses a sharp meander, however this watercourse is confirmed Redside Dace habitat, which will likely constrain the ability to realign the creek at the crossing.
33.11.2. Degree of moderate sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from PD A3-1.
33.11.3. Degree of low sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from PD A3-1.
33.11.4. Degree of unconfirmed sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from PD A3-1.
33.12. Vegetation			
33.12.1. Effect on upland vegetation units	<ul style="list-style-type: none"> None affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from PD A3-1.

Ashburn Road Realignment West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Preliminary Design Alternative (West PD A3-1) & Preliminary Design Alternative (West PD A3-2)

Factor Areas/ Evaluation Criteria / Indicators	West PD A3-1 Realign Ashburn Road to the west, connect to Highway 7 east of Cochrane Street	Comparative Ranking of Alternatives West PD A3-2 (PREFERRED) Realign Ashburn Road to the west, connect to Cochrane Street
33.12.2. Effect on significant vegetation communities	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from PD A3-1.
33.12.3. Effect on known species of conservation concern or Species at Risk	<ul style="list-style-type: none"> No known effect 	<ul style="list-style-type: none"> No change from PD A3-1.
33.13. Wetlands Effect on wetlands (Evaluated and Unevaluated)	<ul style="list-style-type: none"> Removes approximately 0.28 ha (48%) of an unevaluated wetland community, Unit C5COC-1 is a low quality linear meadow marsh that forms a narrow riparian zone along the tributary. 	<ul style="list-style-type: none"> Removes approximately 0.32 ha (56%) of an unevaluated wetland community, Unit C5COC-1 is a low quality linear meadow marsh that forms a narrow riparian zone along the tributary.
33.14. Wildlife Effect on core wildlife habitat (including indirect effects such as noise and light)	<ul style="list-style-type: none"> No core wildlife habitat or interior forest habitat within 500 m of the alternative. 	<ul style="list-style-type: none"> No change from PD A3-1.
33.14.2. Effect on specialized or sensitive wildlife habitat areas (including indirect effects such as noise and light)	<ul style="list-style-type: none"> No specialized wildlife habitat within 500 m of the alternative. 	<ul style="list-style-type: none"> No change from PD A3-1.
33.14.3. Effect on habitat of known species of conservation concern or Species at Risk (including indirect effects such as noise and light)	<ul style="list-style-type: none"> No known effect. 	<ul style="list-style-type: none"> No change from PD A3-1.
33.15. Environmentally Significant Features Effect on identified ESAs and ANSIs	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from PD A3-1.
33.16. Landscape Connectivity Effect on linkages between core natural areas and other connectivity zones	<ul style="list-style-type: none"> One crossing of Tributary 1 of Lynde Creek identified as a potential local wildlife corridor. It is recommended that passage for small mammals be provided at the crossing. 	<ul style="list-style-type: none"> No change from PD A3-1.
34. SOCIAL ENVIRONMENT 34.1. Noise 34.1.1. Separation distance to sensitive receptors sound levels and impacts	<ul style="list-style-type: none"> Similar separation distance between receptors. 	<ul style="list-style-type: none"> No change from PD A3-1.

Ashburn Road Realignment West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Preliminary Design Alternative (West PD A3-1) & Preliminary Design Alternative (West PD A3-2)

Factor Areas/ Evaluation Criteria / Indicators	West PD A3-1 Realign Ashburn Road to the west, connect to Highway 7 east of Cochrane Street	Comparative Ranking of Alternatives West PD A3-2 (PREFERRED) Realign Ashburn Road to the west, connect to Cochrane Street
34.2. Community Fabric		
34.2.1. Encroachment on or severance of established and/or proposed settlement areas	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from PD A3-1. <p style="text-align: center;">NEUTRAL</p>
34.2.2. Likely effects on planned/ approved community structure, as may be identified or proposed in provincial land use policies and/or regional official plans, within and east of the study area	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from PD A3-1. <p style="text-align: center;">NEUTRAL</p>
34.2.3. Delivery of community services (emergency, school bus)	<ul style="list-style-type: none"> None anticipated to be affected. 	<ul style="list-style-type: none"> No change from PD A3-1. <p style="text-align: center;">NEUTRAL</p>
34.2.4. Urban or rural barrier effects	<ul style="list-style-type: none"> No barrier effects. 	<ul style="list-style-type: none"> No change from PD A3-1. <p style="text-align: center;">NEUTRAL</p>
34.3. Recreational Opportunities		
34.3.1. Effect on hiking, hunting, fishing, nature viewing, facilities (golf) and educational opportunities	<ul style="list-style-type: none"> No barrier effects. 	<ul style="list-style-type: none"> No change from PD A3-1. <p style="text-align: center;">NEUTRAL</p>
34.4. Property Impacts		
34.4.1. Residential, commercial, industrial, institutional and recreational property effects: <ul style="list-style-type: none"> Full removal/Displacement Frontage/Reduced frontage Severance – Complete/Partial Loss of Access/Access Impacted 	<ul style="list-style-type: none"> No property impacts. 1 residential displacement. <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> 2 property impacts No residential displacements. <p style="text-align: center;">MORE PREFERRED</p>
34.5. Traffic Nuisance		
34.5.1. Potential for diversion of longer distance travel to/from local roadways	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from PD A3-1. <p style="text-align: center;">NEUTRAL</p>
34.6. Visual Aesthetics		
34.6.1. Total aesthetic value of visibly accessible landscape components	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from PD A3-1. <p style="text-align: center;">NEUTRAL</p>
34.7. Light		
34.7.1. Effect on light sensitive receptors	<ul style="list-style-type: none"> Low effects on light sensitive receptors due to mitigation opportunities. 	<ul style="list-style-type: none"> No change from PD A3-1. <p style="text-align: center;">NEUTRAL</p>
34.8. Air Quality		
34.8.1. Separation distance to sensitive receptors, predicted concentrations and impacts	<ul style="list-style-type: none"> Similar separation distance between receptors. 	<ul style="list-style-type: none"> No change from PD A3-1. <p style="text-align: center;">NEUTRAL</p>

Ashburn Road Realignment West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Preliminary Design Alternative (West PD A3-1) & Preliminary Design Alternative (West PD A3-2)

Factor Areas/ Evaluation Criteria / Indicators	West PD A3-1 Realign Ashburn Road to the west, connect to Highway 7 east of Cochrane Street	Comparative Ranking of Alternatives West PD A3-2 (PREFERRED) Realign Ashburn Road to the west, connect to Cochrane Street
35. ECONOMIC/ LAND USE ENVIRONMENT		
35.1. Provincial/Municipal/Private Land Use Development Strategies		
35.1.1. Degree of compatibility with municipal and regional development goals and objectives	Moderate degree of compatibility with regional goals and objectives	No change from PD A3-1.
35.1.2. Capability to provide transportation service/stimulate development of major development initiatives	NEUTRAL	NEUTRAL
35.1.3. Compatibility with federal/provincial/municipal planning goals/objectives/policies, including principles and policy directions under development in the Greater Golden Horseshoe Growth Plan and Greenbelt Plan, the Watershed based Source Protection Planning and the proposed GTA Transportation Strategy	Moderate level of development. NEUTRAL Route is partially compatible with PPS, GGHGP, and Greenbelt Plan.	NEUTRAL NEUTRAL
35.1.4. Effects on approved private development proposals	NEUTRAL	NEUTRAL
35.2. Non-Farm Commercial Activities		
35.2.1. Businesses displaced	None affected.	No change from PD A3-1.
35.2.2. Businesses with access affected	NEUTRAL	NEUTRAL
35.2.3. Number of employees working for businesses displaced within the right-of-way	None affected.	No change from PD A3-1.
35.2.4. Changes (+/-) in business exposure	None displaced.	NEUTRAL
35.2.5. Construction impacts on businesses	No change. Construction impacts may temporarily disrupt regular business operations.	NEUTRAL NEUTRAL
35.3. Mineral Aggregate Resources		
35.3.1. Effect on licensed aggregate resource facilities	NEUTRAL	NEUTRAL
35.3.2. Effect on aggregate resource areas	None affected.	No change from PD A3-1.
35.4. Agriculture		
35.4.1. Removal or sterilization of Class 1-3 agricultural land(s)	Less loss of Class 1 – 3 Agricultural lands. MORE PREFERRED	Greater loss of Class 1 – 3 Agricultural lands. LESS PREFERRED
35.4.2. Specialty crops/cropland affected	None affected.	No change from PD A3-1.

Ashburn Road Realignment West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Preliminary Design Alternative (West PD A3-1) & Preliminary Design Alternative (West PD A3-2)

Factor Areas/ Evaluation Criteria / Indicators	West PD A3-1 Realign Ashburn Road to the west, connect to Highway 7 east of Cochrane Street NEUTRAL	Comparative Ranking of Alternatives West PD A3-2 (PREFERRED) Realign Ashburn Road to the west, connect to Cochrane Street NEUTRAL
35.4.3. Dairy/livestock operations affected	<ul style="list-style-type: none"> 2 dairy/livestock operations affected. 	<ul style="list-style-type: none"> No change from PD A3-1.
35.4.4. Field crop operations affected	<ul style="list-style-type: none"> 2 field crop operations affected. 	<ul style="list-style-type: none"> 3 field crop operations affected.
35.4.5. Farm properties greater than 20 ha affected	<ul style="list-style-type: none"> 2 farm properties affected. 	<ul style="list-style-type: none"> 3 farm properties affected.
35.4.6. Severed parcels greater than 20 ha affected	<ul style="list-style-type: none"> 1 parcel created. 	<ul style="list-style-type: none"> No change from PD A3-1.
35.4.7. Severed parcels less than 20 ha affected	<ul style="list-style-type: none"> 1 parcel created. 	<ul style="list-style-type: none"> No change from PD A3-1.
35.4.8. High investment operations affected	<ul style="list-style-type: none"> 1 high investment operation affected. 	<ul style="list-style-type: none"> No change from PD A3-1.
35.4.9. Farm equipment Transportation routes affected	<ul style="list-style-type: none"> Limitations to transportation routes similar on all routes. 	<ul style="list-style-type: none"> No change from PD A3-1.
35.4.10. Division of agricultural community areas	<ul style="list-style-type: none"> Division of agricultural community areas similar on all routes. 	<ul style="list-style-type: none"> No change from PD A3-1.
35.5. Property Contamination		
35.5.1. Impact on properties in urban areas	<ul style="list-style-type: none"> No direct footprint impacts in urban areas are identified. 	<ul style="list-style-type: none"> No change from PD A3-1.
35.5.2. Impact on properties in rural areas	<ul style="list-style-type: none"> No direct footprint impacts in rural areas are identified. 	<ul style="list-style-type: none"> No change from PD A3-1.
35.6. Waste Management		
35.6.1. Impact on known operating and closed waste management facilities (e.g. transfer stations, stormwater treatment plants, waste disposal sites, landfills)	<ul style="list-style-type: none"> No direct footprint impacts on known operating or closed waste management facilities are identified. 	<ul style="list-style-type: none"> No change from PD A3-1.
36. CULTURAL ENVIRONMENT		
36.1. Archaeological Features		
36.1.1. Disturbance or destruction of known significant archaeological sites	<ul style="list-style-type: none"> No known archaeological sites within route alternative. 	<ul style="list-style-type: none"> No change from PD A3-1.

Ashburn Road Realignment West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Preliminary Design Alternative (West PD A3-1) & Preliminary Design Alternative (West PD A3-2)

Factor Areas/ Evaluation Criteria / Indicators	West PD A3-1 Realign Ashburn Road to the west, connect to Highway 7 east of Cochrane Street	Comparative Ranking of Alternatives West PD A3-2 (PREFERRED) Realign Ashburn Road to the west, connect to Cochrane Street
36.1.2. Disturbance of areas of archaeological potential	• High archaeological potential. MORE PREFERRED	• Alternative involves slightly larger area of high archaeological potential. LESS PREFERRED
36.2. Built Heritage Resources		
36.2.1. Displacement or disruption of built heritage resources	• No identified cultural heritage resources displaced/disrupted. NEUTRAL	• No change from PD A3-1. NEUTRAL
36.3. Cultural Landscape Resources		
36.3.1. Displacement or disruption of cultural landscape resources	• 4 identified cultural landscape resources displaced/disrupted. MORE PREFERRED	• 5 identified cultural landscape resources displaced/disrupted. LESS PREFERRED
37. TECHNICAL CONSIDERATIONS		
37.1. Overall Transportation System Performance		
37.1.1. Out of way travel	• Direct route; no significant out of way travel. NEUTRAL	• No change from PD A3-1. NEUTRAL
37.1.2. Support for transit services	• High potential to attract/support transit ridership, close to urban centres. NEUTRAL	• No change from PD A3-1. NEUTRAL
37.2. Transportation System Compatibility		
37.2.1. Transportation Network Compatibility	• High compatibility with existing and planned network. NEUTRAL	• No change from PD A3-1. NEUTRAL
37.3. Transportation System Connectivity		
37.3.1. Ability of each alternative to support or connect to existing or proposed travel modes	• Transit stations designated at key interchanges. NEUTRAL	• No change from PD A3-1. NEUTRAL
37.4. Accessibility		
37.4.1. Accessibility of alternative to population and employment centres	• High potential to improve accessibility to population and employment centres. NEUTRAL	• No change from PD A3-1. NEUTRAL
37.5. Emergency Access		
37.5.1. Impact of alternative on emergency access to adjacent lands	• High potential to improve emergency service access/routing. NEUTRAL	• No change from PD A3-1. NEUTRAL
37.6. Cost		
37.6.1. Examines the short and long term costs associated with each alternative	NEUTRAL	NEUTRAL

Ashburn Road Realignment
West Table 1 – Preliminary Design Alternative Evaluation
Comparative Evaluation of Preliminary Design Alternative (West PD A3-1) & Preliminary Design Alternative (West PD A3-2)

Factor Areas/ Evaluation Criteria / Indicators	West PD A3-1 Realign Ashburn Road to the west, connect to Highway 7 east of Cochrane Street	Comparative Ranking of Alternatives West PD A3-2 (PREFERRED) Realign Ashburn Road to the west, connect to Cochrane Street
37.7. Traffic Operations 37.7.1. Impact on Traffic Operations	<ul style="list-style-type: none"> Acceptable traffic operations; results in additional T-intersection on Winchester Road. <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> Better traffic operations with connection of Ashburn Road to Cochrane Street. <p style="text-align: center;">MORE PREFERRED</p>
37.8. Constructability 37.8.1. Ease / Feasibility of Implementation	<ul style="list-style-type: none"> No significant constructability issues identified. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from PD A3-1. <p style="text-align: center;">NEUTRAL</p>

Preliminary Design Alternative
Railway Crossing North of Rossland Road on West Durham Link

Rail Crossing North of Rossland Road (on West Durham Link) West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (West TRR A4) & Preliminary Design Alternatives (West PD A4-1 & A4-2)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives		
		West TRR A4 Crossing type undefined	West PD A4-1 407 corridor over CPR rail line	West PD A4-2 (PREFERRED) 407 corridor under CPR rail line
1. NATURAL ENVIRONMENT				
37.9. Groundwater				
37.9.1. Effect on groundwater recharge areas	<ul style="list-style-type: none"> The net effect of construction on recharge volumes is negligible. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
37.9.2. Effect on groundwater discharge areas	<ul style="list-style-type: none"> The net effect of construction on discharge volumes is negligible. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
37.9.3. Shallow water supply wells within 500 m of the alternative	<ul style="list-style-type: none"> No wells to be decommissioned. Fewer than 5 shallow wells within high permeability buffer areas. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
37.9.4. Changes to groundwater quality	<ul style="list-style-type: none"> Footprint covers 15 ha of high permeability soils. 	NEUTRAL	<ul style="list-style-type: none"> Footprint covers 13 ha of high permeability soils. 	<ul style="list-style-type: none"> No change from TRR.
37.10. Surface Water Quality and Quantity				
37.10.1. Watercourse crossings and surface water features	<ul style="list-style-type: none"> None affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
37.11. Fisheries and Aquatic Habitat				
37.11.1. Degree of high sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
37.11.2. Degree of moderate sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
37.11.3. Degree of low sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
37.11.4. Degree of unconfirmed sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. 	NEUTRAL	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.

Rail Crossing North of Rossland Road (on West Durham Link) West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (West TRR A4) & Preliminary Design Alternatives (West PD A4-1 & A4-2)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives		
		West TRR A4 Crossing type undefined	West PD A4-1 407 corridor over CPR rail line	West PD A4-2 (PREFERRED) 407 corridor under CPR rail line
37.12. Vegetation				
37.12.1.	Effect on upland vegetation units	<ul style="list-style-type: none"> Removes approximately 0.4 ha (8.5%) of a hemlock forest and mixed forest from the valley of Tributary B of Lynde Creek. This is a moderate quality habitat with mature hemlock and Black Maple (regionally rare). Removes approximately 3.7 ha (39%) of a deciduous forest (RLAK-4) patch. <p style="text-align: center;">MORE PREFERRED</p>	<ul style="list-style-type: none"> Removes approximately 0.53 ha (11%) of a hemlock forest and mixed forest from the valley of Tributary B of Lynde Creek. This is a moderate quality habitat with mature hemlock and Black Maple (regionally rare). Removes approximately 5 ha (53%) of a deciduous forest (RLAK-4) patch. <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> Removes approximately 0.56 ha (11.7%) of a hemlock forest and mixed forest from the valley of Tributary B of Lynde Creek. This is a moderate quality habitat with mature hemlock and Black Maple (regionally rare). Removes approximately 5.8 ha (60%) of a deciduous forest (RLAK-4) patch. <p style="text-align: center;">LESS PREFERRED</p>
37.12.2.	Effect on significant vegetation communities	<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
37.12.3.	Effect on known species of conservation concern or Species at Risk	<ul style="list-style-type: none"> No known effect <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
37.13. Wetlands				
37.13.1.	Effect on wetlands (Evaluated and Unevaluated)	<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
37.14. Wildlife				
37.14.1.	Effect on core wildlife habitat (including indirect effects such as noise and light)	<ul style="list-style-type: none"> No core wildlife habitat or interior forest habitat within 500 m of the alternative. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
37.14.2.	Effect on specialized or sensitive wildlife habitat areas (including indirect effects such as noise and light)	<ul style="list-style-type: none"> No specialized wildlife habitat within 500 m of the alternative. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
37.14.3.	Effect on habitat of known species of conservation concern or Species at Risk (including indirect effects such as noise and light)	<ul style="list-style-type: none"> No known effect. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
37.15. Environmentally Significant Features				
37.15.1.	Effect on identified ESAs and ANSIs	<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>

Rail Crossing North of Rossland Road (on West Durham Link) West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (West TRR A4) & Preliminary Design Alternatives (West PD A4-1 & A4-2)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives		
		West TRR A4 Crossing type undefined	West PD A4-1 407 corridor over CPR rail line	West PD A4-2 (PREFERRED) 407 corridor under CPR rail line
37.16. Landscape Connectivity				
37.16.1. Effect on linkages between core natural areas and other connectivity zones	<ul style="list-style-type: none"> Slight encroachment into the valley of Tributary B of Lynde Creek, identified as a potential local wildlife corridor. <p style="text-align: center;">MORE PREFERRED</p>	<ul style="list-style-type: none"> Slightly greater encroachment into the valley of Tributary B of Lynde Creek than the TRR. <p style="text-align: center;">SLIGHTLY LESS PREFERRED</p>	<ul style="list-style-type: none"> Slightly greater encroachment into the valley of Tributary B of Lynde Creek than Alternative A4-2. <p style="text-align: center;">SLIGHTLY LESS PREFERRED</p>	
38. SOCIAL ENVIRONMENT				
38.1. Noise				
38.1.1. Separation distance to sensitive receptors sound levels and impacts	<ul style="list-style-type: none"> Similar separation distances between receptors. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	
38.2. Community Fabric				
38.2.1. Encroachment on or severance of established and/or proposed settlement areas	<ul style="list-style-type: none"> None Affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	
38.2.2. Likely effects on planned/ approved community structure, as may be identified or proposed in provincial land use policies and/or regional official plans, within and east of the study area	<ul style="list-style-type: none"> None Affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	
38.2.3. Delivery of community services (emergency, school bus)	<ul style="list-style-type: none"> Potential increased bussing as a result of barrier effect of highway link. Emergency services may experience increased response times. Limited impact on municipal road services. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	
38.2.4. Urban or rural barrier effects	<ul style="list-style-type: none"> No barrier effects. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	
38.3. Recreational Opportunities				
38.3.1. Effect on hiking, hunting, fishing, nature viewing, facilities (golf) and educational opportunities	<ul style="list-style-type: none"> None Affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	
38.4. Property Impacts				
38.4.1. Residential, commercial, industrial, institutional and recreational property effects: <ul style="list-style-type: none"> Full removal/Displacement Frontage/Reduced frontage Severance – Complete/Partial Loss of Access/Access Impacted 	<ul style="list-style-type: none"> 4 property impacts. No residential displacement. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	

Rail Crossing North of Rossland Road (on West Durham Link) West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (West TRR A4) & Preliminary Design Alternatives (West PD A4-1 & A4-2)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives		
		West TRR A4 Crossing type undefined	West PD A4-1 407 corridor over CPR rail line	West PD A4-2 (PREFERRED) 407 corridor under CPR rail line
38.5. Traffic Nuisance				
38.5.1. Potential for diversion of longer distance travel to/from local roadways		<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
38.6. Visual Aesthetics				
38.6.1. Total aesthetic value of visibly accessible landscape components		<ul style="list-style-type: none"> Unknown. 	<ul style="list-style-type: none"> High net impact on receptors. LESS PREFERRED 	<ul style="list-style-type: none"> Low net impact on receptors. MORE PREFERRED
38.7. Light				
38.7.1. Effect on light sensitive receptors		<ul style="list-style-type: none"> Low effects on light sensitive receptors due to mitigation opportunities. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
38.8. Air Quality				
38.8.1. Separation distance to sensitive receptors, predicted concentrations and impacts		<ul style="list-style-type: none"> Similar separation distances between receptors. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
39. ECONOMIC/ LAND USE ENVIRONMENT				
39.1. Provincial/Municipal/Private Land Use Development Strategies				
39.1.1. Degree of compatibility with municipal and regional development goals and objectives		<ul style="list-style-type: none"> Moderate degree of compatibility with regional goals and objectives. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
39.1.2. Capability to provide transportation service/stimulate development of major development initiatives		<ul style="list-style-type: none"> Moderate level of development. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
39.1.3. Compatibility with federal/provincial/municipal planning goals/objectives/policies, including principles and policy directions under development in the Greater Golden Horseshoe Growth Plan and Greenbelt Plan, the Watershed based Source Protection Planning and the proposed GTA Transportation Strategy		<ul style="list-style-type: none"> Route is partially compatible with PPS, GGHGP, Greenbelt Plan. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
39.1.4. Effects on approved private development proposals		<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.

Rail Crossing North of Rossland Road (on West Durham Link) West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (West TRR A4) & Preliminary Design Alternatives (West PD A4-1 & A4-2)

Factor Areas/ Evaluation Criteria / Indicators	West TRR A4 Crossing type undefined	Comparative Ranking of Alternatives West PD A4-1 407 corridor over CPR rail line	West PD A4-2 (PREFERRED) 407 corridor under CPR rail line
39.2. Non-Farm Commercial Activities			
39.2.1. Businesses displaced	<ul style="list-style-type: none"> None displaced. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
39.2.2. Businesses with access affected	NEUTRAL	NEUTRAL	NEUTRAL
39.2.3. Number of employees working for businesses displaced within the right-of-way	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
39.2.4. Changes (+/-) in business exposure	NEUTRAL	NEUTRAL	NEUTRAL
39.2.5. Construction impacts on businesses	<ul style="list-style-type: none"> None displaced. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
	<ul style="list-style-type: none"> No changes. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
	NEUTRAL	NEUTRAL	NEUTRAL
	<ul style="list-style-type: none"> Construction impacts may temporarily disrupt regular business operations. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
	NEUTRAL	NEUTRAL	NEUTRAL
39.3. Mineral Aggregate Resources			
39.3.1. Effect on licensed aggregate resource facilities	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
39.3.2. Effect on aggregate resource areas	NEUTRAL	NEUTRAL	NEUTRAL
	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
	NEUTRAL	NEUTRAL	NEUTRAL
39.4. Agriculture			
39.4.1. Removal or sterilization of Class 1-3 agricultural land(s)	<ul style="list-style-type: none"> Similar loss of Class 1 – 3 Agricultural lands. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
39.4.2. Specialty crops/cropland affected	NEUTRAL	NEUTRAL	NEUTRAL
	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
39.4.3. Dairy/livestock operations affected	NEUTRAL	NEUTRAL	NEUTRAL
	<ul style="list-style-type: none"> 1 dairy / livestock operation affected. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
	NEUTRAL	NEUTRAL	NEUTRAL
39.4.4. Field crop operations affected	<ul style="list-style-type: none"> 2 field crop operations affected. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
	NEUTRAL	NEUTRAL	NEUTRAL
39.4.5. Farm properties greater than 20 ha affected	<ul style="list-style-type: none"> 1 farm property affected. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
	NEUTRAL	NEUTRAL	NEUTRAL

Rail Crossing North of Rossland Road (on West Durham Link) West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (West TRR A4) & Preliminary Design Alternatives (West PD A4-1 & A4-2)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives		
		West TRR A4 Crossing type undefined	West PD A4-1 407 corridor over CPR rail line	West PD A4-2 (PREFERRED) 407 corridor under CPR rail line
39.4.6. Severed parcels greater than 20 ha affected	<ul style="list-style-type: none"> 1 parcel created. 	NEUTRAL	NEUTRAL	NEUTRAL
39.4.7. Severed parcels less than 20 ha affected	<ul style="list-style-type: none"> None affected. 	NEUTRAL	NEUTRAL	NEUTRAL
39.4.8. High investment operations affected	<ul style="list-style-type: none"> 1 high investment operation affected. 	NEUTRAL	NEUTRAL	NEUTRAL
39.4.9. Farm equipment Transportation routes affected	<ul style="list-style-type: none"> Limitations to transportation routes similar on all routes. 	NEUTRAL	NEUTRAL	NEUTRAL
39.4.10. Division of agricultural community areas	<ul style="list-style-type: none"> Division of agricultural community areas similar on all routes. 	NEUTRAL	NEUTRAL	NEUTRAL
39.5. Property Contamination				
39.5.1. Impact on properties in urban areas	<ul style="list-style-type: none"> No direct footprint impacts in urban areas are identified. 	NEUTRAL	NEUTRAL	NEUTRAL
39.5.2. Impact on properties in rural areas	<ul style="list-style-type: none"> One property will be directly impacted by the footprint in a rural area. 	NEUTRAL	NEUTRAL	NEUTRAL
39.6. Waste Management				
39.6.1. Impact on known operating and closed waste management facilities (e.g. transfer stations, stormwater treatment plants, waste disposal sites, landfills)	<ul style="list-style-type: none"> No direct footprint impacts on known operating or closed waste management facilities are identified. 	NEUTRAL	NEUTRAL	NEUTRAL
40. CULTURAL ENVIRONMENT				
40.1. Archaeological Features				
40.1.1. Disturbance or destruction of known significant archaeological sites	<ul style="list-style-type: none"> No known sites within route alternative. 	NEUTRAL	NEUTRAL	NEUTRAL

Rail Crossing North of Rossland Road (on West Durham Link) West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (West TRR A4) & Preliminary Design Alternatives (West PD A4-1 & A4-2)

Factor Areas/ Evaluation Criteria / Indicators	Comparative Ranking of Alternatives		
	West TRR A4 Crossing type undefined	West PD A4-1 407 corridor over CPR rail line	West PD A4-2 (PREFERRED) 407 corridor under CPR rail line
40.1.2. Disturbance of areas of archaeological potential	<ul style="list-style-type: none"> High archaeological potential <p style="text-align: center;">SLIGHTLY MORE PREFERRED</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> Alternative involves slightly larger area of high archaeological potential. <p style="text-align: center;">SLIGHTLY LESS PREFERRED</p>
40.2. Built Heritage Resources			
40.2.1. Displacement or disruption of built heritage resources	<ul style="list-style-type: none"> No identified cultural heritage resources displaced/disrupted. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
40.3. Cultural Landscape Resources			
40.3.1. Displacement or disruption of cultural landscape resources	<ul style="list-style-type: none"> No identified cultural landscape resources displaced/disrupted. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
41. TECHNICAL CONSIDERATIONS			
41.1. Overall Transportation System Performance			
41.1.1. Out of way travel	<ul style="list-style-type: none"> Direct route; no significant out of way travel. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
41.1.2. Support for transit services	<ul style="list-style-type: none"> High potential to attract/support transit ridership; close to urban centres. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
41.2. Transportation System Compatibility			
41.2.1. Transportation Network Compatibility	<ul style="list-style-type: none"> High compatibility with existing and planned network. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
41.3. Transportation System Connectivity			
41.3.1. Ability of each alternative to support or connect to existing or proposed travel modes	<ul style="list-style-type: none"> Transit stations designated at key interchanges. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
41.4. Accessibility			
41.4.1. Accessibility of alternative to population and employment centres	<ul style="list-style-type: none"> High potential to improve accessibility to population and employment centres. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
41.5. Emergency Access			
41.5.1. Impact of alternative on emergency access to adjacent lands	<ul style="list-style-type: none"> High potential to improve emergency service access/routing. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>

Rail Crossing North of Rossland Road (on West Durham Link) West Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (West TRR A4) & Preliminary Design Alternatives (West PD A4-1 & A4-2)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
41.6. Cost	West TRR A4 Crossing type undefined	West PD A4-1 407 corridor over CPR rail line	West PD A4-2 (PREFERRED) 407 corridor under CPR rail line
41.6.1. Examines the short and long term costs associated with each alternative	NEUTRAL	NEUTRAL	NEUTRAL
5.7. Traffic Operations			
5.7.1. Impact on Traffic Operations	NEUTRAL	NEUTRAL	NEUTRAL
	<ul style="list-style-type: none"> High potential for good traffic operations. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
5.8. Constructability			
5.8.1. Ease / Feasibility of Implementation	<ul style="list-style-type: none"> Undefined. 	<ul style="list-style-type: none"> Challenges matching Rossland Road grade separation requirements. 	<ul style="list-style-type: none"> Drainage issues to be addressed.
	NEUTRAL	NEUTRAL	NEUTRAL

Preliminary Design Alternative
Railway Crossing North of Rossland Road on West Durham Link

Halls Road versus Coronation Road Realignment Preliminary Design Alternative Evaluation

Two alternatives are under consideration for the replacement of the Halls Road corridor:

- Alternative 1: Halls Road realigned to the east (as identified for the TRR)
- Alternative 2: Coronation Road realigned to the west (as identified by the Town of Whitby)

Based on the transportation planning work undertaken by the Town of Whitby for the proposed development in West Whitby, Alternative 2 is preferred, subject to a detailed review of environmental impacts and public input. The 407 East EA study team will continue to work with municipal staff and local stakeholders to finalize the alignment for Coronation Road through West Whitby.

The effects associated with the Coronation Road realignment will be documented through the impact assessment work.

Preliminary Design Alternative
Lake Ridge Road Realignment at Highway 401

Lake Ridge Road Realignment at Highway 401 Preliminary Design Alternative Evaluation

Two alternatives were developed for the realignment of Lake Ridge Road at Highway 401:

- Alternative 1: Existing Lake Ridge Road alignment retained
- Alternative 2: Lake Ridge Road realigned approximately 30 m to the west

Alternative 2 is preferred as it results in an insignificant change in impacts for all environmental factor areas. In addition, it results in improved access to Almond Village and improved constructability of the Lake Ridge Road interchange.

The effects associated with the realignment of Lake Ridge Road will be documented through the impact assessment work.

**Preliminary Design Alternative
Regional Road 57 Interchange**

Regional Road 57 Interchange Preliminary Design Alternative Evaluation

Two alternatives were considered for the Regional Road 57 Interchange:

- Alternative 1: Larger interchange footprint; based on 90 m radius inner loop ramps
- Alternative 2: Smaller interchange footprint; based on 55 m radius inner loop ramps

Alternative 2 is preferred as it results in reduced effects for all environmental factor areas. In addition, it allows for improved geometrics for the transitway corridor.

The effects associated with the smaller interchange footprint will be documented through the impact assessment work.

Preliminary Design Alternative
Bethesda Road versus Darlington-Clarke Townline Road

Bethesda Road vs. Darlington-Clarke Townline Road Interchange East Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (East TRR A1) & Preliminary Design Alternatives (East PD A1-1, A1-2, A1-3 & A1-4)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives					
		East TRR A1 Interchange at Bethesda Road; significant realignment of Concession Road	East PD A1-1 Interchange at Bethesda Road; grade separation at Brown Rd	East PD A1-2 Interchange at Bethesda Road; grade separation at Darlington- Clarke Townline	East PD A1-3 (PREFERRED) Interchange at Darlington-Clarke Townline; grade separation at Bethesda Road	East PD A1-4 Interchange at Bethesda Road; grade separation for Concession Roads 6 and 7	
1. NATURAL ENVIRONMENT							
41.7. Groundwater	41.7.1. Effect on groundwater recharge areas	<ul style="list-style-type: none"> The net effect of construction on recharge volumes is negligible. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	
	41.7.2. Effect on groundwater discharge areas	<ul style="list-style-type: none"> The net effect of construction on discharge volumes is negligible. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	
	41.7.3. Shallow water supply wells within 500 m of the alternative	<ul style="list-style-type: none"> Fewer than 5 wells to be decommissioned. Fewer than 10 shallow wells within high permeability buffer areas. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
	41.7.4. Changes to groundwater quality	<ul style="list-style-type: none"> Footprint covers 29 ha of high permeability soils. <p style="text-align: center;">LEAST PREFERRED</p>	<ul style="list-style-type: none"> Footprint covers 27 ha of high permeability soils. <p style="text-align: center;">MORE PREFERRED</p>	<ul style="list-style-type: none"> Footprint covers 27 ha of high permeability soils. <p style="text-align: center;">MORE PREFERRED</p>	<ul style="list-style-type: none"> Footprint covers 24 ha of high permeability soils. <p style="text-align: center;">MOST PREFERRED</p>	<ul style="list-style-type: none"> Footprint covers 27 ha of high permeability soils. <p style="text-align: center;">MORE PREFERRED</p>	
	41.8. Surface Water Quality and Quantity	41.8.1. Watercourse crossings and surface water features	<ul style="list-style-type: none"> 3 agricultural swales affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
41.9. Fisheries and Aquatic Habitat	41.9.1. Degree of high sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	
	41.9.2. Degree of moderate sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	
	41.9.3. Degree of low sensitivity fish habitat affected	<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>

Bethesda Road vs. Darlington-Clarke Townline Road Interchange East Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (East TRR A1) & Preliminary Design Alternatives (East PD A1-1, A1-2, A1-3 & A1-4)

Factor Areas/ Evaluation Criteria / Indicators	Comparative Ranking of Alternatives				
	East TRR A1 Interchange at Bethesda Road; significant realignment of Concession Road	East PD A1-1 Interchange at Bethesda Road; grade separation at Brown Rd	East PD A1-2 Interchange at Bethesda Road; grade separation at Darlington- Clarke Townline	East PD A1-3 (PREFERRED) Interchange at Darlington-Clarke Townline; grade separation at Bethesda Road	East PD A1-4 Interchange at Bethesda Road; grade separation for Concession Roads 6 and 7
41.9.4. Degree of unconfirmed sensitivity fish habitat affected	NEUTRAL • None affected.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.
41.10. Vegetation					
41.10.1. Effect on upland vegetation units	NEUTRAL • 0.16 ha of upland vegetation removed.	NEUTRAL • 0.4 ha of upland vegetation removed.	NEUTRAL • 0.7 ha of upland vegetation removed.	NEUTRAL • 0.7 ha of upland vegetation removed.	NEUTRAL • 0.6 ha of upland vegetation removed.
41.10.2. Effect on significant vegetation communities	NEUTRAL • None affected.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.
41.10.3. Effect on known species of conservation concern or Species at Risk	NEUTRAL • None affected. MORE PREFERRED	NEUTRAL • Removal of 5 specimens of Butternut (Woodlot TDCT-7). LESS PREFERRED	NEUTRAL • Removal of 5 specimens of Butternut (Woodlot TDCT-7). LESS PREFERRED	NEUTRAL • Removal of 5 specimens of Butternut (Woodlot TDCT-7). LESS PREFERRED	NEUTRAL • Removal of 5 specimens of Butternut (Woodlot TDCT-7). LESS PREFERRED
41.11. Wetlands					
41.11.1. Effect on wetlands (Evaluated and Unevaluated)	NEUTRAL • 0.2 ha of unevaluated wetland removed.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.
41.12. Wildlife					
41.12.1. Effect on core wildlife habitat (including indirect effects such as noise and light)	NEUTRAL • 0.25 ha of core area removed.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.
41.12.2. Effect on specialized or sensitive wildlife habitat areas (including indirect effects such as noise and light)	NEUTRAL • None affected.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.
41.12.3. Effect on habitat of known species of conservation concern or Species at Risk (including indirect effects such as noise and light)	NEUTRAL • None affected.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.
41.13. Environmentally Significant Features	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL

Bethesda Road vs. Darlington-Clarke Townline Road Interchange East Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (East TRR A1) & Preliminary Design Alternatives (East PD A1-1, A1-2, A1-3 & A1-4)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives				
		East TRR A1 Interchange at Bethesda Road; significant realignment of Concession Road	East PD A1-1 Interchange at Bethesda Road; grade separation at Brown Rd	East PD A1-2 Interchange at Bethesda Road; grade separation at Darlington- Clarke Townline	East PD A1-3 (PREFERRED) Interchange at Darlington-Clarke Townline; grade separation at Bethesda Road	East PD A1-4 Interchange at Bethesda Road; grade separation for Concession Roads 6 and 7
41.13.1.	Effect on identified ESAs and ANSIs	<ul style="list-style-type: none"> Encroachment into Mackie Creek Valley and Upper Soper Creek ESAs. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
41.14.	Landscape Connectivity	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL
41.14.1.	Effect on linkages between core natural areas and other connectivity zones	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
42. SOCIAL ENVIRONMENT		NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL
42.1.	Noise					
42.1.1.	Separation distance to sensitive receptors sound levels and impacts	<ul style="list-style-type: none"> Lower number of receptors; greater separation distance 	<ul style="list-style-type: none"> Lower number of receptors; greater separation distance 	<ul style="list-style-type: none"> Lower number of receptors; greater separation distance 	<ul style="list-style-type: none"> Higher number of receptors; reduced separation distance 	<ul style="list-style-type: none"> Lower number of receptors; greater separation distance
42.2.	Community Fabric	MORE PREFERRED	MORE PREFERRED	MORE PREFERRED	LESS PREFERRED	MORE PREFERRED
42.2.1.	Encroachment on or severance of established and/or proposed settlement areas	<ul style="list-style-type: none"> No encroachment on or severance of established or proposed settlement areas. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
42.2.2.	Likely effects on planned/ approved community structure, as may be identified or proposed in provincial land use policies and/or regional official plans, within and east of the study area	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL
42.2.3.	Delivery of community services (emergency, school bus)	<ul style="list-style-type: none"> No effects on planned community structure. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
42.2.4.	Urban or rural barrier effects	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL
42.3.	Recreational Opportunities	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL

Bethesda Road vs. Darlington-Clarke Townline Road Interchange East Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (East TRR A1) & Preliminary Design Alternatives (East PD A1-1, A1-2, A1-3 & A1-4)

Factor Areas/ Evaluation Criteria / Indicators	Comparative Ranking of Alternatives				
	East TRR A1 Interchange at Bethesda Road; significant realignment of Concession Road	East PD A1-1 Interchange at Bethesda Road; grade separation at Brown Rd	East PD A1-2 Interchange at Bethesda Road; grade separation at Darlington- Clarke Townline	East PD A1-3 (PREFERRED) Interchange at Darlington-Clarke Townline; grade separation at Bethesda Road	East PD A1-4 Interchange at Bethesda Road; grade separation for Concession Roads 6 and 7
42.3.1. Effect on hiking, hunting, fishing, nature viewing, facilities (golf) and educational opportunities.	NEUTRAL • No effect on recreational opportunities.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.
42.4. Property Impacts 42.4.1. Residential, commercial, industrial, institutional and recreational property effects: • Full removal/Displacement Frontage/Reduced frontage • Severance – Complete/Partial • Loss of Access/Access Impacted	NEUTRAL • 10 property impacts • No residential displacements.	NEUTRAL • 12 property impacts. • No residential displacements.	NEUTRAL • 13 property impacts. • No residential displacements.	NEUTRAL • 9 property impacts. • No residential displacements.	NEUTRAL • 14 property impacts. • No residential displacements.
42.5. Traffic Nuisance 42.5.1. Potential for diversion of longer distance travel to/from local roadways	SLIGHTLY MORE PREFERRED	SLIGHTLY LESS PREFERRED	SLIGHTLY LESS PREFERRED	MORE PREFERRED	SLIGHTLY LESS PREFERRED
42.6. Visual Aesthetics 42.6.1. Total aesthetic value of visibly accessible landscape components	NEUTRAL • Low potential for traffic infiltration.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.
42.7. Light 42.7.1. Effect on light sensitive receptors	NEUTRAL • Moderate net effect on receptors.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.
42.8. Air Quality 42.8.1. Separation distance to sensitive receptors, predicted concentrations and impacts	NEUTRAL • Low effect due to mitigation opportunities.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.	NEUTRAL • No change from TRR.
	MORE PREFERRED • Lower number of receptors; greater separation distance	MORE PREFERRED • Lower number of receptors; greater separation distance	MORE PREFERRED • Lower number of receptors; greater separation distance	LESS PREFERRED • Higher number of receptors; reduced separation distance	MORE PREFERRED • Lower number of receptors; greater separation distance

Bethesda Road vs. Darlington-Clarke Townline Road Interchange East Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (East TRR A1) & Preliminary Design Alternatives (East PD A1-1, A1-2, A1-3 & A1-4)

Factor Areas/ Evaluation Criteria / Indicators	Comparative Ranking of Alternatives				
	East TRR A1 Interchange at Bethesda Road; significant realignment of Concession Road	East PD A1-1 Interchange at Bethesda Road; grade separation at Brown Rd	East PD A1-2 Interchange at Bethesda Road; grade separation at Darlington- Clarke Townline	East PD A1-3 (PREFERRED) Interchange at Darlington-Clarke Townline; grade separation at Bethesda Road	East PD A1-4 Interchange at Bethesda Road; grade separation for Concession Roads 6 and 7
43. ECONOMIC/ LAND USE ENVIRONMENT					
43.1. Provincial/Municipal/Private Land Use Development Strategies					
43.1.1. Degree of compatibility with municipal and regional development goals and objectives	<ul style="list-style-type: none"> Moderate degree of compatibility with regional goals and objectives. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
43.1.2. Capability to provide transportation service/stimulate development of major development initiatives	<ul style="list-style-type: none"> Moderate level of development. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
43.1.3. Compatibility with federal/provincial/municipal planning goals/objectives/policies, including principles and policy directions under development in the Greater Golden Horseshoe Growth Plan and Greenbelt Plan, the Watershed based Source Protection Planning and the proposed GTA Transportation Strategy	<ul style="list-style-type: none"> Route is partially compatible with PPS, GGHGP, Greenbelt Plan. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
43.1.4. Effects on approved private development proposals	<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
43.2. Non-Farm Commercial Activities					
43.2.1. Businesses displaced	<ul style="list-style-type: none"> None displaced. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
43.2.2. Businesses with access affected	<ul style="list-style-type: none"> None affected. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>

Bethesda Road vs. Darlington-Clarke Townline Road Interchange East Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (East TRR A1) & Preliminary Design Alternatives (East PD A1-1, A1-2, A1-3 & A1-4)

Factor Areas/ Evaluation Criteria / Indicators	Comparative Ranking of Alternatives				
	East TRR A1 Interchange at Bethesda Road; significant realignment of Concession Road	East PD A1-1 Interchange at Bethesda Road; grade separation at Brown Rd	East PD A1-2 Interchange at Bethesda Road; grade separation at Darlington- Clarke Townline	East PD A1-3 (PREFERRED) Interchange at Darlington-Clarke Townline; grade separation at Bethesda Road	East PD A1-4 Interchange at Bethesda Road; grade separation for Concession Roads 6 and 7
43.2.3. Number of employees working for businesses displaced within the right-of-way	<ul style="list-style-type: none"> None displaced. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
43.2.4. Changes (+/-) in business exposure	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL
43.2.5. Construction impacts on businesses	<ul style="list-style-type: none"> Construction impacts may temporarily disrupt regular business operations. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
43.3. Mineral Aggregate Resources	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL
43.3.1. Effect on licensed aggregate resource facilities	<ul style="list-style-type: none"> None affected. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
43.3.2. Effect on aggregate resource areas	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL
43.4. Agriculture	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL
43.4.1. Removal or sterilization of Class 1-3 agricultural land(s)	<ul style="list-style-type: none"> Similar loss of Class 1 – 3 Agricultural lands. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
43.4.2. Specialty crops/cropland affected	<ul style="list-style-type: none"> 1 small specialty crop operations affected. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
43.4.3. Dairy/livestock operations affected	<ul style="list-style-type: none"> 2 dairy/livestock operations affected. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
43.4.4. Field crop operations affected	<ul style="list-style-type: none"> 8 field crop operations affected. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.

Bethesda Road vs. Darlington-Clarke Townline Road Interchange East Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (East TRR A1) & Preliminary Design Alternatives (East PD A1-1, A1-2, A1-3 & A1-4)

Factor Areas/ Evaluation Criteria / Indicators	Comparative Ranking of Alternatives			
	East TRR A1 Interchange at Bethesda Road; significant realignment of Concession Road	East PD A1-1 Interchange at Bethesda Road; grade separation at Brown Rd	East PD A1-2 Interchange at Bethesda Road; grade separation at Darlington- Clarke Townline	East PD A1-3 (PREFERRED) Interchange at Darlington-Clarke Townline; grade separation at Bethesda Road
43.4.5. Farm properties greater than 20 ha affected	6 farm properties affected.	7 farm properties affected.	No change from A1-1.	No change from A1-1.
43.4.6. Severed parcels greater than 20 ha affected	SLIGHTLY MORE PREFERRED 5 parcels created	SLIGHTLY LESS PREFERRED 6 parcels created	SLIGHTLY LESS PREFERRED No change from A1-1.	SLIGHTLY LESS PREFERRED No change from A1-1.
43.4.7. Severed parcels less than 20 ha affected	SLIGHTLY MORE PREFERRED 5 parcels created.	SLIGHTLY LESS PREFERRED 6 parcels created.	SLIGHTLY LESS PREFERRED No change from A1-1.	SLIGHTLY LESS PREFERRED No change from A1-1.
43.4.8. High investment operations affected	SLIGHTLY MORE PREFERRED No high investment operations.	SLIGHTLY LESS PREFERRED No change from TRR.	SLIGHTLY LESS PREFERRED No change from TRR.	SLIGHTLY LESS PREFERRED No change from TRR.
43.4.9. Farm equipment Transportation routes affected	NEUTRAL Limitations to transportation routes similar on all routes.	NEUTRAL No change from TRR.	NEUTRAL No change from TRR.	NEUTRAL No change from TRR.
43.4.10. Division of agricultural community areas	NEUTRAL Division of agricultural community areas similar on all routes.	NEUTRAL No change from TRR.	NEUTRAL No change from TRR.	NEUTRAL No change from TRR.
43.5. Property Contamination	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL
43.5.1. Impact on properties in urban areas	No direct footprint impacts in urban areas are identified.	No change from TRR.	No change from TRR.	No change from TRR.
43.5.2. Impact on properties in rural areas	NEUTRAL No direct footprint impacts in rural areas are identified.	NEUTRAL No change from TRR.	NEUTRAL No change from TRR.	NEUTRAL No change from TRR.
43.6. Waste Management	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL
43.6.1. Impact on known operating and closed waste management facilities (e.g. transfer stations, stormwater treatment plants, waste disposal sites, landfills)	No direct impacts on known operating or closed waste management facilities are identified.	No change from TRR.	No change from TRR.	No change from TRR.
44. CULTURAL ENVIRONMENT	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL
East PD A1-4 Interchange at Bethesda Road; grade separation for Concession Roads 6 and 7				
				No change from A1-1.
				SLIGHTLY LESS PREFERRED No change from A1-1.
				SLIGHTLY LESS PREFERRED No change from A1-1.
				SLIGHTLY LESS PREFERRED No change from TRR.

Bethesda Road vs. Darlington-Clarke Townline Road Interchange East Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (East TRR A1) & Preliminary Design Alternatives (East PD A1-1, A1-2, A1-3 & A1-4)

Factor Areas/ Evaluation Criteria / Indicators	Comparative Ranking of Alternatives				
	East TRR A1 Interchange at Bethesda Road; significant realignment of Concession Road	East PD A1-1 Interchange at Bethesda Road; grade separation at Brown Rd	East PD A1-2 Interchange at Bethesda Road; grade separation at Darlington- Clarke Townline	East PD A1-3 (PREFERRED) Interchange at Darlington-Clarke Townline; grade separation at Bethesda Road	East PD A1-4 Interchange at Bethesda Road; grade separation for Concession Roads 6 and 7
44.1. Archaeological Features					
44.1.1. Disturbance or destruction of known significant archaeological sites	<ul style="list-style-type: none"> No known archaeological sites within route alternatives. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
44.1.2. Disturbance of areas of archaeological potential	<ul style="list-style-type: none"> High archaeological potential. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
44.2. Built Heritage Resources					
44.2.1. Displacement or disruption of built heritage resources	<ul style="list-style-type: none"> None displaced or disrupted. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
44.3. Cultural Landscape Resources					
44.3.1. Displacement or disruption of cultural landscape resources	<ul style="list-style-type: none"> None displaced or disrupted. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
45. TECHNICAL CONSIDERATIONS					
45.1. Overall Transportation System Performance					
45.1.1. Out of way travel	<ul style="list-style-type: none"> Relatively direct route; some out of way travel to Brown Road. 	<ul style="list-style-type: none"> Relatively direct route; some out of way travel to Brown Road. 	<ul style="list-style-type: none"> Relatively direct route; some out of way travel to Brown Road. 	<ul style="list-style-type: none"> Relatively direct route; some out of way travel to Brown Road. 	<ul style="list-style-type: none"> Relatively direct route; some out of way travel to Brown Road.
45.1.2. Support for transit services	<ul style="list-style-type: none"> North of high population areas. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
45.2. Transportation System Compatibility					
45.2.1. Transportation Network Compatibility	<ul style="list-style-type: none"> Compatible with existing and planned road network. 	<ul style="list-style-type: none"> Compatible with existing and planned road network. 	<ul style="list-style-type: none"> Compatible with existing and planned road network. 	<ul style="list-style-type: none"> Compatible with existing and planned road network. 	<ul style="list-style-type: none"> Compatible with existing and planned road network.
45.3. Transportation System Connectivity					
45.3.1. Connectivity	<ul style="list-style-type: none"> NEUTRAL 	<ul style="list-style-type: none"> NEUTRAL 	<ul style="list-style-type: none"> NEUTRAL 	<ul style="list-style-type: none"> NEUTRAL 	<ul style="list-style-type: none"> NEUTRAL

Bethesda Road vs. Darlington-Clarke Townline Road Interchange East Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (East TRR A1) & Preliminary Design Alternatives (East PD A1-1, A1-2, A1-3 & A1-4)

		Comparative Ranking of Alternatives				
Factor Areas/ Evaluation Criteria / Indicators		East TRR A1	East PD A1-1	East PD A1-2	East PD A1-3 (PREFERRED)	East PD A1-4
Interchange at Bethesda Road; significant realignment of Concession Road		Interchange at Bethesda Road; grade separation at Brown Rd	Interchange at Bethesda Road; grade separation at Darlington-Clarke Townline	Interchange at Bethesda Road; grade separation at Darlington-Clarke Townline; grade separation at Bethesda Road	Interchange at Bethesda Road; grade separation for Concession Roads 6 and 7	
45.3.1. Ability of each alternative to support or connect to existing or proposed travel modes	<ul style="list-style-type: none"> Supports connections to other modes, including provision of transitway station NEUTRAL	<ul style="list-style-type: none"> No change from TRR. NEUTRAL	<ul style="list-style-type: none"> No change from TRR. NEUTRAL	<ul style="list-style-type: none"> No change from TRR. NEUTRAL	<ul style="list-style-type: none"> No change from TRR. NEUTRAL	<ul style="list-style-type: none"> No change from TRR. NEUTRAL
45.4. Accessibility						
45.4.1. Accessibility of alternative to population and employment centres	<ul style="list-style-type: none"> High accessibility. NEUTRAL	<ul style="list-style-type: none"> No change from TRR. NEUTRAL	<ul style="list-style-type: none"> No change from TRR. NEUTRAL	<ul style="list-style-type: none"> No change from TRR. NEUTRAL	<ul style="list-style-type: none"> No change from TRR. NEUTRAL	<ul style="list-style-type: none"> No change from TRR. NEUTRAL
45.5. Emergency Access						
45.5.1. Impact of alternative on emergency access to adjacent lands	<ul style="list-style-type: none"> High potential to improve emergency access/routing. NEUTRAL	<ul style="list-style-type: none"> No change from TRR. NEUTRAL	<ul style="list-style-type: none"> No change from TRR. NEUTRAL	<ul style="list-style-type: none"> No change from TRR. NEUTRAL	<ul style="list-style-type: none"> No change from TRR. NEUTRAL	<ul style="list-style-type: none"> No change from TRR. NEUTRAL
45.6. Cost						
45.6.1. Examines the short and long term costs associated with each alternative	<ul style="list-style-type: none"> Comparable cost. NEUTRAL	<ul style="list-style-type: none"> Comparable cost. NEUTRAL	<ul style="list-style-type: none"> Comparable cost. NEUTRAL	<ul style="list-style-type: none"> Comparable cost. NEUTRAL	<ul style="list-style-type: none"> Comparable cost. NEUTRAL	<ul style="list-style-type: none"> Comparable cost. NEUTRAL
45.7. Traffic Operations						
45.7.1. Impact on Traffic Operations	<ul style="list-style-type: none"> Good interchange spacing. High potential for good traffic operations due to interchange location and configuration and local road network connections SLIGHTLY LESS PREFERRED	<ul style="list-style-type: none"> Good interchange spacing. High potential for good traffic operations due to interchange location and configuration and local road network connections SLIGHTLY LESS PREFERRED	<ul style="list-style-type: none"> Good interchange spacing. High potential for good traffic operations due to interchange location and configuration and local road network connections SLIGHTLY LESS PREFERRED	<ul style="list-style-type: none"> Better interchange spacing. High potential for good traffic operations due to interchange location and configuration and local road network connections SLIGHTLY MORE PREFERRED	<ul style="list-style-type: none"> Good interchange spacing. High potential for good traffic operations due to interchange location and configuration and local road network connections SLIGHTLY LESS PREFERRED	<ul style="list-style-type: none"> Good interchange spacing. High potential for good traffic operations due to interchange location and configuration and local road network connections SLIGHTLY LESS PREFERRED
45.8. Constructability						
45.8.1. Ease / Feasibility of Implementation	<ul style="list-style-type: none"> No significant constructability issues identified. NEUTRAL	<ul style="list-style-type: none"> No significant constructability issues identified. NEUTRAL	<ul style="list-style-type: none"> No significant constructability issues identified. NEUTRAL	<ul style="list-style-type: none"> No significant constructability issues identified. NEUTRAL	<ul style="list-style-type: none"> No significant constructability issues identified. NEUTRAL	<ul style="list-style-type: none"> No significant constructability issues identified. NEUTRAL

**Preliminary Design Alternative
Highway 35/115 Connection**

Highway 35/115 Connection East Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (East TRR A2) & Preliminary Design Alternative (East PD A2-1)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		East TRR A2 Freeway-to-freeway connection; Hwy 35/115 upgraded to freeway to Hwy 35/Hwy 115 split	East PD A2-1 (PREFERRED) Trumpet interchange; no upgrades to Hwy 35/115 corridor
1. NATURAL ENVIRONMENT			
45.9. Groundwater			
45.9.1. Effect on groundwater recharge areas		NEUTRAL	NEUTRAL
45.9.2. Effect on groundwater discharge areas		NEUTRAL	NEUTRAL
45.9.3. Shallow water supply wells within 500 m of the alternative	<ul style="list-style-type: none"> At least 6 wells to be decommissioned. Fewer than 5 shallow wells within high permeability buffer areas. At least 5 deep wells within the area of Oak Ridges Moraine sediments which lie downgradient of the route footprint. 	NEUTRAL	NEUTRAL
45.9.4. Changes to groundwater quality	<ul style="list-style-type: none"> Footprint covers 60 ha of high permeability soil, including those of the Oak Ridges Moraine sediments. Footprint covers slightly more of the Oak Ridges Moraine sediments than PD alternative. 	LESS PREFERRED	MORE PREFERRED
45.10. Surface Water Quality and Quantity			
45.10.1. Watercourse crossings and surface water features	6 surface water features classified as agricultural swales affected.	NEUTRAL	NEUTRAL
45.11. Fisheries and Aquatic Habitat			
45.11.1. Degree of high sensitivity fish habitat affected	None affected.	NEUTRAL	NEUTRAL
45.11.2. Degree of moderate sensitivity fish habitat affected	None affected.	NEUTRAL	NEUTRAL
45.11.3. Degree of low sensitivity fish habitat affected	None affected.	NEUTRAL	NEUTRAL
45.11.4. Degree of unconfirmed sensitivity fish habitat affected	None affected.	NEUTRAL	NEUTRAL
45.12. Vegetation			
45.12.1. Effect on upland vegetation units	8 ha of upland vegetation removed (0.7 ha deciduous forest; 0.5 mixed forest; 1.3 coniferous forest; 5.8 ha plantation).	LESS PREFERRED	MORE PREFERRED

**Highway 35/115 Connection
East Table 1 – Preliminary Design Alternative Evaluation
Comparative Evaluation of Technically Recommended Route (East TRR A2) & Preliminary Design Alternative (East PD A2-1)**

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives East TRR A2 Freeway-to-freeway connection; Hwy 35/115 upgraded to freeway to Hwy 35/Hwy 115 split East PD A2-1 (PREFERRED) Trumpet interchange; no upgrades to Hwy 35/115 corridor	
45.12.2.	Effect on significant vegetation communities	• None affected.	• No change from TRR.
45.12.3. Risk	Effect on known species of conservation concern or Species at Risk	NEUTRAL	NEUTRAL
45.13. Wetlands	Effect on wetlands (Evaluated and Unevaluated)	NEUTRAL	NEUTRAL
45.13.1.		• 2.3 ha of unevaluated wetland removed.	• No change from TRR.
45.14. Wildlife	Effect on core wildlife habitat (including indirect effects such as noise and light)	NEUTRAL	NEUTRAL
45.14.1.		• 6.3 ha of core habitat removed. LESS PREFERRED	• None affected. MORE PREFERRED
45.14.2.	Effect on specialized or sensitive wildlife habitat areas (including indirect effects such as noise and light)	• No areas of SSWH directly affected. • TRR is adjacent to 2 SSWH areas (SSWH O and SSWH EE- both large, diverse forest with high numbers of area sensitive species). LESS PREFERRED	• None affected. MORE PREFERRED
45.14.3.	Effect on habitat of known species of conservation concern or Species at Risk (including indirect effects such as noise and light)	• A breeding Golden-winged Warbler was recorded on the route (north of Wilcox Road). Approximately one third of the suitable habitat in this location is removed. LESS PREFERRED	• None affected. MORE PREFERRED
45.15. Environmentally Significant Features	Effect on identified ESAs and ANSIs	• No ESAs or ANSIs directly affected • TRR is adjacent to Ganaraska Forest and Headwaters Provincially Significant Life Science ANSIs. LESS PREFERRED	• None affected. MORE PREFERRED
45.15.1.			
45.16. Landscape Connectivity	Effect on linkages between core natural areas and other connectivity zones	NEUTRAL	NEUTRAL
45.16.1.		• None affected.	• No change from TRR.
46. SOCIAL ENVIRONMENT			
46.1. Noise	Separation distance to sensitive receptors sound levels and impacts	• Lower number of receptors; greater separation distance MORE PREFERRED	• Higher number of receptors; reduced separation distance LESS PREFERRED

Highway 35/115 Connection East Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (East TRR A2) & Preliminary Design Alternative (East PD A2-1)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		East TRR A2 Freeway-to-freeway connection; Hwy 35/115 upgraded to freeway to Hwy 35/Hwy 115 split	East PD A2-1 (PREFERRED) Trumpet interchange; no upgrades to Hwy 35/115 corridor
46.2. Community Fabric	46.2.1. Encroachment on or severance of established and/or proposed settlement areas	<ul style="list-style-type: none"> No encroachment on or severance of established or proposed settlement areas. 	<ul style="list-style-type: none"> No change from TRR.
46.2.2. Likely effects on planned/ approved community structure, as may be identified or proposed in provincial land use policies and/or regional official plans, within and east of the study area	<ul style="list-style-type: none"> No effects on planned community structure. 	<ul style="list-style-type: none"> No change from TRR. 	<ul style="list-style-type: none"> No change from TRR.
46.2.3. Delivery of community services (emergency, school bus)	<ul style="list-style-type: none"> Potential increased bussing as a result of barrier effect of highway and interchange. Emergency services may experience increased response time. Moderate impact on municipal road services. 	<ul style="list-style-type: none"> LESS PREFERRED 	<ul style="list-style-type: none"> No significant changes to current bussing practices or emergency services. Reduced impact on municipal road services. MORE PREFERRED
46.2.4. Urban or rural barrier effects	<ul style="list-style-type: none"> No barrier effects. 	<ul style="list-style-type: none"> NEUTRAL 	<ul style="list-style-type: none"> No change from TRR. NEUTRAL
46.3. Recreational Opportunities	46.3.1. Effect on hiking, hunting, fishing, nature viewing, facilities (golf) and educational opportunities	<ul style="list-style-type: none"> No effects on recreational opportunities. 	<ul style="list-style-type: none"> No change from TRR. NEUTRAL
46.4. Property Impacts	46.4.1. Residential, commercial, industrial, institutional and recreational property effects: <ul style="list-style-type: none"> Full removal/Displacement Frontage/Reduced frontage Severance – Complete/Partial Loss of Access/Access Impacted 	<ul style="list-style-type: none"> 27 property impacts. No residential displacements. LESS PREFERRED 	<ul style="list-style-type: none"> 7 property impacts. No residential displacements. MORE PREFERRED
46.5. Traffic Nuisance	46.5.1. Potential for diversion of longer distance travel to/from local roadways	<ul style="list-style-type: none"> Low potential for traffic infiltration. 	<ul style="list-style-type: none"> No change from TRR. NEUTRAL
46.6. Visual Aesthetics	46.6.1. Total aesthetic value of visibly accessible landscape components	<ul style="list-style-type: none"> Low net effect on receptors. 	<ul style="list-style-type: none"> No change from TRR. NEUTRAL
46.7. Light	46.7.1. Effect on light sensitive receptors	<ul style="list-style-type: none"> Low effect due to mitigation opportunities. 	<ul style="list-style-type: none"> No change from TRR. NEUTRAL

Highway 35/115 Connection East Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (East TRR A2) & Preliminary Design Alternative (East PD A2-1)

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives East TRR A2 Freeway-to-freeway connection; Hwy 35/115 upgraded to freeway to Hwy 35/Hwy 115 split		East PD A2-1 (PREFERRED) Trumpet interchange; no upgrades to Hwy 35/115 corridor	
47.3.2. Effect on aggregate resource areas		• None affected.	NEUTRAL	• No change from TRR.	NEUTRAL
47.4. Agriculture					
47.4.1. Removal or sterilization of Class 1-3 agricultural land(s)		• Greater loss of Class 1 – 3 agricultural lands LESS PREFERRED		• Less loss of Class 1 – 3 agricultural lands MORE PREFERRED	
47.4.2. Specialty crops/cropland affected		• None affected.	NEUTRAL	• No change from TRR.	NEUTRAL
47.4.3. Dairy/livestock operations affected		• 1 dairy/livestock operations affected.	NEUTRAL	• No change from TRR.	NEUTRAL
47.4.4. Field crop operations affected		• 9 field crop operations affected. LESS PREFERRED		• 6 field crop operations affected. MORE PREFERRED	
47.4.5. Farm properties greater than 20 ha affected		• 9 farm properties affected. LESS PREFERRED		• 5 farm properties affected. MORE PREFERRED	
47.4.6. Severed parcels greater than 20 ha affected		• 7 parcels created LESS PREFERRED		• 5 parcels created MORE PREFERRED	
47.4.7. Severed parcels less than 20 ha affected		• 1 parcels created LESS PREFERRED		• 2 parcels created. MORE PREFERRED	
47.4.8. High investment operations affected		• 1 high investment operations. MORE PREFERRED		• No change from TRR. LESS PREFERRED	
47.4.9. Farm equipment Transportation routes affected		• Limitations to transportation routes similar on all routes. NEUTRAL		• No change from TRR. NEUTRAL	
47.4.10. Division of agricultural community areas		• Division of agricultural community areas similar on all routes. NEUTRAL		• No change from TRR. NEUTRAL	
47.5. Property Contamination					
47.5.1. Impact on properties in urban areas		• No direct footprint impacts in urban areas are identified. NEUTRAL		• No change from TRR. NEUTRAL	
47.5.2. Impact on properties in rural areas		• 7 properties will be directly impacted by the footprint in a rural area. LESS PREFERRED		• No direct footprint impacts in rural areas are identified. MORE PREFERRED	

**Highway 35/115 Connection
East Table 1 – Preliminary Design Alternative Evaluation
Comparative Evaluation of Technically Recommended Route (East TRR A2) & Preliminary Design Alternative (East PD A2-1)**

Factor Areas/ Evaluation Criteria / Indicators		Comparative Ranking of Alternatives	
		East TRR A2 Freeway-to-freeway connection; Hwy 35/115 upgraded to freeway to Hwy 35/Hwy 115 split	East PD A2-1 (PREFERRED) Trumpet interchange; no upgrades to Hwy 35/115 corridor
47.6. Waste Management			
47.6.1. Impact on known operating and closed waste management facilities (e.g. transfer stations, stormwater treatment plants, waste disposal sites, landfills)		<ul style="list-style-type: none"> No direct impacts on known operating or closed waste management facilities are identified. 	<ul style="list-style-type: none"> No change from TRR.
48. CULTURAL ENVIRONMENT		NEUTRAL	NEUTRAL
48.1. Archaeological Features			
48.1.1. Disturbance or destruction of known significant archaeological sites		<ul style="list-style-type: none"> No known archaeological sites within route alternative. 	<ul style="list-style-type: none"> No change from TRR.
48.1.2. Disturbance of areas of archaeological potential		<ul style="list-style-type: none"> High archaeological potential. 	<ul style="list-style-type: none"> No change from TRR.
48.2. Built Heritage Resources		NEUTRAL	NEUTRAL
48.2.1. Displacement or disruption of built heritage resources		<ul style="list-style-type: none"> None displaced or disrupted. 	<ul style="list-style-type: none"> No change from TRR.
48.3. Cultural Landscape Resources		NEUTRAL	NEUTRAL
48.3.1. Displacement or disruption of cultural landscape resources		<ul style="list-style-type: none"> None displaced or disrupted. 	<ul style="list-style-type: none"> No change from TRR.
49. TECHNICAL CONSIDERATIONS		NEUTRAL	NEUTRAL
49.1. Overall Transportation System Performance			
49.1.1. Out of way travel		<ul style="list-style-type: none"> Relatively direct route. 	<ul style="list-style-type: none"> No change from TRR.
49.1.2. Support for transit services		<ul style="list-style-type: none"> North of high population areas. 	<ul style="list-style-type: none"> No change from TRR.
49.2. Transportation System Compatibility		NEUTRAL	NEUTRAL
49.2.1. Transportation Network Compatibility		<ul style="list-style-type: none"> Requires upgrading of north-south road network beyond that described in TMP. 	<ul style="list-style-type: none"> No change from TRR.
49.3. Transportation System Connectivity		NEUTRAL	NEUTRAL
49.3.1. Ability of each alternative to support or connect to existing or proposed travel modes		<ul style="list-style-type: none"> Supports connections to other modes, including provision of transitway station 	<ul style="list-style-type: none"> No change from TRR.

Highway 35/115 Connection

East Table 1 – Preliminary Design Alternative Evaluation

Comparative Evaluation of Technically Recommended Route (East TRR A2) & Preliminary Design Alternative (East PD A2-1)

Factor Areas/ Evaluation Criteria / Indicators	East TRR A2 Freeway-to-freeway connection; Hwy 35/115 upgraded to freeway to Hwy 35/Hwy 115 split	Comparative Ranking of Alternatives East PD A2-1 (PREFERRED) Trumpet interchange; no upgrades to Hwy 35/115 corridor
49.4. Accessibility 49.4.1. Accessibility of alternative to population and employment centres	<ul style="list-style-type: none"> High accessibility. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
49.5. Emergency Access 49.5.1. Impact of alternative on emergency access to adjacent lands	<ul style="list-style-type: none"> High potential to improve emergency access/routing. 	<ul style="list-style-type: none"> No change from TRR. <p style="text-align: center;">NEUTRAL</p>
49.6. Cost 49.6.1. Examines the short and long term costs associated with each alternative	<ul style="list-style-type: none"> Substantially higher relative cost. <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> Lower relative cost. <p style="text-align: center;">MORE PREFERRED</p>
49.7. Traffic Operations 49.7.1. Impact on Traffic Operations	<ul style="list-style-type: none"> Good traffic operations for 407 corridor to Hwy 115 corridor. Affects traffic operations for Hwy 35/115 corridor. <p style="text-align: center;">MORE PREFERRED</p>	<ul style="list-style-type: none"> Acceptable traffic operations for 407 corridor and Hwy 35/115 corridor. <p style="text-align: center;">LESS PREFERRED</p>
49.8. Constructability 49.8.1. Ease / Feasibility of Implementation	<ul style="list-style-type: none"> Complex construction. Significant challenges associated with maintenance of traffic during construction. <p style="text-align: center;">LESS PREFERRED</p>	<ul style="list-style-type: none"> Construction requirements simplified. Better able to accommodate traffic during construction. <p style="text-align: center;">MORE PREFERRED</p>